

LEPCON Mumbai 2012 27-29 Jan 2012

It was an event to remember for the scores of delegates assembled at the Nair Hospital Auditorium that day. To begin with, the inaugural lighting of the lamp was performed by a leprosy patient along with eminent personalities like Chief Guest Dr. V M Katoch, Guest of Honor, Mr. Ranjit Shahani, President of IAL Dr. Atul Shah, Scientific secretary Mrs. Kiran Katoch, Secretary of ISL Dr. Swapan Samanta and Organising Secretary Ms. Neela Shah and others. The occasion was the inaugural session of LEPCON Mumbai 2012, the 28th Biennial Conference of the Indian Association of Leprologists (IAL) held from 27 – 29 January, 2012. It was the first ever IAL conference to be inaugurated without any discrimination and with the participation of invited stake holders. Said the son of one of the leprosy patients invited to the event, “I am thankful to the organizers for allowing me to sit through the session and learn about how I should deal with the complications of leprosy in case my father develops it.”

Not a soul could have ever imagined that a mundane subject like leprosy eradication could evoke such an enthusiastic response. Not many could have even thought that they would be so spellbound by the CME - Continuing Medical Education program - conducted by LEPCON and accredited by the Maharashtra Medical Council that they would sit through the program with keen interest for the entire day. The conference also had a surprise ending in store for the delegates. It was wrapped off in style – with a banquet, which free from successive speeches of office bearers was just a great reason to celebrate, to dance, to relax and unwind from the strong and copious doses of scientific contents

ranging from epidemiology and DPMR to real commitment of The Leprosy Mission, and from immunology and pathology to vaccine development. The inclusive CME program on the first day set the tone for the rest of the conference which was a spectacular success. The message was clear, the organizers succeeded in delivering the promise held out by the theme “Science for the benefit of society”.

The Indian Association of Leprologists was founded in 1955 and has served to guide the national program by exchange of information through its biennial conferences of leprosy experts. Dr. Atul Shah, Director, Novartis Comprehensive Leprosy Care Association, was congratulated by the Chairman of Novartis when he informed him of his being elected President of this prestigious body in 2010.. Chairman Dr. Daniel Vasella wrote: “...The Indian Association of Leprologists has an important role in the fight against leprosy in India and its contributions are of major importance.”

Far exceeding the normal attendance figures of 150 to 200 delegates as seen in previous conferences, LEPCON 2012 witnessed the eager participation of more than 260 delegates. Thanks to the forging of strong bonds by the IAL president Dr. Atul Shah and the Organizing Secretary Ms. Neela Shah, and the respect accorded to them, each of the major leprosy organizations became either a collaborator or supporter of the event. Acceding to their request, a 37-strong faculty of leprosy experts converged on the metropolis of Mumbai to deliver talks on their lifetime experiences to newly inducted members, resident doctors, post graduate students and the members of the prestigious organization IAL.

More than 45 free papers and 30 posters were presented reflecting the various scientific aspects of leprosy as seen today.

At the formal inaugural session Ms. Neela Shah extended a warm welcome to the dignitaries on the dais and fellow delegates. She said that her dream to bring as many participants from as many organizations as possible was fulfilled. She specially thanked local committee members and ILEP members who had attended the conference to share their expertise in their respective fields. She thanked Dr. Ranavare, Dean, Nair Hospital and Dr. Baliarsing, Head, Plastic Surgery for their help and support. She appreciated profoundly the burning of the midnight oil since a month by all the resident doctors and Assistant Professor Dr. Rajat Kapoor to ensure that nothing was left to chance.

Speaking at the inauguration, Chief Guest, Dr. V M Katoch, Director-General of ICMR and Secretary, Health Resources, Government of India, said that India is marching forward slowly and steadily to eradicate leprosy. Time is not important, advances are important, he said and expressed confidence that we would win the fight against leprosy. He lauded the government's efforts towards reaching MDT to each and every affected person besides working towards disability prevention and medical rehabilitation in a big way for alleviating the suffering of millions of disabled persons in India. He also mentioned that a new taskforce is in place at ICMR to oversee the research advancement in leprosy.

The entire crowd was delighted when ex-chief of the WHO leprosy program, Dr. Noordeen, presented a memento to Mr. Ranjit Shahani - managing director and vice chairman of Novartis India Limited which as collaborator for the conference supported the CME program, provided ecofriendly kits specially flown in from Hyderabad to participating delegates and offered them the new edition of the Text book of Leprosy by Yawalkar (2011), edited by Dr. Noordeen and Dr. Atul Shah and published by Novartis Foundation for Sustainable Development, which

supports the Novartis Comprehensive Leprosy Care Association for over two decades. Mr. Shahani appreciated the gesture from IAL and reaffirmed his company's commitment to fight against leprosy not by chemotherapy alone but also by providing relief to the leprosy disabled through innovative products and services developed by NCLCA. He said that Dr. Atul Shah and Ms. Neela Shah's award winning work was recently presented to the CEO of Novartis Mr. Joe Jimenez. He elaborated that Mr. Jimenez was moved by the plight of the destruction of the human body caused by leprosy and efforts of NCLCA to alleviate the sufferings. However, in order to cure the leprosy and reach it to nearer the elimination, extension of MDT donation beyond 2015 would be necessary and that it would soon be announced.

Dr. Agrawal, Deputy Director General of Leprosy, Government of India, praised the efforts of the IAL in bringing together almost all the organizations working in the field of leprosy under one umbrella. He stressed that the expertise of each and every individual and organization will need to be harnessed if leprosy is to be eliminated in a short span of time from the still endemic districts. He stressed the need for improving the quality care and results with proper planning. He also mentioned that Government of India would provide the increased allotment in the 12th five year plan, necessary to carry on the fight against leprosy. Dr. Noordeen in his address reaffirmed that the strategy to eliminate leprosy has been largely successful. He said that dealing with the consequences of leprosy required operational research in disability prevention and care and that IAL can make a big contribution towards sustaining the required expertise after integration. Dr. Samanta, secretary of IAL and an ophthalmologist by profession described at length the achievements of IAL and the need for continuation of frequent meetings for exchange of ideas and information by leprosy experts and forging alliances with South East Asian countries. Mrs. Kiran Katoch, Director of National Jalma

Institute of Mycobacterial Diseases, Agra, and the Scientific Secretary, IAL, said that despite the absence of a vaccine, recent advances in molecular biology have made it possible to give serious thought to good leprosy control. She said that Dr. Shah with great humility often consulted her for putting together the best possible scientific content.

Dr. M. A. Rajan, an eminent ophthalmologist acknowledged for his expertise in the treatment of eye complications and reactions was given the honor of delivering the Jal Mehta Oration. The late Dr. Jal Mehta of Pune was known for establishing the speciality of reconstructive surgery in leprosy. The lifetime achievement award was conferred on Dr. Vitthal Jadhav, a past President of IAL and a reputed dermatologist from Pune, Dr. Bhusan Kumar, a renowned dermatologist and co-author of the recently published 'IAL Text Book of Leprosy', and Dr. S. L. Gupta, a veteran in field care whose efforts towards case finding and collaboration of health authorities and the public are well known. A special award was conferred on Dr. P. L. Joshi, former deputy director general (leprosy) for "leprosy elimination". A memento was also presented to the organizers of the mid-term conferences - Dr. Nagaraju from Chennai, Dr. K. K. Das from Guwahati and Dr. Mohan Das from Goa.

Taking the ceremony further, Ms. Pratiksha Lakhani, the chief compere and one time news reader on a national video channel, introduced Dr. Atul Shah as the fifth surgeon and only the second plastic surgeon to become the President of IAL, amidst tremendous applause from the entire crowd. Dr. Atul Shah and Ms. Neela Shah were honored with a traditional shawl and offered a huge memento portraying him as the rescuer of the ship. The entire crowd gave a standing ovation to Dr. and Mrs. Neela Shah. Continuing his speech, Dr. Samanta, secretary of IAL, who was instrumental in selecting, preparing and bringing all the mementos specially from Kolkata, said that Dr. Shah had not only rescued IAL but also through this conference enhanced its

prestige, made it more famous and transformed it into a unique consortium of leprosy experts of international caliber. Dr. Atul Shah in his Presidential address said that the success of any conference is judged by its scientific content. On his part, he had contacted not only each and every speaker but also each and every participant individually. He said that bridging the gap between science and societal needs is the only solution to problems caused by chronic diseases like leprosy. He said that his commitment to leprosy reconstructive surgery originated from his teacher Dr. Antia who 25 years ago had held the IAL conference in the same auditorium and whom he had assisted on that occasion. He said that he was overwhelmed by the response that he had got from both faculty and participants, that too despite not sending them the scientific program in advance. This only showed the measure of trust that all the delegates had in LEPCON MUMBAI 2012 and he thanked them for making it a success through their participation.

Dr. Shah expressed special thanks to Mrs. Katoch for putting together the scientific content and Dr. V M Katoch, Past President of IAL for his advice on various organizational aspects besides the financial support from ICMR. He sincerely appreciated the commitment of the Government of India and Dr. C. M. Agrawal in particular who instructed all SLOs to participate and make a contribution to the event; in fact, this was the first time that an entire special session on NLEP in the main auditorium was included in the scientific content at the IAL conference. He thanked each and every ILEP member for their gracious presence and even financial contribution. He heaped praise on the IAL Central Council which supported him in his tenure. He apologized for any shortcomings in communication regarding the conference as no paper communications were sent to the participants and since a Go Green policy was followed, the entire conference was organized by communicating through the electronic media.

There were loud cheers from the crowd when Dr.

Shah appreciated Mr. Ranjit Shahani for sparing time to be the Guest of Honour and Novartis for supporting the conference. Endorsing what Mr. Shahani had said in his address as Guest of Honour, Dr. Shah said that the continuous donation of MDT since the year 2000 has opened new vistas for leprosy eradication and this window of opportunity should be well utilized for early case detection and treatment. It would not have been possible without the active support of the Novartis Foundation for Sustainable Development and Dr. Klaus Leisinger to even think of leprosy elimination. Moreover, Novartis Comprehensive Leprosy Care Association has devised many disability care modalities which have now been accepted scientifically as the best practices for caring for leprosy affected people. Dr. Shah also thanked Parekh Charities for their valuable contribution towards the organization of the conference and said that a memento would be sent to them in appreciation. Mr. Ratin Dutta, Treasurer, IAL, proposed the vote of thanks, after which the glittering ceremony concluded with a big round of applause from the audience.

The session for awarding the best papers was extremely well attended. Among the nine candidates, Ms. Ashwini Manjare won the first prize for best paper and Ms. Neha Saboo won the second prize. The best publication prize went to Ms. Mallika Lavania who earlier had won the best paper prize and is now the Head of the Research Laboratory of the Leprosy Mission at Delhi.

One of the main reasons why it was possible for 260 delegates to come here on their own, stay on their own and travel to the venue on their own - without bothering the organizers was the extra care and attention that was given to receiving them and to the provision of services to them. Round the clock services of breakfast, coffee and tea and sumptuous lunch and high tea in the evening and assistance by volunteers sitting at the help desk for the entire duration of the conference ensured that the delegates' needs were fully satisfied. Ms. Neela Shah left no stone unturned for the above arrangements and

supervision of the same, besides presenting scientific free papers and posters which were well received. The instant Grip-Aid paper presented in the form of demonstration along with slides was liked so much that many state program managers as well as the NGOs asked for the support of the NCLCA for rehabilitation of leprosy cases in their areas through grip-aid kit in their leprosy colonies, congregations and settlements.

A wonderful post-conference experience is the way delegates continue to flood the organizers with appreciative e-mails. To cite one of them, Vanaja Shetty of FMR says, "We want to congratulate you both and your team for excellently organizing the 28th IAL conference in Mumbai. We all know how difficult it is to organize a conference like this in the city of Mumbai. We were impressed by the way you were able to ensure the support and cooperation of many academic departments in the city's Medical Colleges as well as Government and Municipal agencies and NGOs.....". To cite another letter:

Dear Prof. Atul ,

You had organised an excellent meeting in Mumbai, the costliest city. Everything went on smoothly. We enjoyed our get-together twice at West End Hotel Rooftop. Mrs. Neela Shah has been the backbone . Our special appreciation and thanks to her. Please convey our wholehearted thanks to all members of your team including Dr. Rajat Kapoor. We have not come out of the hangover the nostalgic moments during our Mumbai stay. Thanks again. May God bless you and your family with sound health and long life so that your help to leprosy sufferers go unabated. Our wishes to Miss Shah in her academic endeavour.

With regards,

venkatesan

Dr. K. Venkatesan

Deputy Director (Sr.Gr.)/ Scientist F & Head (Biochemistry)

Incharge-Laboratory Division, National JALMA Instt. for Leprosy & Other Mycobacterial Diseases

Scientific Abstracts Presented

(NOTE: Does not include Invited talks, symposia and similar topics for which write up was not asked for)

Leprosy in India: Recent trends in post leprosy elimination era

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Leprosy control program, including multi-drug therapy (MDT), have undergone significant changes over the last few years. The number of leprosy cases has come down drastically over the last 2 decades and registered global prevalence in the beginning of 2010 was 211 903 cases, India harboring maximum proportion of leprosy patients. With the process of integration of leprosy into general health services taking place all over India, dermatologists are more responsible for the care of leprosy patients than ever before.

There have been some recent reports of relapse and resistance with new 12 months MDT MBR. Also multibacillary forms of disease like Histoid have been noted to be still prevalent. There is lack of an efficient surveillance system for relapse, drug resistance and treatment dropouts. This is a matter of concern in view of the public health risk posed by the likelihood of infection due to active relapse cases and treatment dropouts with new short term treatment regimens. Patients treated and released from treatment continue to come for the management of reactions, neuritis and deformities. The dermatological services will continue to play an important role in diagnosis of the incident and remaining leprosy cases scattered in wide geographic areas a population

of more than 100 million in India in post leprosy elimination era for many more years and decades.

The World Health Organization's Enhanced Global Strategy for Further Reducing the Disease Burden Due to Leprosy: 2011-2015 focuses on sustaining the gains made so far and on reducing the disease burden further in all endemic communities and ensuring that the quality of services is not compromised. Together, we can further reduce the disease burden due to leprosy and ensure that the physical and social consequences of the disease continue to decline in magnitude throughout the world.

Reality in field area in finding and confirming new cases

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State Leprosy officer, Odisha

National Leprosy Eradication Programme has been integrated with general health care system since 2004. Now entire responsibility of NLEP has been entrusted to general health care system. In the field the general health care system start from village level to District HQ Hospital level. At the village level, ASHA are stationed @ one ASHA in every 1000 population. ASHA is a lady activist belongs to same village and lives in the same village where she works. They are responsible for all health activities carried out at village level. HW (M/F) they support and supervise the work of ASHA from sub center level. At the sector level, one PHC functions in every 30000 population headed by one MO and supported by Health Supervisor(HS) and Pharmacist. They support and supervise the functions and activities of HWs. At

Block level one Community Health Center (CHC) functions in every 1 lakh population headed by one Sr. MO supported by HS, Pharmacist, Block Extension Educator (BEE) and many other ancillary staffs. He/ she with his/her teams supervise work of PHC and SC.

As per job chart of ASHA they are supposed to suspect a case of leprosy and refer the case to nearest PHC/CHC for confirmation of case. After confirmation 1st dose of MDT is delivered to patient at PHC/CHC where patient has been confirmed and subsequent doses are delivered by the concerned HW of SC through ASHA. ASHA is also supposed to monitor the regularity of treatment till treatment completion. Under the programme ASHA is being paid incentive @ Rs.300/- per PB case and Rs.500/- per MB case referral but payment is done after successful completion of treatment.

HW of SC collects MDT BCP every month from PHC from pharmacist and updates the PHC treatment register as well as case card.

Pharmacist PHC/CHC indents the MDT, procure the drugs and keep the records updated at PHC / CHC level.

Medical officer of PHC is trained in leprosy can confirm a case of leprosy and if not trained refer the case to MO CHC who is leprosy trained MO. He can confirm a case of leprosy and also complications if any and can advise treatment. Difficult to diagnose cases are referred to DLO/MO DN by MO CHC for confirmation in consultation of Dermatologist working at District HQ Hospital. Case card is prepared at the time of confirmation of case and transferred to respective SC.

Finding of case mainly happens by two ways;

1. Suspects directly reporting before health system either to ASHA, HW or MO PHC/CHC
2. Suspects identified by field level health functionaries and referred to health centers.

Self reporting of cases before system varies from place to places. This depends on;

- Awareness level of people/ community regarding early signs and symptoms of leprosy and its curability.
- Availability of trained manpower and responsive health system to receive the reporting case, listen his problem and solve the problem.
- Accessibility of health system or manpower.
- Stigma prevails in the community or person himself.

Various studies conducted reveals that awareness level in community for the diseases is fairly well because of IEC activities conducted time to time since inception of programme. People believe on curability of disease with MDT. There is visible decline in occurrence of new cases and disability amongst new cases which are realized by all because of successful implementation of MDT programme since last 30 years.

Availability of trained manpower and their sustenance is a problem. Even trained personnel are available but they are not responsive because of more other programmes they deal. Health systems in many places are not responsive. Somehow system's priority is decided by someone else. Many other interventions draw major intensions of system deviating them from regular planned strategy.

Accessibility is a problem in many places but because of NRHM supports and availability of ASHA in every village they are easily accessible to people but actual place of confirmation and treatment is some time far away and also not available in regular basis.

Stigma is also a major hindrance in reporting of the cases. Though it has come down but still persists.

Above mentioned facts are realities in the field which prevent a suspect to report before health system and get service.

Identification of suspects in the field is one of the job responsibilities of ASHA. As we know that ASHAs are not regular paid staff of Health & FW dept. rather they are activists. Their main job is to care pregnant women. Now they are being involved in almost all health programmes for which they are being paid incentives for different jobs. They are now overburdened with limited knowledge. Identification of leprosy cases or leprosy suspects by ASHA depends on her interest, rate and regularity of incentive payment and level of knowledge and her proximity and popularity with population. As we know, as such person having signs and symptoms of leprosy usually do not report unless enquired frequently. ASHA can reach each suspect through IPC or a suspect can frankly disclose his/ her signs and symptoms to ASHA but reality is that people consider ASHA as care taker of pregnant women only in non tribal areas where a suspect likes to disclose his or her findings to either ANM or MO PHC or leprosy worker but in outreach or in tribal areas suspect report to ASHA. That is the reason why percentage of case detection through ASHA referral is 20-60% in tribal areas where as in non tribal areas it is less than 10% of total case detection in Odisha.

Before ASHAs were inducted under NRHM, identification of case was the responsibility of HWs. Confidence level of people on HWs particularly on ANM is very high than ASHA. HWs have earlier have participated in all leprosy campaigns and were backbone of provision of leprosy services under General Health care System. But since ASHAs were inducted and paid incentives for case identification, HWs are not taking much interest in case identification activity. But still a good number of cases self report to ANM for identification and treatment. Percentage of referral of suspects through HWs is 20-30% in Odisha.

In urban areas case identification is a problems. AWWs and HWs posted under the ICDS and urban

revamping programmes particularly in urban slums play a major role in identification of cases in urban slums. Moreover the self reporting of cases directly to Urban Health Centers much high.

House hold and healthy contact survey has again been introduced in the programme. This activity is mainly done by Leprosy workers retained under integrated set up. Their numbers are going down because of their retirement and no new posting has been done since last 15 years. Hence contact survey in all areas is not uniform. Case detection through contacts examination is still a good and cost effective method of cases identification.

Routine case identification activities through referral, contacts examination and self reporting methods are sustainable strategies but in reality we miss almost same number of cases what we detect every year and they remain undetected and source of infection in the community. This was revealed during Intensive Case detection Drive conducted in Odisha during 2010-11 in 50 high endemic blocks. We detected 1567 new cases in 47.78 lakhs of population during drive where as in same population 789 cases were detected through routine activities in previous year (2009-10). Similarly in NSS conducted in 2010-11, 129 new cases were detected by examining 971468 population in 10 Blocks and 1 urban areas. In the same population 114 cases were detected during the same year through routine methods. It means we are missing almost same number of cases or more what we detect through routine methods.

As far as confirmation of case is concerned, it the job of MO PHC/CHC to confirm the case. Case is being confirmed on the basis of cardinal signs but diagnosis of early lepromatous leprosy cases with macular or fine infiltrative lesions in the field situation is difficult. Diagnosis of pure neural types of leprosy or facial lesions is difficult to confirm by MO PHC/CHC. Many a times if history taking is not complete or examination of case is not done properly or MO PHC/CHC does not know

New cases detected from 2008-09 to 2010-11

Sl. No.	District	Name of the block/urban area	Mid Year Population March 2011	Population of villages Examined	2008-09		2009-10		2010-11			
					New cases detected	ANCDR/1 00000	New cases detected	ANCDR/1 00000	During NSS	Routine cases during the year	Total	ANCDR/1 00000
1	Cuttack	Cuttack (M)	535,732	204,663	46	8.72	32	5.98	8	28	36	6.72
2	Gajapati	Mohana Block	126,696	121,335	3	2.52	5	4.15	8	3	11	8.68
		Gosani Block	96,050	52,447	16	16.92	7	7.30	4	4	8	8.33
3	Koraput	Rabanaguda Block	114,354	102,811	23	20.43	19	16.64	16	17	33	28.86
		Nandapur Block	94,633	80,540	2	2.15	-	-	9	6	15	15.85
4	Nuapada	Boden Block	82560	25640	15	18.46	6	7.29	12	4	16	19.38
		Komna Block	136064	53808	43	33.02	13	9.85	16	14	30	22.05
5	Puri	Delang Block	139,340	115,000	20	14.58	18	12.93	16	9	25	17.94
		Satyabadi Block	123,027	85,000	9	7.43	17	13.83	12	11	23	18.70
6	Sambalpur	Dhankauda Block	97,152	69,010	25	27.66	23	25.09	16	18	34	35.00
		Naktideul Block	66,595	61,214	4	6.10	2	3.01	12	-	12	18.02
Total			1,612,203	971,468	206	14.36	142	9.64	129	114	243	18.14

about atypical presentation of case or if the circumstances in OPD is not conducive, the MO likely to miss the diagnosis. Such cases are either declared non case or kept under observation. If referred, the case does not feel to go to District Headquarter Hospital and remain undiagnosed till disability develops. So under diagnosis is a problem in rural areas.

In urban areas, cases mostly go to DHH or Medical College where services of Dermatologists are available. But chances of recycling of cases or over treatment are much more in urban areas.

Odisha is first State in the country to introduce 100% validation of cases in 2005-06 after a sample survey conducted by NIH&FW in 2 districts of Odisha in 2004-05. The finding

revealed that around 40 % cases in Odisha are being wrongly diagnosed and registered for treatment. The DTST team of ILEP and MO DN were given responsibility to conduct 100% validation of cases confirmed at PHC/CHCs before registration. Simultaneously MO PHC/CHC were provided hands on training by MO DN and Modular training at State level to built up their capacity for correct diagnosis of leprosy cases. This has resulted in reduction of wrong diagnosis of leprosy cases at PHCs/CHCs considerably. The correctness of diagnosis has improved from 60% in 2004-05 to 92-96% in 2010-11. Now entire responsibility of confirmation of cases has been entrusted to MO CHC and now necessity of validation of all the cases by MO DN is not felt.

Reports on Intensive Case Detection Drive during 2010-11

Sl. No.	District	Name of the ICDD Block	Total Population	Population covered	No. of Suspect identified	No. of suspect examined	No. of cases confirmed	No. of cases Validated	No. of New cases Registered										Grand Total	Total cases Registered (New+ Other)		Disability	
									As New					As others						Male	Female	Gr-I	Gr-II
									PB	Child	MB	Child	Total	PB	Child	MB	Child	Total					
									Adult	Child	Adult	Child	Adult	Child	Adult	Child	Adult	Child		Adult	Child		
1	Angul	Angul Block (Bantala)	159866	155065	177	122	33	18	8	1	2	0	11	0	0	0	0	11	1	10	0		
2	Angul	Chhendipara	165672	155917	189	172	39	31	11	1	13	0	25	0	1	1	1	26	15	11	1		
3	Angul	Athamalick (Madhapur)	126135	112138	109	109	36	33	19	4	7	0	30	0	0	0	0	30	14	16	2		
4	Angul	Banarpal	204441	176297	232	206	69	67	24	3	18	2	47	0	1	1	1	48	26	22	1		
5	Angul	Kaniha	155861	115685	122	88	36	26	6	1	7	2	16	1	1	1	1	17	12	5	1		
6	Angul	Pallahara	125166	125066	133	130	29	15	5	0	5	1	11	1	1	1	1	12	11	1	1		
		Total	937141	840168	962	827	242	190	73	10	52	5	140	2	0	4	144	79	65	3	9		
1	Bargarh	Padmapur	118465	103963	161	138	88	70	14	0	13	1	28	1	0	0	0	29	14	15	2		
2	Bargarh	Paikmal	117149	103230	169	150	96	78	1	1	6	0	8	0	0	5	0	13	10	3	1		
3	Bargarh	Jharabandha	181845	56809	176	152	96	83	13	1	10	0	24	0	0	1	0	25	9	16	0		
4	Bargarh	Gaisilet	94302	83868	105	93	71	61	9	0	1	0	10	0	0	2	0	12	5	7	1		
5	Bargarh	Sohella	132491	130453	1080	981	81	78	17	5	12	2	36	4	0	6	0	46	22	24	0		
6	Bargarh	Bijepur	106670	84440	192	162	36	36	13	3	5	0	21	1	0	2	0	24	9	15	0		
7	Bargarh	Bhatli	88604	75825	293	218	59	49	10	3	5	1	19	1	0	5	0	6	25	19	6		
8	Bargarh	Attabira	156415	109491	281	257	44	44	15	6	4	0	25	6	0	5	0	36	20	16	0		
9	Bargarh	Barargh	152775	139847	148	127	65	65	8	4	6	1	19	0	1	0	1	21	9	12	4		
		Total	1148716	887926	2605	2278	636	564	100	23	62	5	190	13	1	26	1	41	231	117	114	8	
1	Bolangir	Agalpur	98464	98464	164	164	44	44	20	1	20	0	41	1	0	1	3	44	29	15	0		
2	Bolangir	Deogaon	99458	95752	152	152	36	24	13	1	9	1	24	0	0	0	0	24	7	17	0		
3	Bolangir	Bolangir-I (Chudapalli)	97823	97264	315	315	50	50	33	2	15	0	50	0	0	0	0	50	29	21	3		
4	Bolangir	Pauntala	108283	99577	317	292	65	65	29	10	25	1	65	0	0	0	0	65	34	31	2		
5	Bolangir	Loisinga	97940	97629	215	209	48	40	21	0	17	0	38	0	1	1	0	40	23	17	3		
		Total	501968	488686	1163	1132	243	223	116	14	86	2	218	1	1	2	1	5	223	122	101	8	
1	Boudh	Boudh	145708	136149	231	231	112	112	23	1	26	3	26	49	0	3	3	52	7	7	5		
2	Boudh	Kantamal	155330	139903	208	208	91	91	24	24	30	0	54	0	1	1	1	55	10	10	4		
		Total	301038	276052	439	439	203	203	47	0	56	0	103	0	0	4	0	4	107	0	0	17	
1	Cuttack	Tigiria	77448	72483	66	66	12	9	6	1	1	0	8	0	0	1	0	9	3	6	1		
		Total	77448	72483	66	66	12	9	6	1	1	0	8	0	0	1	0	9	3	6	1		
1	Dhenkanal	Odapada	122735	112074	584	531	79	78	22	7	9	1	39	2	0	3	0	44	28	26	1		
2	Dhenkanal	Hindol	124361	114726	467	348	57	55	10	8	9	0	27	3	0	2	0	32	17	15	1		
3	Dhenkanal	Parajanga	123835	120431	1892	1125	163	143	28	4	17	1	50	2	0	7	0	59	29	30	4		
		Total	370931	347231	2943	2004	299	276	60	19	35	2	116	7	0	12	0	19	135	74	71	6	
1	Jajpur	Sukinda	149318	126318	155	151	62	56	16	3	17	0	36	0	0	2	0	38	11	25	12		
		Total	149318	126318	155	151	62	56	16	3	17	0	36	0	0	2	0	38	11	25	12		
1	Jharsuguda	Lakhanpur	84819	74156	318	292	48	43	13	1	6	1	21	0	0	0	0	21	13	8	0		
2	Jharsuguda	Lakera (Wardajore)	51790	40966	157	157	26	26	13	1	5	0	19	0	0	0	0	19	9	10	0		
3	Jharsuguda	Jharsuguda (Rajpur)	74062	60292	180	140	22	20	12	0	3	0	15	0	0	0	0	15	8	7	1		
		Total	210671	175414	655	589	96	89	38	2	14	1	55	0	0	0	0	55	30	25	0		
1	Koraput	Kotapad	89865	79806	329	329	54	54	29	3	22	0	54	0	0	0	0	54	26	28	5		
2	Koraput	Boriguma	118842	11121	531	486	49	49	35	3	11	0	49	0	0	0	0	49	26	23	5		
		Total	208707	90927	860	815	103	103	64	6	33	0	103	0	0	0	0	103	52	51	10		
1	Mayurbhanj	Tiringa	56959	51074	229	212	16	16	13	0	3	0	16	0	0	0	0	16	4	12	0		
2	Mayurbhanj	K.Tandil (Mairada)	108605	70785	182	160	37	37	17	6	13	1	37	0	0	0	0	37	16	21	3		
3	Mayurbhanj	Kostha (Sullapada)	116054	96056	246	186	34	2	0	0	2	0	2	0	0	0	0	2	1	1	0		
4	Mayurbhanj	Bahalada	83862	68475	126	58	23	23	10	2	8	3	23	0	0	0	0	23	13	10	4		
		Total	365480	286390	783	616	110	78	40	8	26	4	78	0	0	0	0	78	34	44	7		
1	Nawarangpur	Kosagumunda	123008	114548	395	331	79	55	22	6	24	2	54	1	0	0	1	55	38	22	0		
2	Nawarangpur	Sanamasigam	755994	73087	158	138	29	26	17	1	6	1	25	0	0	1	0	26	9	12	0		
		Total	879002	187635	553	469	108	81	39	7	30	3	79	1	0	1	0	81	47	34	0		
1	Nuapada	Nuapada (CHC K.Road)	103178	79838	194	158	34	29	13	1	11	4	29	0	0	2	0	31	20	11	2		
		Total	103178	79838	194	158	34	29	13	1	11	4	29	0	0	2	0	31	20	11	2		
1	Sonepur	Sonepur (Malkenpali)	76053	71682	171	146	21	20	12	3	15	0	15	0	0	0	0	15	20	11	2		
2	Sonepur	Tarabha	91958	85879	74	63	36	36	19	7	7	0	26	0	0	0	0	26	18	8	1		
3	Sonepur	Binka	102967	95495	152	132	35	27	13	10	23	2	23	2	0	0	2	25	18	7	2		
4	Sonepur	Dunguripalli	122538	117925	240	213	49	44	22	7	29	1	29	1	0	0	1	30	18	12	1		
5	Sonepur	B.M.Pur	95674	87187	197	162	39	36	18	8	26	1	26	1	0	0	1	27	18	9	4		
6	Sonepur	Ullunda	86829	81161	139	119	28	25	10	8	18	4	18	4	0	0	4	22	14	8	1		
		Total	576019	539329	973	835	208	188	94	0	43	0	137	1	7	0	0	145	0	0	2		
1	Sundargarh	Hemagiri	81369	79172	321	321																	

Trend of Correct diagnosis of leprosy cases by MO PHC in Odisha

Year	Cases validated	Found correctly diagnosed	% of correct diagnosis	Remark
2004-05	367	221	60.22	Sample conducted by NIH&FW in 2 districts
2005-06	6785	5009	73.82	100% Validation before registration introduced
2006-07	6544	5667	86.60	Modular Training programmes for MO PHC taken up and validation gradually withdrawn
2007-08	6896	6034	87.50	
2008-09	6990	6122	87.58	
2009-10	6455	6231	96.53	
2010-11	6990	6478	92.68	

Recommendations:

- Routine case detection/identification activities like referral by HWs and ASHA, encouragement for self reporting and conduction of contacts examination should be strengthened and monitored properly by DLO/SLO.
- Time to time area specific intensive case detection drives should be undertaken along with local capacity building and public awareness.
- Capacity of ASHA and HWs should be strengthened by providing on the job training and materials.
- Sustained integrated IEC should be taken up in general population
- Confirmation of leprosy should be entrusted to MO PHC/CHC with appropriate skill based capacity building
- In Medical College the final year student should be exposed to orientation on confirmation of leprosy by the State Leprosy Officer.
- Validation on sample basis should be taken up to know the need of training of MOs.

Plea to reactivate slit - smear test for leprosy in the changing context

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Skin smear was a self-starter for MDT

During the initial years skin smear test was almost a self starter to classify leprosy into MB and PB for MDT(1) though in 1988 there was change in the criteria. The test was enthusiastically received but, out of all components of the programme, making smear laboratory functional, posed a great challenge. About a decade latter an independent review of the India, observed that number of LT positions continued to be vacant and only 40% registered cases had skin smear examination (2). Lack of quality report was viewed as an obstacle in speedy implementation of MDT and grouping in to MB and PB was made as per the number of skin and nerve lesions (2). The already disrepute smear test was almost discontinued. The limited experience can be presented latter.

Its past was even richer with hair slitting exercises and half a dozen of indices such as BI, MI, BIG, SFGI and HI. Of them BI was of high field utility and solid and spore like granules referred in MI were

of interesting speculations as discussed in early text books.

The emerging needs for smear test

Post elimination, it is being realized that, what has been achieved so far is a good control of leprosy which needs strong surveillance. Though this is no less achievement (3), there are needs to reorganize the slit skin smear services due to the following needs and logic:

1. A convincing evidence for decline in the NCDR and lack of information on infection pool is lacking. Some clue on transmission and sub-clinical infection can be obtained through skin smear and newer tests.
2. In spite of the robustness of MDT, relapse of leprosy cannot be ruled out. Quality slit skin smear labs are essential to support diagnosis MB relapse.
3. Programme guidelines of CLD, WHO, workshops (4) are reemphasizing for activating the test.
4. MDT programme in leprosy is similar to that of tuberculosis which insists on negative sputum to ensure destruction of infection pool (5). Then, why to be lax with a still smattercousin?
5. Retention of expertise is shown to be a concern in recent years as experts in leprosy are opting to work in other diseases (6). There is enough learning from tuberculosis and malaria about the consequences of hasty dismantling of facility and expertise (7). Even higher order tests of molecular biology, especially in low resource situation will be more productive if the basic tests are in place.

Learning from failure warrants simplification

1. Retrospection now indicates that the programme could have been less ambitious to go for a simpler exercise of smear reporting. Reporting smear as negative or positive correctly or simple grading as mild,

moderate or massive on two sites probably would have been more feasible and sustainable.

2. Present guidelines advise 2 smears from a patient and it will be adequate if the clinician is skilled to select the right site. For follow up, one site showing higher in initial test seems to be adequate.
3. Initiation of skin smear testing may be done in labs for sputum microscopy. Both the tests are similar in terms of procedure and reagents. In many states and districts control of both the diseases is under one programme officer. This will help in promoting smear test. Testing for different diseases will fight monotony.
4. Provision of better logistics, refresher training and similar motivational avenues are necessary to retain the technicians.

It is not out of place to mention that several components of the MDT programme has undergone series of simplifications (to be described latter). Why slit smear also enjoy this programme concession. Let the see better days in a simpler form.

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How laboratory can help in various situations to establish or negate leprosy diagnosis

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We have few established lab test/s and tools that serve as specific tests or auxiliary aids in leprosy diagnosis and prognosis. It is most important to know the sensitivity and specificity of any given test as well as its appropriate application that may differ widely. It is also important to state at this point that in leprosy there is no sole lab test that can be used to detect all forms of leprosy.

Specific tests:

Slit Skin Smear: First and for most is the slit skin smear test. (SSS) for the detection of *M leprae* in the lesion/s. Is a simple cost effective test, can be carried out by a para medical worker even at field level. However due care must be taken during its collection and disposal. This test is most useful in early infectious cases that form ~10% of all leprosy cases. In cases presenting with ill defined/diffused lesions. It is difficult to illicit sensory impairments (sensory impairment usually occurs late) in such cases. SSS is also very useful in ruling out leprosy in nodules due to dermal leishmaniasis, and neurofibromatosis that simulate leprosy.

It is also important to note that >70% of all leprosy

cases do not score positive in SSS. Thus even though specificity of this test is 100%, sensitivity of SSS is less than 50%.

Serodiagnosis: Serology is another complimentary test, is time tested and easy to use (U Sengupta, VM Katoch, IAL text book of leprosy pg. 189-196). Is based on *M leprae* specific antigen and their epitope specific antibodies. Epitopes such as PGL-1, 35 kDa and 18 kDa. are extensively studied. Phenolic glycolipid or its terminal sugars have been used extensively for developing various types of serological tests Finding of specific lipid PGL-1 on *M leprae* cell wall (Brennan PJ et al., 1981) led to the development of an enzyme linked immunoabsorbent assay (ELISA). Nearly 90 to 95% of BL/LL patients and 25 to 60% of TT/BT patients were found to be positive for PGL-1.

Monoclonal antibody (Mab), MLO4 which specifically reacts with 35kD epitope of *M leprae* was also used for detection of antibodies in leprosy patients (Sinha et al., 1983) The assay that was later developed as a radioimmunoassay and competition ELISA further improved the sensitivity.

There are other Recombinant antigens of *M leprae* and several of them were found to highly immuno-dominant for both T and B cells. Recently after screening a large number of serum samples, the fusion construction of two proteins ML405, and ML2331 (designated as LID1) showed the diagnostic potential. Further follow up of house hold contacts showed increase in levels of LID-1 and ND-O BSA before clinical manifestation of leprosy.

There are also immunohistochemistry based approaches useful in histological diagnosis, help in creasing the sensitivity in atypical cases (Khanolkar SR, et al., 1989; Natrajan M, et al., 1995).

Rapid diagnosis of *M leprae* – molecular technique- Good news is that recent PCR and

multiplex PCR techniques have been effectively used to detect the presence of *M leprae* from smear negative cases (Jadhav RS, et al., 2005). These molecular techniques show sensitivity of up to 80% in smear negative cases, suspected cases or even contacts. A number of *M leprae* specific markers have been identified eg 16s rRNA gene, RLEP which are used to detect its presence in such cases. Attempts are on to make it field friendly and cost effective. Molecular probes are also available to detect presence of drug resistant mutations in *M leprae* (Zhang L, et al., 2004; Kim SK, et al., 2003).

Biopsy examination: A deep incision biopsy of the skin lesion or biopsy from an involved nerve (in case of pure neural leprosy) and histopathological examination is not only diagnostic, it helps to determine and classify the disease.

Diagnostic utility of Fine needle aspiration cytology (FNAC) of peripheral nerve also has been evaluated in Nepal and India (Singh N, et al., 1998; Malik A, et al., 1999). This procedure is considered safe and advantages over nerve biopsy as it is less invasive and repeatable. Additionally major mix nerves that are out of bound for biopsy can be subjected to FNAC. Draw back of the tech. is ~25% of cases fails to give a representative sample.

Sensory testing for diagnosis of leprosy: Sensory loss in the skin nerve lesion / effected area is one of the cardinal signs of leprosy. Elicitation of diminished or loss of sensation at the dermal level is a simple, sensitive and a specific test that help in diagnosis/ differential diagnosis. Basis of these tests in leprosy is there is a pattern of loss of sensory modalities usually in the following sequence- sweating, temperature, pain followed by touch due to degeneration of non-myelinated fibers, followed by small and large myelinated fibers respectively (ref). It is important to note that these tests need to be done carefully to minimize subjective-ness.

Ancillary (non diagnostic) tests:

Ancillary investigations have no specific

diagnostic value but they through light on nerve function impairment.

Most important is the electrophysiological tests comprising of sensory and motor conduction velocity (SNCV, MNCV), sensory and motor compound nerve action potential (SNAP, CNAP). Such studies have proved the vulnerability of sensory fibers in leprosy and predictability of major peripheral nerve to maximal damage at superficial sites. Serial nerve conduction studies have been used to assess the outcome of therapies (Antia NH, et al., 1970)

There are studies delineating the sensitivity and specificity of clinical examination including nerve palpation, voluntary muscle testing, thermal discrimination and touch thresh holds using MNCV and SNCV values as reference. (Brown TR, et al., 1996)

Cutaneous autonomic function using complimentary technique of neurophysiology and laser dopler flowmetry, the former involves recording of the sudomotor sympathetic skin response on the electromyography and the later records finger (or toe) pulp vasomotor response. (Abbot NC, et al., 1996; Wilder-Smith A, et al., 1996).

Ultra sonography- is a non invasive technique that allows visualization of longitudinal and transverse nerve echo structure. It has been possible to demonstrate structural sallow (Jain S, et al., 2009; Beekman R, et al., 2004)

Differential diagnosis:

Patches due to birth mark, leucoderma tinea versicolour, Psoriasis and nodules due to dermal leishmaniasis, neurofibromatosis simulate leprosy. Nutritional dyschromia, Lichen Planus, Scars and kiloids Xanthomas, mimic leprosy lesions (Sharma NL and Mahajan V. IAL text book of leprosy pg 197-210).

For a leprosy conscious examiner a differential diagnosis does not pose a major problem. Never the less one should not hesitate to apply the lab tests to ascertain.

Chief categories of poly neuropathy which may be confused with leprosy are inherited and acquired hypertrophic and acrodystrophic. In hypertrophic neuropathies unmyelinated and small myelinated fiber involvement in the skin is not striking and deep tendon reflex may be depressed or absent. Also unlike leprosy motor conduction is markedly slowed in nerves supplying proximal muscles which might also be denervated. In inherited sensory neuropathy (HSN) presence of similar condition in a sibling/s is helpful point and usually starts from childhood.

Nerve enlargement or tenderness is not a feature. Retained SNAP in a limb which has neuropathic ulcer points to sensory root or spinal cord pathology.

Like wise few clinical and histological features help to distinguish non leprosy facial, ulnar, median and common peroneal mononeuropathies from the leprosy variety, (Sharma PK and Sharma P. IAL text book of leprosy pg 211-223).

Unlike neuropathic ulcers due to leprosy vasculogenic ulcers (eg Raynauds disease, scleroderma etc) in fingers and toes are painful.

Lastly it is important to remember in leprosy the laboratory tests only supplement and do not substitute for a good clinical evaluation.

Immunology of Leprosy

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Abstract:

Leprosy manifests in the form of a spectrum ranging from paucibacillary tuberculoid type (TT) to multibacillary lepromatous leprosy (LL). In spite of the infectious agent being the same i.e. *M. leprae*, different individuals manifest the disease in different forms. This clearly indicates the role of host factors in differential manifestations of the disease. While cell mediated immune response is observed on the

tuberculoid side of the spectrum, patients at lepromatous pole are anergic to *M. leprae* antigens i.e. T helper 1 (Th1) type of immune response is observed on the TT side of the spectrum and Th2 type of immune response is seen at the LL pole. Different factors like the dose of the infection, MHC-TCR affinity, dendritic cell subsets during activation and Toll like receptor activation determine the type of immune response generated in an individual. CD4+ T helper cells may also differentiate into T regulatory cells which may be involved in suppression of immune responses. So, it is an interplay and integration of different factors which results in different immune responses in different individuals. The kind of immune response generated also depends on the immunogenetic factors since the antigen presenting molecules, the cytokines released and all the other factors involved are under genetic control determining the expressions of different genes which in turn may be involved in modulating the immune response to Th1 or Th2 poles. Different immunological and immunogenetic factors will be discussed.

Review of global leprosy vaccine development

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The word vaccine is derived from the French word 'la vacche' meaning the cow, a reference to the cowpox extract used by Jenner in 1812 to prevent smallpox in humans. Vaccines can be prophylactic (e.g. to prevent or ameliorate the effects of a future infection by any natural or "wild" pathogen like small pox, cholera, typhoid etc), or therapeutic (e.g. vaccines against cancer, leprosy, psoriasis etc).

Vaccines are usually made from killed or live attenuated organisms which have lost their virulence but have retained their protective antigenic properties. Secondly they can be

prepared by use a live attenuated or killed non-pathogenic organism that antigenically cross-reacts with the pathogen. Thirdly the approach could be to use only the immunogenic 'subunit(s)' of the organism. Miscellaneous agents like drugs, elements etc could be the fourth class of agents which modulate the immune response of the host so as to overcome the deleterious effects of the pathogen invoking tissue destruction immune response in the host.

In leprosy the use of BCG alone or in combination with killed *M leprae* derived from armadillos has been used for protection and prophylaxis against leprosy with varied results in different populations. ICRC bacillus, MIP (*Mycobacterium indicus pranii*, *M vaccae* *M Habana* and *M gordoni*) are from the antigenically related mycobacteria or the second group. Of these ICRC bacillus, MIP & *M vaccae* and have been tested for the immunoprophylactic activity have been used in general population as well as healthy household contacts of leprosy patients to provide protection against leprosy. Drugs like Corticosteroids, Thalidomide, Clofazimine in higher doses, Colchicine, Aziothropin and Zinc belong to the fourth group of agents which have been used to modulate the immune response away from tissue destruction in leprosy. MIP, ICRC and *M vaccae* have also has been used as an immunomodulator for treatment and control of leprosy reactions and lepromin conversion.

Key Modalities for Disability Prevention and Medical Rehabilitation

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NCLCA has a history of constantly innovating and finding new ways to reach out to leprosy patients. Through DPMR camps these innovative services are provided to the patients. The following is a list of such services:

Health Education Materials

Numbness and loss of sensation in the hands and feet are key concerns for the patients. Health education on how to care for such hands and feet is crucial for prevention of secondary deformities through injuries or burns. Patients are instructed to watch their hands closely to compensate for the loss of sensation and not to touch sharp objects and hot items with unprotected hands. CLCP has designed an educational pamphlet with simple illustrations to explain the same to illiterate people. Over the years its use has been found to be extremely important and easy, therefore, it has been adopted in many languages. It has also developed a booklet, which answers the typical questions asked by patients, their families and the general public.

Physiotherapy Exercises

Physiotherapy exercises are aimed at maintaining the range of movements in finger joints, which would otherwise become stiff and immovable, thereby preventing the worsening of deformities. CLCP has developed a simple package of one exercise for each major deformity, which can easily be done at home by the patient. NCLCA advocates the group therapy approach where many cases are brought together and taught about care with simple exercises.

Prefabricated standardized splints

The prefabricated standardised splints made out of durable and easily available materials such as PVC, Rexene and rubber bands, have proved to be highly effective in the prevention and correction of claw-hand. NCLCA has pioneered the reach of prefabricated splints through government healthcare staff. As this simple technology is highly effective, straightforward to use, and easy to deliver, it has been adopted by the Government of India and other NGOs. Some NGOs have started manufacturing them and splints are now commercially available. NCLCA has also introduced integrated care in similar

disabilities following trauma to the nerves with these splints.

Instant Grip-Aid Kit

Patients with advanced deformities of the hand have difficulty in holding and using articles of daily use. The simplest of tasks, such as eating, are often difficult and dependence on others becomes a demeaning burden. The “**Instant Grip-Aid Kit**” developed by NCLCA is a tremendous boon for such cases. This kit increases a patient's quality of life and self-esteem as it enables them to perform everyday tasks on their own. This kit is also used to overcome handicap in other disabilities like burns and amputation of fingers thereby, integrating its use in the standard tertiary care.

Foot care

Leprosy patients mostly belong to the poorest sections of society and often move about barefoot. Hence, those with loss of sensation in the soles of their feet hurt themselves easily, and worse still, do not notice early injuries. If neglected, these wounds can progressively worsen, become ulcers and take a long time to heal. The most effective way of dealing with ulcers is by empowering patients to take care of their own limbs. A precondition for this is that these patients must understand why they must take special care of their insensitive limbs, and must possess the necessary skills and materials to do so.

Self-Care Kit

NCLCA has developed a special “Self-care Kit”, containing sterile gauze pieces, scissors, sticking plaster, foot scraper, bandages, antiseptic cream and a specially developed moisturizing cream. This kit is distributed for free at the camps. Groups of patients are taught the 'how's and 'why's of self-care at these camps. The enthusiastic response and high levels of participation among patients with foot ulcers at the camps has been extremely impressive. The follow-up camps held

after two months clearly indicated good compliance with the self-care instructions. Nearly 40 % achieve complete healing of their ulcers with the kit, while the rest show a dramatic improvement. Patients who attend the camps receive a replacement each month in order to ensure that they continue to take care of their feet.

Once they and their families are convinced that the self-care is effective, it becomes second nature to them. The 'self-care kit' now forms a part of the DPMR guidelines endorsed by the Government of India. Besides, many other organisations have also adopted its principles and are making their own kits with similar materials.

MCR Footwear

Patients with anaesthesia in the feet need special footwear with insoles made of microcellular rubber (MCR) in order to prevent the occurrence and progression of foot ulcers. NCLCA has designed MCR footwear using commercially available patterns in order to overcome the reluctance of patients to use the typical leprosy footwear, which labels them as leprosy sufferers. NCLCA provides the footwear free of cost in its camp areas. In Sri Lanka, a commercial company has made a good design to manufacture the same.

Foot drop splints

One of the key achievements of NCLCA is in the improved management of foot drop. NCLCA has prefabricated the Foot Drop Splint and trained the healthcare staff to provide it at the earliest sign of weakness in the leg to prevent the complications mentioned above. The foot drop splint can be easily attached to the MCR footwear or commercial shoes with a buckle on the upper side/strap. These splints are provided at the camps. However, if any patient requires modern thermoplastic material splint they are called at the centre and given the same.

Reconstructive surgery

Besides selecting the patients at its regular DPMR camps, NCLCA also holds special camps to clear the back log of cases who require Reconstructive Surgery to cure them of their deformities. These patients are examined by doctors at the camp and selected for RCS. Also their consent is obtained to perform the surgery. The patients are then referred to the local Government hospital and are given a date on which they are supposed to come for their surgery. When the patient arrives at the hospital at the given date he/she is admitted and operated on.

Most major operations such as claw hand correction, take approximately one and half hour. About 7 such major operations can be carried out in one day on one operating table, however, for optimum results operating on five cases is recommended. Also, some ulcer cases which require minor operation are operated upon in the minor OT.

NCLCA has been instrumental in the adoption of the “Camp and Workshop” approach at Gujarat. This simultaneous workshop is a hands on approach involving training of the local orthopaedic surgeons. The camp organisation involves deputing the field staff to inform, take the patients' consent and transport them to district or medical college hospitals where the camp is being held. At these camps physiotherapists who are deputed, carry out pre-operative assessment along with local physiotherapists. They also look after post-operative care for the first few days of care required after plaster removal. The Government of India has since named the approach - the Gujarat model. The adoption of this approach pioneered by CLCP has ensured that the benefits of reconstructive surgery reach as many cases as possible.

Economic rehabilitation

Often leprosy sufferers, especially those with

stigmatizing signs and deformities, are not treated with due consideration even by their own families. However, the instances of debilitation leading to social ostracism are on the decrease following extensive education about leprosy and the availability of a cure in the form of multi-drug therapy. Nonetheless, as such patients often find it difficult to find a way to earn money, they become a strain on the family income, which makes them all the more vulnerable.

Government or NGOs' health care staff identify people who need economic rehabilitation, understand their skills, preferences and aspirations, and together with them, identify what could serve as an appropriate economic rehabilitation aid (e.g. sewing machines, handcars, kits for bicycle repair, carpentry, masonry work, agricultural tools, etc.). Following this recommendation, NCLCA personnel assess the need and provide the required aids at a public function.

The publicity provided by the public function is a great help in increasing awareness about leprosy as a disease, about the plight of the sufferers and offers a platform to involve the local politicians, clergy and like minded persons from voluntary agencies. The economic rehabilitation program has had a dramatic impact on the disabled individuals and has transformed the lives of hundreds of people.

Sustaining leprosy control during integration phase

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The great leaps with MDT programme in the past 3 decades led to two major strategic steps in our country: declaration of leprosy elimination and integration of leprosy into general health care system. The former one was a 'short term' moral booster but distorted the policy priorities and constrained resource allocations to sustain

leprosy control work during integration phase. Achievement of target driven 'elimination' led to misrepresentation of epidemiological situation, making it difficult to predict the trend. The later is a long term process and yet to be operationalized in its real terms.

The persistent occurrence of new leprosy cases and an increase in NCDR at sub-national level is a matter of concern that calls for alternative programme strategy. Containing and combating leprosy from the public health perspective requires accentuation of sustained control measures with strong political commitment and adequate resources in the changing scenario.

ALERT - INDIA has promoted a strategic programme called LEAP (Leprosy Elimination Action Programme) to respond to the needs of all persons affected by leprosy; focussing on effective capacity building of public health personnel; and enlisting active community participation and support for creating a long term impact.

In the above context, ALERT-INDIA defines the term 'elimination' to mean the need for acceleration of leprosy control interventions in endemic regions. The 'elimination' definition of WHO was an intermediate target for the country as a whole to declare that leprosy is no more a public health problem. Sustaining leprosy control measures is the need of the hour. Eradication is a far cry scientifically as well as operationally.

The paper deals with the results and the lessons learnt in implementing LEAP in 12 endemic districts of Maharashtra State and its prospects for replication.

Involvement of civil society in leprosy control in the context of reaching the target set for 2015

Krishnamurthy

Damien Foundation India Trust

The target

- Reduction in New case with G2D by 35% by

the end of 2015 compared to baseline at the beginning of 2011.

- Recommended by WHO and endorsed by all countries including India and partners including ILEP

What it means-early diagnosis- what does it entail?

Policy- advocacy, strategic orientation, funding

Strategy-Awareness generation, endemic specificity, capacity building, partnership, case finding, contact examination, monitoring and supervision, validation mechanism

Is the present strategy adequate? Have we reached the pinnacle of efficiency in the present strategy? More of the same or better of the same or some of the new?

Corollary benefit- reduction in new cases

- ? Where are we?
- ? Around 4000 new cases with G2D every year
- ? Trend analysis using data from 1995 for major endemic countries:

For 1995 fit: 41% reduction every 5 years

For complete data set up to 2010: 54% reduction every 5 years

Whatever method is used, reduction of 8% per year

China, Brazil is not likely to achieve, Thailand will, India's case- inconclusive

(Catherina et al, Bull WHO, 2011)

- ? Targeted action
- ? New cases with G2D reported in 2010 is 4000
- ? The target at the end of 2015, around 2600 G2D cases
- ? Is it possible?
- ? Yes, provided we do something more and something more intense than what we are doing.

- | | |
|---|--|
| <p>? Medical action, operational and Social action</p> <p>Medical- prevention, reducing the duration of infectivity by early, quick and more efficient diagnosis. MDT?</p> <p>Operational - case detection before deformity sets</p> <p>Social- mobilisation of the community</p> | <p>? Role of NGOs</p> <p>? Operational NGOs</p> <p>Medical action</p> <p>? Training</p> <p>? Referral centre for diagnosis and management</p> <p>? Supportive guidance</p> <p>Social action</p> |
| <p>? Medical / Social action- typology of Institutions</p> | <p>? Mobilising positive opinion among the public</p> <p>? Disseminating correct information</p> |
| <p>? Three defined sectors-</p> <p>First sector- Government</p> <p>Second sector- Business</p> <p>Third sector- Civil Society</p> | <p>? Advocacy NGOs</p> <p>Bring citizen concern to the government</p> <p>Advocate and monitor policies</p> <p>Serve as early warning mechanism</p> |
| <p>? Intermediary institutions or third sector citizen organisations</p> <p>Professional associations</p> <p>NGOs</p> <p>Religious groups</p> <p>Labour unions</p> <p>Citizen advocacy organisations (the people affected)</p> <p>Unorganised- individuals</p> | <p>Help monitor and implement international commitment</p> <p>? How: value based collective/collaborative action</p> <p>Identifying NGOs/Civil society groups/ associations (including the people affected)</p> <p>Developing partnerships at all levels</p> <p>Link associations across different interests and agendas</p> |
| <p>? Assumed functions</p> | <p>Build strong link between official bodies at different levels and citizen groups, communities</p> |
| <p>? Service provider</p> <p>Undertaking Government task (contract, voluntary)</p> <p>Complementing Government task</p> | <p>Assigning mutually agreed responsibilities</p> <p>Guaranteeing the independence of organisations</p> |
| <p>? Consultation</p> | <p>Encourage innovations in citizen actions</p> |
| <p>? Collaboration</p> | <p>Constitute a common platform for dissemination of best practices, for discussion and deliberation</p> |
| <p>? Social Change</p> <p>Advocacy (political/ Legislative)</p> | <p>? Benefits</p> |
| <p>? Activist</p> | <p>Empowers community</p> |
| <p>? Persuasive</p> <p>Enhance citizen participation and social responsibility</p> | <p>Encourages innovative actions, creativity</p> <p>Creates demand for correct action</p> |

Forces accountability
 Programme becomes easily acceptable
 Expands the reach of the programme
 Free publicity
 Sense of fulfillment and togetherness

? But the sad story...

The number of LINGO has come down from over 240 to less than 150 in the last 5 years

Are there problems with human rights in leprosy patients?

Dr. V. V. Dongre

Presenting Author : Dr. V. V. Dongre (Oral)

Organisation : The Society for the Eradication of Leprosy, Mumbai

Abstract

The mythological and historical evidence tells us that there was social acceptance of leprosy patients in the societal stream. However, this was defeated on account of misconceptions attached to the disease. Patients suffered from social ostracism, became outcasts and were shown discrimination, became destitutes. The patients started creating self-settled colonies of their own.

Societal attitudes are set in laws. The attitudes have roots in religious books, so, religion and law give the legitimacy.

? All **derogatory acts** adversely affecting the fundamental human rights of a leprosy patient as a citizen should be repealed, where needed, without any delay.

? *The leprosy patients all over the world have created an association of theirs.*

? *In India we have its chapter consisting of representation from 700 self-settled leprosy colonies.*

An association of Leprosy patients of India along with some NGOs have made an appeal to the speaker of Rajyasabha & made a petition.

A committee has visited some states for the study

of state of art and a report has been submitted to the speaker of Rajyasabha for further action. Hundred and Thirty First Report on petition, praying for integration and empowerment of leprosy affected persons was presented on 24 October, 2008 to the Vice President of India.

UNO's General Body has passed a resolution on 6 October, 2010 to remove discrimination against leprosy patients and keep their human rights safe.

Problems with human rights in leprosy patients are lessening.

W.H.O Classification of Leprosy: Need For Revalidation

KAR HK

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Introduction: WHO guidelines classify leprosy patients clinically into PB and MB group based on the number of skin lesions (NSL) with e" 6 skin lesions as a criterion for MB leprosy. The sensitivity of this classification varies from 85% to 93% and specificity from 39% to 88%. As we have achieved leprosy elimination and moving towards eradication, the misclassified MB cases as PB are more vulnerable for relapse (due to inadequate treatment) and act as reservoir of infection in the post elimination era. We conducted a prospective study to re-evaluate the WHO classification and attempted to improve it by addition of other clinical criteria based on number of body area affected and size of largest skin lesion.

In the present study the sensitivity and specificity of the WHO classification, was found to be 63% and 85% respectively and but on combining WHO criteria with NBAA and SLSL, sensitivity increased to 98.5% with no significant change in specificity, which was 77.5%. Recently, Rao PN et al from hydrabad, have demonstrated wide heterogeneity among patients classified as PB by WHO and have raised a therapeutic question regarding re-classification of PB patients into MB group on appearance of new lesions while patient is already on chemotherapy.

In 2004, Norman et al from Karigiri, found that based on NSL alone, about 11% of patients would be under treated, while 13% would be over treated. They also reported that by using SLSL of 5 cm or more as MB, the sensitivity was found to be fairly low at 52.9% and a specificity of 71.7%, the sensitivity decreasing further as the cut off for the size of the lesion was increased to 8cm. On combining the SLSL (5 cm or more) to WHO classification, the sensitivity improved only slightly to 58.8%, while specificity remained almost the same at 70.4%. However, they admitted that, only a small proportion (4.9%) of their patients had a record of the largest skin lesion. In our study, using SLSL of 5 cm or more as MB, the sensitivity was found to be 87.4% and a specificity of 65%. On combining the SLSL (5 cm or more as MB) to the classification based on NSL alone, the sensitivity remained almost the same (88%), while the specificity improved only slightly to 67%.

In another study from Bangladesh, Dr. Groenen G and his team, found that at least 3 body areas were involved in 100% of patients presenting with 6 or more skin lesions, they calculated the sensitivity of this classification as 83.1%. In our study, at 3 BAA as cut off, sensitivity and specificity were 80.3% and 80.6% respectively whereas, at 2 as cut off for MB sensitivity rose to 90% and specificity fell to 75%. Further, by adding NBAA to NSL both the sensitivity and the specificity improved slightly to 91.5% and 77% respectively. However, on adding a third parameter i.e. SLSL, the sensitivity rose to 98.5%.

Our study, also found that out of 33 clinically PB cases with single peripheral nerve enlargement, 15 (45.0%) were found to be MB on gold standard parameter, while among 40 clinical MB patients, 39 had at least single clinically enlarged peripheral nerve. The difference was statistically significant ($p < 0.01$). Therefore, it can be concluded that among patients with skin lesion(s), presence of even a single clinically

enlarged nerve trunk should be considered as a marker of MB disease.

Conclusion: Our findings suggest that the criteria for classifying PAL should be modified as follows:

- A.** Patients with the following characteristics should be classified as MB leprosy:
 - i. Those with e" 3 skin lesions of leprosy or,
 - ii. Those with e" 2 different body areas affected (involvement of nerve is also taken as an area of involvement) or,
 - iii. Those with 1-2 skin lesion(s) with size of the largest skin lesion e" 5 cm in the longest diameter or,
 - iv. Those with 1-2 skin lesions with single nerve enlargement.
- B.** Patients with the following characteristics should be classified as PB leprosy:
 - i. Those with 1-2 skin lesions of leprosy with size of the largest skin lesion less than 5 cm in the longest diameter and without any nerve enlargement or,
 - ii. Those with one body area affected (involvement of nerve is also taken as an area of involvement).

To conclude, since clinical criteria are required for application in field, criteria should be modified as suggested, however, in tertiary care hospital with slit-skin smear facility and good histopathological backup, treatment should be provided based on gold standard criteria.

Proteomic analysis of amikacin and kanamycin resistant isolates of *Mycobacterium tuberculosis*

Authors: **Deepa Bisht, Bhavnesh Kumar, Prashant Sharma, Divakar Sharma, Vishwa Mohan Katoch*, Krishnamurthy Venkatesan**

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Tuberculosis is a great threat to mankind since ancient times. This gets further worsen with the development of drug resistance and co-infection with HIV which is the main problem to deal with. Globally, 1.7 million deaths occurred due to this disease. BCG vaccination in uninfected people and chemotherapy using drug combinations is the only existing tool against tuberculosis. Amikacin and kanamycin are commonly used drugs in the multi-drug resistant tuberculosis treatment. They inhibit protein synthesis in susceptible bacteria by interacting with several steps of translation. Several explanations have been put forward to explain the mechanism of aminoglycoside resistance but still our knowledge is incomplete. As proteins are the main functional moiety in the cell and they manifest most of the biological processes, these are the attractive targets for developing drugs, immunodiagnostics or therapeutics. The aim of our study was to compare the protein profiles of whole cell lysates from *Mycobacterium tuberculosis* isolates susceptible and resistant to amikacin and kanamycin by two-dimensional gel electrophoresis. On comparing two dimensional gels some proteins were found to be upregulated in amikacin and kanamycin resistant isolates and were identified by MALDI-TOF mass spectrometry. These proteins are likely to be used as markers of amikacin and kanamycin resistance and/or might play an important role in developing better drugs, diagnostics and vaccines.

Viable *M. leprae* forms an essential component of reversal reaction: assessed using growth in mouse foot pad, Ag 85 detection & *M. leprae* specific 16s rRNA

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Background and objective: In leprosy ~ 40 to 50% of all patients experience a lepra reaction, Type 1 [T1R] or 2 [T2R] during the course of the disease. Reactions and ensuing nerve damage are indeed managed by the use of immunosuppressive/anti inflammatory drugs such as corticosteroids. The basic question of what precipitates such a reaction, that is key to its prevention/prediction and management however remains unclear.

A recent study demonstrates presence of viable *M leprae* (as evidenced by the unequivocal growth in the footpads of non immunosuppressed S/W mice), in a significant proportion (12/25 = 48%) of smear negative BT patients with 'late reversal reactions'. This raised a question with regard to role if any of viable *M leprae* in the reaction precipitation. Secondly, lesions showing sub-clinical (only histopathological) evidence of T1R, scored higher (7/12=58%) as against non reaction cases (5/13=38.5%) suggesting that viable *M leprae* in a given site may be involved in the induction of reaction. Since histopathological evidence precedes overt clinical signs of reaction, an associated linkage can be inferred between viable *M leprae* in a lesion and T1R. **The working hypothesis is, viable *M leprae* play a central role in the precipitation of T1R reaction in leprosy.**

Methods: A cohort of 170 BT to BL patients were included in the study. The sample size was calculated on the basis of 'sample size for comparison of proportions'. The fact that around 45% of BT-BL cases present with or develop

clinical T1R, at 95% confidence interval, a sample of ~150 BT-BL cases was required to be entered in to the study. At baseline, two incision skin biopsies were obtained from all the patients to include, one lesion showing maximum activity/ reaction and a Non lesion area (ideally a mirror image site) to serve as control. Skin biopsies were also obtained at the onset of a repeat episode of T1R and at 3 months post release from treatment from an equal number of patients those who did not developed any episode of T1R.

Demonstration of the presence of 'viable bacteria' in the reaction lesions was achieved using 3 tests a) immunohistochemical detection of *M leprae* secretory protein Ag 85 b) detection of *M leprae* specific 16s rRNA using *in situ* RT-PCR and c) growth in the mouse foot pad (MFP).

Findings & conclusion: A significantly higher proportion of lesion biopsies collected at onset, from T1R (+) cases scored positive in MFP test as compared to T1R (-) ($P < 0.005\%$). In contrast, there was no difference in the mirror image (non lesion) sites. 2) The overall scores were comparable, in case of both Ag85 and 16s rRNA, however the intensity of Ag85 staining (grade $\geq 2+$) was des-proportionately higher in BT –BB lesions with T1R (+) (15/23 = 65%) as compared to T1R (-) (3/13=23%) and this difference was statistically significant ($P < 0.05$) and 3) Ag85 was detected in a higher proportion of cases during a repeat episode of T1R indicating that few ($< 10^4$) bacilli present in this lesion are metabolically active, that was unlike non reactive lesions. It was inferred therefore that these metabolically active bacilli play a crucial role/ as a trigger for T1R. Study also notes difference in the quality of bacilli and not the quantity or the ratio of dead to viable, as playing a role in the precipitation of T1R in a given site.

In conclusion: Presence of 'metabolically active' *M leprae* is an essential component / prerequisite and Ag 85, the secretory product act as trigger for the induction of T1R.

A study of the distribution of *Mycobacterium leprae* strains among cases in a rural and urban population of Maharashtra, India.

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Background and Objectives:

India continues to be endemic for leprosy. Yet, limited *M. leprae* strain typing information is available. In this context, the aim was to describe *M. leprae* strain patterns in western Maharashtra, a region where active case surveillance pointed to continued transmission. The second aim was to determine if genetic diversity of *M. leprae* genotypes within and among rural and urban settings could be used to identify strains being transmitted in these populations.

Method:

Genetic markers like VNTRs and SNPs have been identified to track transmission of the pathogen *M. leprae*. These were used to describe *M. leprae* strains detected in 48 skin biopsies of leprosy patients in the state of Maharashtra in western India in a rural and urban area near Mumbai.

Results and Conclusions:

Ninety three percent of strains across both settings belonged to the SNP type 1D; with three of SNP type 1B being identified in patients living within 3km of each other. The VNTR profiles of the Maharashtra strains clustered with those from Southern India reported previously, and to a few other Asian strains, indicating that the Indian strains were conserved at the level of many VNTR loci. Five out of 7 samples from one of 5 rural areas studied were noted to be distinct from all other rural and urban isolates as they clustered with Thai strains on the basis of VNTR. Taken

together, SNP and VNTR markers are sufficiently reliable and suitable for both localized and broad geographical genotype associations. VNTR profiles of additional cases are required to identify distinction between the SNP type 1B and 1D strain, if any.

Immunohistochemical detection of Foxp3 protein positive cells in the skin infiltrates of leprosy patients.

Author/s: **Mohan Natrajan, Kiran Katoch, Rajkamal, Mamata Arora and K.D.Rawat**
Presenting Author: **Mohan Natrajan**

Institute: National JALMA Institute for Leprosy and Other Mycobacterial Diseases (ICMR), Taj Ganj Agra

Abstract:

The Foxp3 (Forkhead box P3) protein encoded by the gene of the same name is a member of the forkhead/winged-helix family of transcriptional regulators. Foxp3 is believed to play a critical role in the control of immune responses possibly by regulating the expression of suppressive molecules. It is expressed on regulatory cells (T-regs) and is reported to be increased in chronic infections besides its role in autoimmune disorders and tumors. In leprosy elevated circulatory T-regs have been found in TT and ENL compared to LL group and healthy controls. In tissues, Foxp3+ cells have been found to be increased in upgrading reactions in a very limited number of cases. The present study examines the presence of Foxp3+ cells in the skin infiltrates of leprosy.

Methods:

Eighteen cases of clinically diagnosed untreated cases of leprosy (BT=6, BB=2, LL=10) were chosen for the study. Lesional skin biopsies were taken after informed consent and the specimens processed for routine histopathology and immunohistochemistry. Immunohistochemistry was performed with anti-Foxp3 antibody using an indirect immunoperoxidase technique employing the streptavidin biotin system.

Results:

All cases chosen were adults with a mean age of 39.3 yrs. Routine histopathology revealed a mean granuloma fraction of 55% with AFB being seen in 8/18 cases. Foxp3+ cells were seen in 15/18 cases. They were few in number in all categories. In BT/BB group they were seen as isolated cells but in 5/8 LL cases aggregates were seen.

Conclusion:

T-regs are found in few numbers across the spectrum of leprosy. Aggregates seen in the LL group suggest a possible role in the progressive form of the disease. A concomitant study of circulating T-regs and tissue T-regs would give a clearer understanding of the role of these cells in leprosy.

Possible Association of CC Chemokine Ligand 2 (-362g/c) Gene Polymorphism with Leprosy.

Author/s: **Sanjay Kumar Biswas, Mohan Natrajan, Dharam Pal, Kiran Katoch and Keshar Kunja Mohanty**

Presenting Author: **Keshar Kunja Mohanty**

Institute/Organisation: National JALMA Institute for Leprosy and Other Mycobacterial Diseases, Dr M.Miyazaki Marg, Taj ganj, Agra (U.P.), India

The differential susceptibility to *M leprae* infection is thought to be influenced by host genetics alongwith environmental factors. Variation in genes of some immunological mediators of host may be one of several reasons for the susceptibility and spectrum of clinical manifestations in leprosy. Monocyte chemoattractant protein (mcp 1)/CC chemokine ligand 2(CCL2) is one of the key chemokine that regulate migration and infiltration of monocytes and macrophages. Association of gene polymorphism in *ccl2* has been reported in many diseases including tuberculosis. So, this study aims at exploring the association of *ccl2* gene polymorphism in leprosy.

Leprosy cases attending the OPD of National

JALMA Institute for Leprosy and Other Mycobacterial Diseases as cases and their healthy contacts were included as controls in this study. Promoter polymorphism at two different sites of *ccl2* gene (-2518A/G by PCR-RFLP) and (-362G/C by real time PCR) was analyzed in 262 leprosy patients and 135 healthy controls. Plasma level of CCL2 was also measured by ELISA.

The interim analysis of polymorphisms suggests that C allele at -362 position either as heterozygous or homozygous condition seems to be associated with leprosy { $p=0.004$, OR 1.59 at 95%CI(1.08-2.3)}.

The biological significance of this polymorphism needs to be addressed further.

Evolutionary trace analysis of Ribonucleotide reductase of *Mycobacterium* species with special reference to *Mycobacterium leprae*.

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Abstract

The Ribonucleotide reductases (RNR) are essential enzymes that catalyze the conversion of nucleotides to deoxynucleotides in DNA replication and repair in all living organisms. The RNRs operate by a free radical mechanism but differ in the composition of subunit, cofactor required and regulation by allostery. Based on these differences the RNRs are classified into three classes class I, class II and class III which depend on oxygen, adenosylcobalamin and S-adenosylmethionine with an iron-sulfur cluster respectively for radical generation. In this study 18 sequences of *Mycobacterium* species were retrieved from GenBank and were analyzed by using various tools of bioinformatics. Evolutionary trace analysis, dot-plot comparisons

and motif analysis was done to identify a number of differences in the RNR. From evolutionary trace analysis it was found that *Mycobacterium* RNR was co-evolved with *Nocardia farcinica* and *Rhodococcus opacus* from a common ancestor. It was also found that *M. leprae* RNR has an extra motif which is not present in any other *Mycobacterium* species taken in this study. This finding provides information about the evolution of RNR of *Mycobacterium* species which might be further used for different drug targets for *M. leprae* as RNR is essential gene for viability of the organism.

No Association of Toll-Like Receptor4 (A896G) variant in Leprosy.

Author/s: **Naveen Chandra.S¹, Sanjeev Kumar N.V¹, Vijaya Lakshmi Valluri¹, Suman Jain², Anandraj MPJS¹.**

Presenting Author: **Naveen Chandra.S**

Institute / Organisation: ¹LEPRA India – Blue Peter Public Health & Research Centre, Cherlapally, Hyderabad, India.

²Thalassemia and Sickle Cell Anaemia Society TSCS, Hyderabad.

Abstract: (in 200 words only)

Purpose of the Study:

Mycobacterium leprae is the etiological agent of human leprosy; human infection with *M. leprae* offers a unique opportunity to link innate and adaptive immune responses to specific host genes. Identifying and functionally exploring the genetic and immunological factors that underlie human susceptibility to leprosy have yielded important insights into *M. leprae* pathogenesis. TLR's play a crucial role in identification of pathogens. TLR4 is a limiting factor in lipopolysaccharide (LPS) signal transduction. Genetic variations of *TLR4* may change the function of the protein and alter the efficiency of the immune response to an infectious disease.

Methods Used:

A total of 132 subjects, patients 68 and controls 64 were studied. Biological sample (Blood) was collected with informed consent. DNA was isolated using Qiagen DNA extraction kit. Primers were designed using Primer3 software for PCR amplification of the TLR4 A896G (rs4986790) gene. PCR followed by Restriction Fragment Length Polymorphism (RLFP) with restriction enzyme BCC-I was performed to confirm the genotype.

Summary of the Results:

The genotype distribution in cases and controls were similar ($p=0.6959$, $OR=1.214(0.4587-3.213)$). The frequency AA (44.6%, 40.9%) genotype was predominately high compared to AG (6.8%, 6.8%) and GG (0%, 0.7%) genotypes frequency.

Conclusions:

Unlike TLR2, TLR4 gene (A896G) polymorphism had no significant association with leprosy, did not affect the disease outcome. The results presented are from early stage of project. Further if the sample size is increased the outcome may vary.

International open trial of uniform multi-drug therapy regimen for 6 months for all types of leprosy patients: rationale, design and preliminary results**Prabu R on behalf of the International Trial Co-ordination Centre, NIE, Chennai**

Prevalence of leprosy decreased globally, clearing the way for integrating leprosy services into the general health services. The definition of PB and MB groups as well as duration of treatment recommended has been changing over the last 25 years. Hence, there is a need to simplify the treatment regimen without compromising the patient cure and acceptability of the treatment which requires no classification of PB or MB in the integrated settings. In this context, the World

Health Organization (WHO) and the UNICEF/ UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR) are supporting a multi-centric trial to assess efficacy of a 6-month uniform multi-drug therapy (U-MDT) for all types of leprosy patients. Standardized clinical criteria were used to assess skin lesions in the field. Assuming a cumulative relapse rate not exceeding 8% over 8 years of follow-up, we needed to recruit 3500 patients (1750 each for MB and PB). During November 2003 to June 2008, we have recruited 1302 MB and 2094 PB patients from India (six centres) and China (two centres) (India 3230; China, 166). This open trial is coordinated by National Institute of Epidemiology (ICMR). The preliminary findings at the end of 5 years after the initiation of the trial will be presented.

Role of Deflazacort in reaction management**Pai VV, Rathod V, Nanda A, Shinde M, Ganapati R****Introduction**

Steroids form an important component of leprosy reactions management and are in use since very long time. Though very few molecules are used since long time, side effects associated with this group of drugs are almost in existence. Recently a new molecule called Deflazacort has been introduced believed to be with lesser adverse effects. Glucocorticoids represent the most important and frequently used class of anti inflammatory drugs and in long run may impair many healthy anabolic processes. Deflazacort is a glucocorticoid and its anti inflammatory and immunosuppressive effects are used in treating various diseases. We report below our interim observations using Deflazacort in management of reactions in leprosy.

Materials and Methods

We recruited nine patients with reaction from March 2011 so far in an open trial. The patients were recruited from the Referral Centre of Bombay Leprosy Project attending on an out

patient basis. Eight patients were males and one female. Four patients were of type I reaction, four were of type 2 and one had neuritis. Deflazacort 6 mg has the same anti inflammatory potency of 5 mg prednisolone and hence doses were adjusted accordingly. Duration of treatment ranged from five to six months. Clinical photographs were taken to document progress.

Results

As patients are under treatment and need to complete the regimen preliminary observations indicate that eight patients improved including the one with neuritis while one did not. No major adverse effects were seen. Follow up of the patients is under progress and more patients will be recruited.

Conclusion

Though preliminary observations are satisfactory long term studies are required to compare with prednisolone for confirmed advantages over prednisolone and concrete opinion regarding its utility.

Use of Thalidomide in Type II lepra reactions in a Private Dermatology Clinic setup

*Dipak Kulkarni, **V V Pai, *Laxman Phonde, *Priyanka Gadge, ***Uday Thakar

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*** *Uday Thakar, Hon Secretary, KRNS, Shantivan, Panvel.*

Introduction

Role of Thalidomide in management of chronic and recurrent Type II reactions in leprosy is well known. We present below our observations on how this benefit can be extended to needy

patients in a private Dermatological clinic set up.

Methodology

A total of 21 patients with Type II lepra reaction (14 males and 7 females, age ranging from 12 to 60 years) were treated with Thalidomide as an adjunct to oral Prednisolone. Acute reactions was treated with oral Prednisolone in dose of 40 to 60 mg. Thalidomide was added after initial control of inflammation with prior consent and following suitable investigations. Special records were maintained to monitor and follow up the patients. Thalidomide was started in a dose of 300 mg per day and tapered and patients maintained on 100 mg alternate days. Steroids were tapered to the lowest possible dose and stopped if possible.

Complete stoppage of oral steroids and Thalidomide was possible in only 2 patients. All other patients could be maintained in symptom free period with 5-10 mg Prednisolone and 100 mg alternate day thalidomide dose as maintenance dose. Stopping either drugs lead to recurrence of ENL reaction within 1-3 weeks.

In our analyses, 2 patients developed nausea in the first 2 weeks after starting Thalidomide and 8 patients suffered from drowsiness. However these patients did not require withdrawal of treatment.

Conclusion

We therefore conclude that Thalidomide is a very useful drug to control Type II lepra reactions and to wean off steroids. Thalidomide treatment achieves significant symptom control without steroid related untoward effects. But most patients continue to require a long term course of maintenance dose of Thalidomide.

We also believe that this model of an NGO - Private partnership in a semi urban set up like Panvel in reaching treatment with thalidomide with expertise can greatly benefit needy leprosy patients and thereby control the disease burden in an integrated scenario.

Reactions and Nerve Function Impairments are continuing problems in Leprosy

Author/s: **Kameswara Rao A, Laxmi Sudha M, Subbanna J, Ranganadha Rao PV, Sathiraju M**

Presenting Author: **Kameswara Rao A**

Institute / Organisation: LEPRO India – Blue Peter Public Health & Research Centre

Abstract:

Purpose of the Study:

Blue Peter Public Health & Research Centre (BPHRC) is a research arm of LEPRO India. It provides holistic care in leprosy right from diagnosis to linkages for rehabilitation since 2000. The objective of this paper is to present the profile of leprosy reactions and nerve function impairments treated at this centre in last two years.

Methods Used:

Following leprosy integration into GHS, the centre is providing specialized referral services like identification and treatment of disease complications viz, reactions, neuritis, ulcer care, provisions of assistive devices including protective MCR footwear, referring for RCS and linkages for SER. This centre acts as a referral center for provision of thalidomide for all needy cases and is recognized to carryout drug resistance in leprosy.

Summary of the Results:

From January, 2010 to December, 2011 the centre has registered 160 leprosy cases for MDT with 134 MB and 26 PB. It has treated 25 cases with type I reaction, 79 of type II reaction and 61 cases with nerve function impairments. Analysis of these cases will be presented in detail.

Conclusions:

Occurrence of reactions and new nerve function impairments manifests in considerable number of leprosy cases. Detection and Management of these conditions is most helpful in prevention of

disability, which is the crucial component in leprosy services.

One year follow up of a cohort of suspected leprosy cases: findings from a Leprosy 'Selective Special Drive' in Gadchiroli District, Maharashtra, India

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Leprosy was officially declared as 'eliminated' (overall prevalence rate <1/10,000) in India in 2005 but endemic regions remain in parts of the country. A "Selective Special Drive" (SSD) was conducted in 2009 by 1053 trained Community Health Workers (CHWs) in Raigad and Gadchiroli districts of Maharashtra State, India. The CHWs carried out a one-day house-to-house leprosy awareness drive in their respective areas, listed persons with suspicious lesions, instructing them to present themselves at the Primary Health Centre (PHC). A large number of new leprosy patients were detected among those suspected cases but more than 40% of the 'suspects' did not attend the PHC.

This study reports the 2010 follow-up visit to 14 of the 45 PHCs in Gadchiroli district to explore attitudes and experience the cohort of all 'suspects' identified by the CHWs in the previous year. 138/151 of the new cases confirmed during the 2009 SSD were registered at the respective PHCs and placed on treatment; the remaining 13 (9%) were not registered for a number of reasons. There were discrepancies between the Clinic registers and the patients' own accounts of their treatment regularity.

Of the 233 suspects who had not attended their PHC, 157 (67%) were examined during the team's home visits in 2010. Thirty-nine (27%) were found

to have leprosy, 15 of whom had, in the interim registered themselves at the PHC; the remaining 24 (62%) remained unregistered and untreated. Six of the 39 confirmed cases (15 %) had Grade 1 or 2 deformities. The reasons frequently proffered by the 'absentees' for not seeking treatment were: absence of pain or discomfort in the skin lesions (~40%), ignorance about the disease (~35%), and apprehension of social stigma (~25%). A few had patronized faith-healers.

Effective supervision of NLEP by Block Public Health Nurse (BPHN) in integrated health services – A developing model in West Bengal

Authors: **Dr.P.K.Mitra¹, Dr. Debajit Sarkar², Dr Vijayakumar³, Mr Shibu George⁴, Dr. Srinivas G⁵.**

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Background

Integration of leprosy services into General Health Services in West Bengal has many fold advantages. The Multi Purpose Health Worker (MPHW) provides most leprosy services like suspect referral, treatment delivery, referrals & basic disability care. A trained BPHN can systematically supervise MPHW to provide quality care services. Hence management trainings were proposed to strengthen supervision and effectively utilise the services of BPHN to strengthen NLEP activities.

Methodology

BPHN were trained in management (including supervision in leprosy). The concept of supervision was elaborated using the job chart of MPHWs specifically their roles and responsibilities in Leprosy. A checklist for supervision developed and was field tested in health sub-centres during their training. The check list for supervision was finalised.

Subsequently, GLRA provided this check list to all trained BPHNs to enable them to use it during their routine visits.

Results

BPHNs are now involved actively in supervision of NLEP in their areas. Their visits have improved the recording system substantially as indicated by availability of quality documents at sub-centre level on counselling, contact survey, suspect referral slips, suspect register, availability of self care posters, services for disabled cases and disability register. Also availability of self care materials is now ensured in sub-centres.

Conclusions

In an integrated set up, strengthening supervision and monitoring is crucial to improve quality of leprosy services. In this model, BPHN are proving to be capable of supervising NLEP component too.

Acknowledgements to Netherlands Leprosy Relief India; State Leprosy Officer - West Bengal; All District Leprosy Officers, West Bengal

Leprosy in Women – A Retrospective study in Kolkata.

Authors: **Dr. D.S. Choudhury, Dr. (Mrs.) Gitanjali Saha, Dr. (Mrs.) Maitrayee Choudhury.**

Presenting Author: **Dr. (Mrs.) Gitanjali Saha.**

Institute/Organization: GRECALTES, Kolkata.

Introduction: Leprosy is probably the oldest disease known to mankind. In India leprosy is known since ancient time as Kustha roga and attributed to curse from God and stigma with the disease is still a global phenomenon. Female patients affected by leprosy face more psychosocial problem than male. The NLEP Report of W.B. for the last three years have shown that female case detection rate is low in West Bengal. To explore current knowledge, attitude and practices about leprosy among female, GRECALTES conducted the study among 500 female leprosy patients in the slums of Kolkata.

Methodology: The study was undertaken in five different slums of Kolkata. The total number of respondents was 500 selected proportionately from the 5 slums.

The sampling method followed was "Proportionate Sampling in respect to the total number of female cases with a quota of 7.5% (deformity cases) in each of the slums. The following table will show the representation of respondent.

Results: The study yielded the following Results.

Stigma: Stigma attached to the disease is relatively low currently. However it still exists varying in intensity.

- ? Patches: Patches have low stigma attached to it in respect to the situation earlier.
- ? Deformity: Deformity still has a high intensity of stigma attached to it.

Family support: The family support recovered by female patients have changes over the years, but still the situation remains where the female with leprosy tend to suffer more than their male counterparts.

- ? Psychological care: The care and support received by female patients have improved a lot over the years. Earlier being banished from house and neighborhood was common but it has become rare nowadays.
- ? Self Care: Most of the respondents mentioned that being overburdened with day to day household work, they got hardly any time and developed apathy for self care and undertaking preventive measures.
- ? Immediate reporting to the clinics with complication is very low due to pre-occupation with household work/other occupation.

Conclusion: Perception and attitude towards leprosy among female is to be changed to increase detection and reduce deformity due to their negligence.

Validation of New Leprosy Cases detected during April 2011 to September 2011 in the Union Territory (UT) of Dadra Nagar and Haveli (DNH)

Authors: **Dr Hiren Thanki¹, Dr Suresh Rohit², Dr Nayan Jani³, Dr Pramila Barkataki⁴, Dr. Rajbir Singh⁵**

Affiliation: ^{1,2,5} German Leprosy & TB Relief Association India, ³ DLO Godhra, Gujarat, ⁴The Leprosy Mission India

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Background

For the year 2011, DNH reported ANCDR 60 per 100000 population and child case proportion of 19%. Case validation of leprosy diagnosis helps to understand the quality of diagnosis and assist program managers to take appropriate steps. A consultative meeting with DNH authorities was held before the validation and subsequently the exercise was done in during Oct'11 to Dec'11.

Methods

All new leprosy cases diagnosed from 1st April 2011 to 30th September 2011 were validated by a team that consisted of a Leprologist, Medical Officer, Leprosy Supervisor and Health Worker. There were 140 cases diagnosed upto Sep 2011 including 49 MB and 91 PB. Total 24 (17%) child cases also noted among 140 total cases. A total of 98 (70%) leprosy cases were validated out of 140 cases. Cases were validated through field visits and were followed up in their house if required. The symptomatic history and clinical examination were done for all validated cases.

Results

Among 98 validated cases, 5% (n=5) were wrong diagnosis while 3% (n=3) were wrongly categorised. In general the number and categorization status of the validated cases were similar to annual indicators reported in the UT during the year 2008 to 2010. Early diagnosis of leprosy cases was observed despite hard to reach

areas since no grade 2 deformity noted among validated cases. During de-briefing the results was discussed by all state holders.

Conclusion

In DNH a good integrated GHC system is working for NLEP activities. The obtained results so far need to be strengthened and sustained.

A focused approach to detect leprosy in high burden tribal mandals of Adilabad district, Andhra Pradesh, India

Author/s: **Subbanna Jonnalagada, Kishan Rao, Ramanuja Chary, Sathiraju M, Ranganadha Rao PV**

Presenting Author: **Subbanna Jonnalagada**

Institute / Organisation: LEpra India – Blue Peter Public Health & Research Centre

Abstract:

Purpose of the Study:

Adilabad district is the northern district of Andhra Pradesh bordering Maharashtra and Chhattisgarh. Adilabad has 52 mandals with a population of 29,72,163 (25% is tribal population). Following leprosy integration into GHS, Adilabad district achieved elimination of leprosy, but 4 mandals showed high incidence rate during 2010-2011, which was targeted to detect more leprosy cases and break the transmission cycle and understand the contributing factors.

Methods Used:

The study focused on 4 mandals of Adilabad tribal area using a Rapid Village Survey (House to House Survey), which was conducted by LEpra India – ARTH project in coordination with Adilabad district officials with a pool of 140 trained ASHA workers using survey formats under the guidance and facilitation support from APMOs, DPMOs and ARTH project staff.

Summary of the Results:

The 4 mandals was surveyed by trained ASHA

workers covering 174 villages with a population of 98,834 in December 2011. The survey reported with 1223 suspects and awaits validation.

Conclusions:

The rapid enquiry survey with validation method to detect the new leprosy cases was tried out. The validation of the suspects is scheduled during 2nd week of January 2011 by the monitoring team. The findings of this along with contributing factors will be presented during the conference.

Atypical presentations in leprosy: A report of 5 cases

Authors: **Dr. Navoshma Jain, Dr. Sharmila Patil, Dr. Nitin Nadkarni, Dr. Manjot Gautam**

Aims and Objectives:

To report cases of pure neuritic forms and atypical presentations in leprosy.

Methodology:

Patients presenting with features of atypical and pure neuritic type of leprosy were examined and biopsy was taken to confirm the diagnosis.

Case Reports:

Case 1: A 25 year male with tingling, numbness, loss of sensations over all four limbs, generalized muscle weakness. Nerves palpable, tender.
Case 2: A 35 year male with thickened, tender left greater auricular nerve. Reduced sensations.
Case 3: A 20 year old male with glove and stocking anesthesia, unilateral hyperhidrosis. Nerves palpable, thickened.
Case 4: A 30 year seropositive male with multiple painless non-traumatic ulcers over limbs. Reduced sensations, palpable tender nerves.
Case 5: A 16 year female with generalized muscle weakness, burning hands feet, keratoderma like picture. Sensations lost. Nerves palpable, tender.

Discussion:

Skin or nerve biopsy done for all, diagnosis of leprosy confirmed. 4 presented with only nerve lesions, 1 with atypical skin lesion, none showed

classical skin lesions indicating increasing incidence of atypical and pure neuritic forms which require a high index of suspicion for diagnosis.

National Programmes on TB, Leprosy, etc. require a Change in Strategy to Achieve a Real Success

Prof. P. N. Gupta

Abstract

We all reside in a place where several tropical diseases are highly endemic and it is certainly a fact that we all are constantly exposed to all such infections repeatedly. A patient with such a background when presents himself in the clinics with either TB, or Leprosy or Malaria we take it for granted that the patient is only having that very particular antigen in his body and therefore our national programmes are unidirectional viz;- NLEP, RNTCP etc. as if a patient of TB will only have TB and a patient of Leprosy will only have leprosy infection. Scientifically and factually this is far from a reality. In fact a pt. of any Tropical disease will have simultaneously all other infections in the tropics and the outcome of treatment will depend on the immunogenicity of that particular antigen in which the person has been repeatedly exposed. We therefore require to consider the National Programmes as concerted and comprehensive approach to the problems presented to us by the patients and not to follow unidirectional programmes for single diseases to achieve success.

The details of the work that we have done in respect of the proposal will be discussed with documentary evidences when presented.

Visual Impairment in patients with Leprosy in Adilabad district in the state of Andhra Pradesh, India

Ravi Kumar Chukka (1,2), Sethu Sheeladevi (2), Siddharth Pujari (2), Badri Narayana G (3)

1. *University of New South Wales, Australia.*

2. *International center for Advancement of Rural Eye Care, L V Prasad Eye Institute, Hyderabad, India*

3. *Senior Ophthalmologist of Project Eye Care, Mancheril, Adilabad district, India*

Abstract

Leprosy is a chronic infectious disease that affects individuals in many ways including eye problems.

Aim: To estimate the prevalence of eye problems in patients with leprosy and to assess the utilization rate of eye care services.

Design: Cross-sectional case series

Methods: All leprosy patients registered between April 2007 and June 2009 with the leprosy treatment cell in Asifabad sub division of Adilabad district in the state of Andhra Pradesh, India were included in the study. They were prospectively assessed by an internist for general health issues and ophthalmic examination including visual acuity was conducted by an ophthalmologist. Visual impairment was defined as best corrected visual acuity of <6/18 to 6/60 in the better eye and blindness as visual acuity of <6/60 in the better eye.

Results: A total of 150 leprosy patients were examined, of which 78(52%) patients had suffered from pauci bacillus (PB) leprosy and 72(48%) from multi bacillus (MB) leprosy. Majority was males (52%) and only 43 (29%) patients were literates. Nineteen (14%) patients had organ deformities on examination due to leprosy. Ocular lesions were seen in 12 (8%) patients but 76 (51%) (95% CI 40.8 -62.7) patients had self reported eye problems requiring intervention and only 26 (17%) (95% CI 11.6-24.4) patients had previously accessed eye care services. Visual Impairment was observed in 19 (12.6%) cases and blindness related to leprosy was seen in 5 (3.3%) cases.

Conclusion: The prevalence of eye problems amongst leprosy patients is still high in the study

area. We strongly recommend a coordinated multidisciplinary approach to prevent blindness among leprosy patients, as well as making a mandatory eye screening part of the treatment schedule for all leprosy patients.

Correlation of Clinical Assessment, Ultrasonography and Electrophysiology of Ulnar Nerves In Leprosy

Authors: **Ashwini Manjare, Dr. Hemangi Jerajani**

Presenting Author: **Dr. Ashwini Manjare**

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Department of Dermatology, L.T.M.M.C. & G.H. Sion, Mumbai & Kaya Skin Clinic, Mumbai

Purpose of the study: To correlate clinical, ultrasonographic and electrophysiological findings of ulnar nerves in leprosy.

Methodology: Thirty untreated cases of leprosy (23 men and 7 women; mean age: 31.7 years) were evaluated with ulnar nerve sonography {Cross sectional area(CSA), diameter and echogenicity}and nerve conduction studies (NCS) {motor conduction and sensory action potentials}with 30 age, sex matched controls undergoing ulnar nerve sonography.

Results: The CSA and diameter (maximum cutoff-5.86 mm) of the ulnar nerves were significantly larger in leprosy group than control group. Sonography showed neuritis in 16.6% of the ulnar nerves whereas clinically only 6.7% nerves showed neuritis. Sonographic abnormalities were found in 4 patients with normal neurophysiologic findings, implying the concurrence of abnormal structures or anatomy with preserved nerve function in leprosy neuropathy. The clinical, sonographic and electrophysiological findings correlated well except in 3 patients with no clinical involvement showing severe deficit in sensory action study indicating that NCS can detect sensory deficits at an earlier stage when it is not clinically manifested.

Conclusions: Sonography and NCS thus proved to

be synergistic in early and accurate diagnosis of ulnar neuropathy enabling early diagnosis and prompt management, decreasing further deformities and disabilities.

Distribution of *Mycobacterium leprae* genotypes in a region of high leprosy prevalence in India

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† The study has been conducted under the guidance and supervision of Dr. Rupendra Jadhav – Former Scientist Incharge of the Stanley Browne Research Laboratory.

Abstract

Objective: Multiple Locus Variable number of tandem repeat (MLVA) analysis and single nucleotide polymorphism (SNP) has been proposed as a tool of strain typing for tracking the transmission of leprosy. However, empirical data for a defined population from scale and duration were lacking for studying the transmission chain of leprosy.

Methods: Eighty five slit skin scrapings were collected from Purulia (West Bengal), Miraj (Maharashtra) and Shahdara (Delhi) hospitals of The Leprosy Mission (TLM). SNP sub typing and MLVA on 10 VNTR loci was applied to the strain typing on *Mycobacterium leprae*. The strain typing, combined with conventional epidemiological investigation was performed to trace the transmission chain. Phylogenetic analysis was done on variable number of tandem repeats (VNTRs) data sets using start software.

Results: Diversity was observed in the cross-

sectional survey of isolates obtained from 85 patients. Similarity in fingerprinting profiles observed in specimens from the cases from same family or nearby locations indicated a possible common source of infection.

Interpretation & Conclusions: The data suggest that these VNTRs including subtyping of SNPs can be used to study the sources and transmission chain in leprosy, which could be very important in monitoring of the disease dynamics in high endemic foci. Multi-case families might constitute epidemic foci and source of *M. leprae* in villages, causing the predominant strain or cluster which tends to be those identified in multi-case families and resulted in the spreading of leprosy.

Detection of viable *Mycobacterium leprae* from soil samples and its genotyping on the basis of rpoT

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† The study has been conducted under the guidance and supervision of Dr. Rupendra Jadhav – Former Scientist Incharge of the Stanley Browne Research Laboratory.

Abstract

Background: Leprosy is a chronic systemic infectious disease which occurs as a result of infection by an acid fast bacterium, *Mycobacterium leprae*. *M. leprae*. The transmission of leprosy is very poorly understood. In order to understand the high occurrence of leprosy in endemic areas, it is necessary to

identify the natural reservoir(s) of *M. leprae*, the route of infection and the mode of transmission.

Objective: In the present study soil samples from endemic areas were tested to detect, if any, viable *Mycobacterium leprae* cells by using molecular methods.

Methodology: One hundred and sixty soil samples were collected from campus of a leprosy hospital and resettlement village of cured leprosy patients where active cases also resided at the time of sample collection. DNA and RNA of *M. leprae* was extracted and amplified using *M. leprae* specific primers.

Result and Conclusion: Fifty two samples showed presence of *M. leprae* DNA whereas 16S rRNA could be detected in sixteen of these samples. PCR amplification of rpoT gene and sequencing of amplicons showed all the samples had three copies of the 6bp tandem repeat (ancient Indian type). Genotyping using additional markers for *M. leprae* found in the soil and the patients residing in the same area could help in understanding the transmission link in leprosy.

Study of polymorphism and *in-vitro* expression levels of IL 17F in leprosy

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*** Dr. U. Sengupta is working as a consultant Scientist for Stanley Browne Research Laboratory.*

Abstract:

Background: Leprosy is a chronic infectious disease affecting the skin and nerves caused by *Mycobacterium leprae*. A genetic marker which determines susceptibility to leprosy is long been desired to identify individuals at risk of contracting leprosy and to initiate early treatment and avoid nerve damage.

Objective: The objective of this study was to investigate the association if any, between the Interleukin 17F (7488 T>C) polymorphism and susceptibility to Leprosy and also to examine the T-cell responses to recombinant Antigen 85A using *in-vitro* assays.

Methods: Peripheral Blood Mononuclear Cells (PBMC) and DNA were extracted from peripheral venous blood of Leprosy cases (n=80) and Healthy Controls (n=40). PBMC assays were conducted with recombinant *Antigen 85A* of *M.bovis* and IL17F levels in supernatants were measured using ELISA. The IL-17F (7488 T/C) polymorphism was genotyped using Amplification Refractory Mutation System – Polymerase Chain Reaction (Allele Specific Amplification).

Results: In Leprosy cases, the homozygous TT genotype frequency was significantly higher than that of the healthy controls ($p < 0.05$). The heterozygous TC genotype was higher in the controls than in the leprosy cases ($p < 0.05$). IL 17F levels in response to *Antigen 85A* in TT genotype leprosy cases was lower than that of controls ($p < 0.05$) and in TC and CC genotype Leprosy cases, the levels were higher than controls ($p < 0.05$).

Discussion: This study suggests that the IL – 17F (7488 T>C) polymorphism may confer a decreased risk of contracting leprosy and the polymorphism is associated with the amount of IL 17F produced in response to antigens of Mycobacterial origin.

Abbreviations:

PBMC - Peripheral Blood Mononuclear Cell

Clinical and Diagnostic aspects of Pure Neural Leprosy

Author – **Usha N Khemani**

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Introduction - Among the diversities of clinical presentation of leprosy, pure neural leprosy (PNL) is a type with nerve involvement only without obvious skin lesion. Clinical case series estimate that neuritic leprosy accounts for about 10% of all leprosy cases. This study highlights clinical, electrophysiological and histopathological observations on PNL.

Methodology - 11 patients of PNL were analysed with clinical examination, electrophysiological tests (EPT), skin and nerve biopsies. The case definition of PNL here was clinical evidence of nerve deficit as sensory cutaneous or motor impairment, numbness, paraesthesia, neuritis, nerve thickening with or without tenderness, no signs of skin inflammation or skin patches.

Results – Of 11 cases, 7 were referrals from other departments. Clinical examination showed paraesthesia and sensory impairment in all, nerve enlargement in 9, neuritis in 2 and paresis in 10 pts. Skin biopsy from area of sensory impairment revealed perineural inflammation in few pts. EPT showed a predominant axonal pattern. Mononeuropathy multiplex was the most frequent presentation. Nerve biopsy was decisive for diagnosis of leprosy in all. Patients were put on MB-MDT during follow-up 1 patient developed erythematous scaly plaque now considered as Primary neuritic leprosy.

Conclusion - There was no significant correlation of severity of clinical findings with nerve histopathology but in contrast all electro-neuromyographic findings matched the nerve histopathology, suggesting immunoinflammatory response in nerve does not depend on that occurring in skin. Nerve biopsy may reveal pathological changes greater in degree than those suggested by skin biopsy or clinical examination.

Can pulverized graft help in repigmenting the hypopigmented patch ?

Rajat Kapoor, Atul Shah

Plastic Surgery Department, JJ Hospital, Mumbai

The hypopigmented skin patches in leprosy quite often remain visible even after successful completion of treatment. Pulverised graft in burns cases help repigment the depigmented patches after burns have healed. Based on the same principle of melanocyte transfer or stimulation we have carried out repigmentation in a case of leprosy hypopigmented patch in a young adult. This technique has immense potential to help leprosy patients and need to be studied in detail.

A Painful Mystery - Complex Regional Pain Syndrome

Authors: **Dr. Deepti Ghia, Dr. Reshma Gadkari, Dr. Chitra Nayak**

Presenting Author: **Dr. Deepti Ghia**

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Abstract:

Complex Regional Pain syndrome (CRPS/Sudeck's dystrophy) is a painful and disabling condition- a triad of autonomic, sensory and motor symptoms disproportionate to the inciting event (inflammatory, infective or traumatic nerve damage).

Case:

A 20 year old male presented with continuous pain, aggravated by cold and emotions, anesthesia, redness, swelling, along lateral aspect of left hand and forearm with weakness in the grip and unnoticed trauma since 6 months. There was a 5 year history of sensory loss only over left index finger which he ignored. Examination revealed abnormal sensory and autonomic functions along left radial and median nerve distribution which

were confirmed by nerve conduction studies suggestive of mononeuritis multiplex. M.R.I. and ultrasonography showed no compressive etiology. Radial cutaneous nerve biopsy was suggestive of leprosy. Anti-leprosy, anti-inflammatory drugs and steroids, physiotherapy, transcutaneous electrical nerve stimulation and surgical median nerve decompression failed to relieve the pain. Temporary stellate ganglion block improved the pain scale proving a sympathetic component to the neuropathic pain. Thus, excluding all other causes the final diagnosis was CRPS secondary to leprosy.

Conclusion:

CRPS is not yet reported with leprosy. It is a diagnosis of exclusion. Treatment requires a multi-disciplinary approach.

Study of clinico-histopathological co-relation in cases of Hansen's Disease.

Authors: **Dr. Akreti Sobti, Dr. Nikita Lodha, Dr. Sheetal Poojary, Dr. Swapna khatu, Dr. Resham Vasani, Dr. N. G. Nagpur.**

Aims and Objectives:

1. To study the clinical and histopathological features in case of Hansen's Disease.
2. to identify the cases with clinico-histopathological discordance.

Inclusion criteria:

All patients of Hansen's Disease attending the opd.

Exclusion criteria:

Patients not consenting for biopsy

Material and Methods:

Retrospective study was done over a period of 5 years from 2007 to 2011 and total 128 patients were included in the study.

Observation and Result:

Of the total number of 128 cases , TT- 4, BTH- 71, IL- 18, BLH- 16, LL- 12, pure neuritic- 2 were there.

There was a discordance noted in the clinical and histological correlation in these cases, mostly in the borderline tuberculoid and indeterminate leprosy spectrum.

Conclusion:

A clinical and histopathological correlation is required in every case of Hansen's disease. Treatment should be given only after correlation of both clinical and histopathological findings.

“Long term results of tibialis posterior tendon transfer for foot drop in leprosy”.

Authors : **Dr Mannam Ebenezer, Dr Partheebharajan, Dr Samuel Solomon**

Presenting Author: **Dr Mannam Ebenezer**

***Institution:** Department of Orthopaedics and Reconstructive Surgery, Schieffelin Institute of Health Research and Leprosy Centre, Karigiri 632 106*

Purpose of study:

To assess the long term results of tibialis posterior transfer in leprosy with the main objective of whether the benefits of tibialis posterior transfer are retained in the long term.

Methodology:

The case record of patients who underwent tibialis posterior transfer at the Schieffelin Leprosy Research and Training Centre, Karigiri between 1960 and 1970 were analysed and basic information was detailed in a proforma. At the recent follow up the gait was analyzed to see if it was near normal, high stepping, or stiff ankle gait. The following angles were measured at the ankle a) foot at rest b) foot in active dorsiflexion and c) foot in active plantar flexion. Complications such as tarsal disintegration, inversion or eversion and flat foot were also noted.

The pattern of gait, range of active movement in dorsiflexion range, foot at rest and post surgical long term complications, were used as criteria to assess and compare the efficacy of the two main methods of performing a tibialis posterior tendon transfer.

Results:

74 patients, who underwent tibialis posterior transfer between 1960 and 1970 at the Schieffelin Leprosy Research & Training Centre, were reviewed more than ten year follow up. 64 patients (86.5%) improved from a high stepping gait to a heel toe gait. The foot at rest position and the range of movement which were seen after surgery were retained. Postoperative complications were minimal.

Conclusions:

In a long term evaluation of this procedure where the follow up ranged from 10 years to more than 30 years tibialis posterior transfer functioned well and did not develop major surgery related complications like neuropathic foot, loosening of tension by stretching of tendon or occurrence of new deformities. The gains of tibialis posterior transfer in terms of active dorsiflexion and gait were retained. Interosseous method of was better than the circumtibial. Tibialis posterior tendon transfer has served the gait and foot function in the long term.

Demystifying the Eye in Leprosy

Talk presented by Dr Shyamala Anand

The Leprosy Mission Trust India

The “Eye in Leprosy” – how many times have we heard these hallowed words that made us think that there was something highly specialized out there that no one could ever touch?

After 20 years as an ophthalmologist treating both general patients and patients affected by leprosy the purpose of my talk today is to demystify, if I may use the term, the “Eye in Leprosy”.

The eye is an organ of sight; that is its only great purpose. With sight we not only get about, avoid danger or injury and perform our daily activities but also experience a million different sensations – pure delight at seeing something beautiful; deep sorrow at seeing someone's pain; disgust

and revulsion at seeing something ugly or horrible; instant hunger at seeing a persuasive advert for food! Our experience of life would be incomplete without sight.

Think of the eye that way and you understand and respect the right to sight of every man, woman and child.

Think of the eye that way and all of us who work in the field of leprosy should want to prevent someone with this disease being robbed of fully experiencing life.

Well, apart from the ocular diseases that plague humanity in general (think cataract, glaucoma and refractive errors); there are just 4 specific to leprosy that are actually consequential. The good news is that with more and more people receiving MDT earlier, they are not all that common*; the bad news is that they all lead to blindness if left undetected or untreated long enough.

What are these 4 entities?

Corneal anaesthesia; Lagophthalmos; Uveitis and Scleritis.

Corneal anaesthesia, we can't do too much about. We don't go checking it (all that accurately either when we do) for every patient. A reduced blink rate in the absence of lagophthalmos is all that indicates corneal anaesthesia, but let's be realistic here, who actually bothers to check the blink rate as a routine? If we do detect it (and we should), then motivating the patient to protect an anaesthetic cornea and ensuring he or she actually does so, is the only recourse (protective spectacles, daily inspection for redness and 'do not rub').

So I'll stick mainly to lagophthalmos, uveitis and scleritis which are obvious enough to all and entities we *can* do something about, although it goes without saying that the presence of corneal anaesthesia complicates the management of all three.

Lagophthalmos, we can manage ourselves – oral

steroids for 5 months at least; Orbicularis oculi strengthening exercises; protection (glasses by day, cover the eye by night); surgery if longer duration lagophthalmos or no improvement with steroids. The problem arises however when the unprotected, exposed cornea goes and develops a corneal ulcer – then we need an ophthalmologist and in a hurry.

Uveitis and Scleritis, now these we need an ophthalmologist to manage with regular monitoring during the long term steroid treatment (usually topical in uveitis and only oral in scleritis). These diseases come with their own baggage of complications (secondary cataract, secondary glaucoma, sclera thinning) in addition to the complications of using long term steroids.

So how, do we as leprologists, approach the Eye in Leprosy?

We start by knowing which kind of patients are at risk; learn how to recognise ocular complications of leprosy and know when to refer.

We teach this to all health care workers involved in leprosy and to our patients.

Who then are these people affected by leprosy who might be at risk of ocular complications?

- ? People with a patch or patches anywhere near the vicinity of the eye (T1R in these patches and you're looking at the likelihood of lagophthalmos)
- ? Patients with T2R (may develop uveitis or scleritis)
- ? Anyone with a history of red eye in the past (uveitis and scleritis are sadly, usually recurrent)
- ? Established lagophthalmos +/- corneal anaesthesia (even after "fixing it" with tarsorrhaphy or TMT there is always some degree and risk of corneal exposure)
- ? Corneal anaesthesia (risk of corneal injury going unrecognized till infected)
- ? Anyone with only one seeing eye

These are the handful of patients that we must not miss out.

When do we start looking out for these patients?

When we see them first (at the time of diagnosis); when we see them when they come for their MDT or anything else (during the period of treatment); when we see them anytime later (after release from treatment).

When do we educate these patients at risk?

It's the same; at diagnosis, during treatment and on release from treatment. One can't reinforce patient education enough.

What do we need to tell them exactly?

"You're high risk for losing your vision but you can prevent it if you protect your eyes; look at your eyes in the mirror every day and come at once if your eye waters, becomes red or you're seeing less clearly than you used to."

What is it that we need to do?

A brief glance at their eyes is all it takes to know whether the eyelids are closing or not or that the eye is red. You don't need to struggle with it much more than that. You've recognised it now you can go ahead and do something about it.

I have always maintained that any ophthalmologist worth his or her salt could manage Lagophthalmos, Uveitis and Scleritis effectively. Lagophthalmos is common enough in Bell's palsy or cerebello-pontine angle tumours. Uveitis is associated with a host of diseases from arthritis and STDs to auto immune diseases. Scleritis is less commonly encountered, but the same.

Have we, as leprologists, discouraged general ophthalmologists from treating ocular complications of leprosy by projecting the Eye in Leprosy as vastly different from say, the eye in Rheumatoid Arthritis? That without an in depth knowledge of Leprosy they could never aspire to treat the ocular complications of the disease? How many ophthalmologists know Diabetes inside out, yet they treat retinopathy and cataract

competently enough and leave the management of the disease to the physician? Why should it be any different with leprosy?

What is our duty as leprologists then?

I see it as very simple: recognize lagophthalmos, uveitis and scleritis, teach our patients (and again it's just a handful) to recognize them. And each one of us, link up with ophthalmologists who will manage the ocular complications just they would any other lagophthalmos, uveitis or scleritis.

While I in no way intend to trivialize the ocular complications of leprosy and its consequences, I maintain that we are the ones to demystify the Eye in Leprosy.

**A world-wide study on the ocular complications of leprosy has been carried out over the past ten years. The data from 4772 patients, designed to give baseline information for a five-year incidence study, have been analysed. Blindness due to leprosy was seen in 3.2% of the sample and 7.1% had Grade 2 visual disability. The causes of visual impairment in the disease are discussed and it is emphasized that a high proportion of these are preventable, particularly through the early use of multidrug therapy. The active participation of ophthalmologists in the management of the disease is still required since many of the blinding complications respond well to surgery. Abstract-TJ Ffytche - Indian journal of Leprosy, 1998*

"Efficacy of Patellar Tendon Bearing Brace in preventing recurrent ulceration in a shortened and deformed foot in leprosy"

Authors: **Dr Samuel Solomon, Dr Mannam Ebenezer**

Presenting Author: **Dr. Samuel Solomon**

Institution: Schieffelin Institute of Health – Research and Leprosy Centre, Karigiri, Tamil Nadu

Purpose:

To study the efficacy of patellar tendon brace in preventing recurrent ulceration in leprosy patients with feet having less than 50% of plantar surface.

The plantar surface area available for weight bearing in an anaesthetic foot in leprosy is critical in the risk of ulceration of the foot. Plantar surface area can be reduced by loss of part of the foot, scarring and deformities the foot. The only way to protect a foot which has lost more than 50% of the plantar surface would be to provide an off loading device such as a Patellar Tendon Brace (PTB).

Methodology:

In this study, 133 Patellar Tendon Bearing Braces were issued to patients who had more than 50% loss of plantar surface. The effectiveness of this device in preventing recurrent ulceration was assessed by categorizing the results into improved, static and worsened depending on the ulcer status at recruitment and subsequent follow up.

Results:

Among patients who did not have an ulcer at the time of issue of the PTB 86.7% did not develop an ulcer in a 2 year period. Among patients who had ulcers at recruitment 23.4% improved, 58.8% remained static with no further ulceration and 17.8% deteriorated.

Conclusions:

PTB provides protection of the foot from recurrent ulceration in about 2/3 of short feet in leprosy. PTB is a useful device to protect shortened/deformed feet in leprosy especially when the contralateral foot is either amputated or equally deformed.

Effectiveness of Social Skills Training for reduction of self-perceived Stigma in Leprosy Patients in rural India - A preliminary study

Authors : **Valsa Augustine, Miriam Longmore, Mannam Ebenezer, Richard.**

Presenting Author: **Mrs Valsa Augustine**

Institution: Schieffelin Leprosy Research and Training Centre, Karigiri, Tamil Nadu.

Purpose of study:

To assess the effectiveness of social skills training in leprosy patients to raise self-esteem and reduce self-perceived stigma.

Methodology:

Five leprosy patients were given ten day-long group-sessions of social skills training over two weeks. Training involved: identification of the emotions and concerns of the patients when interacting socially; analysis of positive and negative social interactions and non-verbal and verbal skills training. Role-plays, videos and live models were used. Self-esteem and a reduction in self-perceived stigma were assessed qualitatively before and after training using semi-structured interviews. Assessment of change was scored under the indicators: self-perception, family, wider community and job. Patients were assessed for displaying new ways of interacting with people and changes in expectations for the future.

Results:

Qualitative analysis of the interviews before and after training suggested that the social skills training could raise the self-esteem leprosy patients and combat self-perceived stigma. Increase in self-esteem, as evident through the verbal interactions with the interviewers and behavioral changes in the community, were noted in the majority of patients.

Conclusion:

The training of social skills may be able to increase the self-esteem of leprosy patients, and so be a useful part of leprosy rehabilitation schemes to try and combat the stigma of leprosy.

Sustainable rehabilitation through Self Help Groups (SHGs) – an experience of German Leprosy & TB Relief Association, India

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Background

Rehabilitation is an integral part of leprosy care services. Non Governmental Organisations play an important role in initiating self sustainable programs. GLRA-India through its NGO partners piloted Self Help Group (SHG) strategy in six districts of Tamil Nadu. The experience during 2006 to 2009 is shared in this paper.

Methodology

Through social mapping leprosy affected people, other Persons With Disabilities (PWD) and vulnerable persons were identified and motivated to form SHGs. Impact monitoring tools such as Participatory Well being Ranking (PWbR), Situational Analysis and Goal Establishment (SAGE) and Performance Assessment of Group (PAG) were used to steer the SHG intervention. SAGE tool was used to assess the SHG member's situation and to set goals accordingly. The individuals and the groups were guided to set priority to achieve the desired goals. SHG's performance was assessed using PAG tool. Through this approach rightful mainstream services like saving and credit, income generation opportunities were created. A total of Rs. 6,00,000/- (Rs. 1,00,000/- for each District) was disbursed as seed money to these groups.

Result

A total of 410 inclusive SHGs were established enrolling 4185 members. This included 154 leprosy affected, 2177 PWDs & other vulnerable people. These SHGs raised a corpus of Rs. 30,46,755/- and got a credit linkage of Rs. 67,74,900/-. It was observed that most of the SHG members stopped availing loans from money lenders. Leprosy affected persons and PWDs started income generation activities and accessing mainstream services. By applying SAGE tool we found that the SHG intervention has given 51.33 per cent average growth among individual members in domains such as Personal, Economical, Social & Cultural Political and Health

and the overall average growth of the groups was found to be 54% in domains such as Attitude, Knowledge & Skills, Economic, Social & Cultural, Political and sustainability.

Conclusion

Inclusive approach of sustainable rehabilitation through SHGs empowers the community including all types of differently abled persons. Hence this approach can be scaled up.

“The importance of plantar soft tissue resilience and plantar padding in the genesis of plantar ulcers in leprosy”

Authors: **Mr David Prakash, Dr Mannam Ebenezer**

Presenting Author: **Mr. David Prakash**

Institution: Schieffelin Leprosy Research and Training Centre, Karigiri, Tamil Nadu.

Purpose of study:

To elucidate the importance of plantar skin resilience and plantar soft tissue padding in the genesis of plantar ulcers in leprosy

Plantar skin resilience and plantar soft tissue padding are important factors in the protection of the foot from injury especially the neuropathic foot in leprosy. In leprosy plantar skin resilience is reduced because of loss of sweating leading to dry, hard skin. The plantar soft tissue padding is reduced because of atrophy of intrinsic muscles of the foot following their paralysis.

Methodology:

In this study both these factors are measured in 15 patients with neuropathic foot in leprosy and a similar number of matched controls. Durometer was used to measure plantar skin resilience and lateral radiographs were used to determine the plantar soft tissue padding.

Results:

It is shown there is a statistically significant reduction both in the plantar skin resilience and in the plantar soft tissue padding when compared to

matched normal subjects. The occurrence of plantar ulcers in 11 out of 15 patients, correlates well with the reduction of the above two factors at the same sites.

Conclusions:

Durometer and foot radiographs can be used to identify sites at risk of developing plantar ulcers. These are simple tests which can be used to predict ulceration at a particular site so that necessary changes can be made in the foot wear.

Assessment of disability care services in an urban set up

Pai V V, Dhamale CB, Kute A and Nanda A

Introduction

Bombay Leprosy Project has been practicing Prevention of disability (POD) care services in urban slums since almost two decades. It is therefore important to assess the impact of services provided to leprosy patients with deformity to ascertain the status. We present below our experience on the impact of POD services in urban slums.

Materials and methods

POD care and services were provided to patients distributed in the Project area (PA) with population of two million after a detailed exercise to identify the total number of patients with grade 2. Location of patients in the PA slums was shown in maps to understand the distribution for planning of services and follow up. Disability services in the form of various splints, wax therapy, MCR footwear, ulcer care for simple and complicated ulcers was provided to patients depending on type of deformity. Services were provided repeatedly through satellite clinics and doorstep services in the field. Assessment of the impact of the services using a special format was undertaken to ascertain the status of deformity.

Results

Maximum improvement was seen in abduction deformity (59%) and mobile claw hand (27%)

while in (74%) patients with mobile claw and in all patients with fixed claw hand, deformity was prevented from worsening. As regards foot problems, planter ulcers showed improvement in (45%) patients and recurrence seen in (2%) of patients.

Conclusion

We believe that regular POD care and services using simple aids and appliances to patients with early deformity practiced in urban slums can provide good improvement and also prevent further worsening of deformities.

Silicone implants for muscular wasting of first web and the hypothenar muscles.

A. Salafia, G Chauhan.

Vimala Dermatological Centre, Versova, Mumbai,

Medial nerve and Ulnar nerve palsy are still very common in spite of MDT. Most surgeons are concerned with the function of the hand – and rightly so – only few have paid attention to the aesthetics of it. However 'white-collar' patients are concerned about the appearance of their hands – besides the function, therefore they would like us to do something for the muscular wasting which is so common. We propose here a new technique, used for the last 10 years, and demonstrate its results. While some surgeons have tried to improve the aesthetics of a hollow first web, no surgeon, to our knowledge, has attempted to improve the curvature of a paralyzed hypothenar area. We have tried, with success, to improve the aesthetics of the first web and of the ulnar side of the hand.

We have operated 20 cases, and the technique will be illustrated at the congress.

Srinivasan technique revisited

Author: **Atul Shah**

In leprosy, ulnar claw hand is the most commonly encountered deformity. In the ulnar claw hand, the little and ring fingers are affected. In certain cases only the little finger may be involved leading

to hindrance in activities of daily living and more so seen as a social stigma of leprosy. In order to correct the isolated deformity of the little finger we have used the Srinivasan's by pass technique. Result was satisfactory from the cosmetic purpose, however on making the lumbrical position the claw was still evident. This signifies that it does not substitute the power at MCP joint. Video clip will be shown.

Grade 2 Deformities In Leprosy: Evaluation of Its Clinico-Demographic Association

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Introduction: Leprosy is associated with social stigma and deformities may further deteriorate psychological and economic impairment. Grade-2 deformities is given due importance by WHO by declaring the goal to reduce its rate by at-least 35% of 2010 level by 2015.

Aims and Objectives: To study relative prevalence of grade-2 deformities among leprosy patients attending Hansen's clinic and to evaluate clinico-demographic risk factor associated with its development.

Methods: An institutional based cross-sectional study carried out over 6 months in the leprosy clinic of a tertiary-care hospital of Eastern India. All leprosy patients were evaluated in terms of their clinico-demographic profile and types of grade-2 deformity.

Results: Among 71 leprosy patients, male:female ratio was 2.73:1, and 34(47.89%) had grade-2 deformities. Those with deformity had a higher male:female ratio(5.8:1, $p=0.0535$) and presented at a later age(33.09 ± 16.14 years, $p=0.587$) than those without deformities. Deformities were

mostly found in BT($n=22$) followed by LL($n=7$) and all patients of pure-neuritic type presented exclusively with deformities. In study population, 10 had type1 reaction and 7 had type2. Among those with type1, 80% and those with type2, 57.14% had deformities. Individual deformities alone or in combination were claw hand($n=20$), drop foot($n=5$), neuropathic ulcer on feet($n=11$) and hands($n=2$), madarosis($n=4$), nasal collapse($n=2$) and lagophthalmos($n=1$).

Conclusion: BT patients are at increased risk of developing deformities of which claw hands and neuropathic ulcer on feet are the most common. Deformities are more commonly seen with type1 reactions than type2.

A comprehensive care in Referral unit to Leprosy affected with complications

Authors: **Dr. Kamlakar Bhandarkar** State ILEP Coordinator, M.P. & **Mr. Siva Rama Krishna** Technical Officer, TRU, MP

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Abstract

Purpose of study:

- ? To study the role of a Referral centre in providing specialized services in management of complications & preventing complications
- ? Making Surgical services available nearer to the patients

Method used:

LEpra India established a referral unit at the district hospital Jabalpur. This center started preparing MCR foot wear for grade-1 disability cases. Started rendering surgical services at the level of District Hospital

Summary of the Results:

As a result of the training to the NLEP staff of neighboring districts, 89 reaction cases were identified by concentrating on the high risk cases. Out of them 86 got complete recovery. Thirty cases with grade 1 disability were prevented from going to grade-2

In the field of surgery, out of a total of 932 surgeries in the state, this centre has contributed 229 (25%) surgeries.

Conclusions:

- ? Admitting operated patients in general ward, has to a great extent contributed in reducing, the stigma and discrimination in leprosy.
- ? The concept of preparing Grade -2 foot wear for cases with planter ulcers or foot drop was imbibed by the state
- ? The orthopedic surgeons from neighboring districts developed interest in doing Leprosy surgery.
- ? Faculty from Government Medical College got involved in doing ophthalmic surgery in Leprosy.
- ? Change in attitude of the GHS system that has stated giving due importance to Leprosy program.

Recommendations:

- ? The THWs to be rejuvenated, & reorientation of Leprosy staff in management of complications
- ? Incentive to the team engaged in Leprosy surgery to ensure quality surgical work and sustained follow up

Management of Face lesions in leprosy - Therapeutic challenges

Pai V V, Rathod V, Khanolkar S and Shinde M

Introduction

Clinical resolution of lesions in leprosy takes longer time particularly so in patients with lesions on face. Reasons for persistence are unknown

though photosensitivity has been postulated. We present below our observations with reference to management of lesions on face posing therapeutic challenges.

Materials and methods

A study was undertaken to compare the efficacy of Prednisolone and Clofazimine in management of face lesions in leprosy. 28 patients were recruited from those attending the Referral centre of Bombay Leprosy Project. Patients were of BT to BL type of leprosy with age ranging from 10 to 60 years. 11 were males and 16 were females. Out of 27 patients, 21 were on MDT while 5 had completed treatment. 14 patients had lesions elsewhere also while 13 patients had lesions only on face. Prednisolone was given in the dose starting from 40 to 60 mg and tapered to 5mg over a period of 22 to 28 weeks. Clofazimine was given in the anti inflammatory dose starting with 300mg / day and tapered to 50mg over a period of 28 weeks. Clinical examination, neurological assessment and photographs were taken to document the progress of lesions.

Results

Analysis indicated that with prednisolone, 9 (33%) patients improved and recurrence observed in 19 (67%) patients, while with Clofazimine 14 (83%) patients showed marked improvement and persistence of lesions on face seen in 3(17%) patients.

Conclusion

It is observed therefore that though clofazimine is generally recommended for management of type II reaction, it is also effective in type I reaction particularly in the management of lesions on face persisting for a longer time not resolving with prednisolone.

Clinical profile of MB leprosy patients after 5-15 years of Releasing From Treatment (RFT)

Author/s: **B. Nagaraju, V.N. Mahalingam, M. Jaggababu, M. Gangadhara Rao, M. Mercy Malliga**

Presenting Author: **B. Nagaraju, Ex-scientist 'F'**

Name of the Institute: *National Institute of Epidemiology (ICMR)*

Abstract:

Introduction

Treatment protocol and surveillance of leprosy has changed over the years according to the control programme. During mono-therapy period, active surveillance was going on even after completion of the treatment. During Multi Drug Therapy, duration of the treatment was reduced and active surveillance was not practiced since relapse rates are lesser than the expected. Presently, duration of treatment for Multi-Bacillary leprosy is for one year and Pauci-Bacillary leprosy for six months. On completion of treatment, it is declared that patients are cured of leprosy and released from treatment (RFT). Consequences of leprosy after RFT are under reported due to passive surveillance followed in National Leprosy Eradication Programme (NLEP). In Tamil Nadu, leprosy vertical programme was integrated into General Health Services in 1997. Hence this study has been undertaken to assess the clinical and disability status of MB patients after 5–15 years of RFT.

Objective

To assess clinical profile of M.B. leprosy patients after 5- 15 years of Released From Treatment under programme conditions.

Methodology

All 596 MB patients treated with WHO-MB – MDT regimen and released from treatment (RFT) during 1986 to 2000 were the study population. The list of identification of all patients was prepared. All the patients were examined for presence of patches, infiltration, disability status, reactions without referring to old clinical charts. At the time of follow up, the information on history of developing new patches and treatment undergone for relapse and reactions after RFT was elicited.

Analysis

Clinical manifestations at the time of RFT and present survey were compared. Results will be presented.

Efficacy of single-dose chemotherapy (Rifampicin, Ofloxacin and Minocycline-ROM) in PB leprosy patients with 2 to 5 skin lesions, India: Randomised double-blind trial

Author/s: **S Balasubramanyam on behalf of team of study investigators**

Presenting Author: **S Balasubramanyam, Scientist D**

Institute / Organization: *National Institute of Epidemiology (ICMR)*

Abstract:

We compared efficacy of single-dose of rifampicin, ofloxacin and minocycline (ROM) for treating paucibacillary (PB) leprosy patients with 2-5 skin lesions with WHO-PB- MDT in a randomized double-blind trial involving 1526 patients enrolled at five centres (ROM=762; WHO-MDT=764) during 1998-2003. We compared rates of complete clearance, clinical scores and relapse rates per 100 person-years (PY) for all the five centres during 36 months post-treatment. In two programme-based centres that had enrolled 1082 of 1526 patients we extended the follow-up for 48 months. Base-line characteristics of patients in two arms were similar at intake. Complete clearance at 36 months was comparable (72% vs. 72.1%; $p=0.95$). Clinical scores declined steadily and equally in both the arms. The relapse rates were 1.13 and 0.35/100 PY in ROM and WHO-MDT ($p=0.001$). Majority (28/38, 75%) of these relapses occurred within 18 months in both the arms. In all, 10 adverse drug reactions were reported (ROM=2; WHO-MDT=8). In the two centres with additional follow-up, the clinical score was not dependent on age, gender, number of lesions or affected body parts. No relapses occurred during the additional follow-up period. Single-dose ROM

can be an alternative regimen to treat PB leprosy patients with 2-5 lesions with adequate follow-up.

Noduloulcerative Erythema Nodosum Leprosum : A Clinocohistological Analysis and A Review Of Treatment

Mary Thomas, Margery Emmanuel

Schieffelin Institute of Health Research and Leprosy Centre, Karigiri

Introduction:

Noduloulcerative erythema nodosum leprosum (ENL) is an uncommon and severe form of type II lepra reaction. The clinohistological correlation of this phenomenon and its response to treatment is not well studied thus far.

Methods:

We retrospectively studied the records of 9 patients with noduloulcerative ENL who presented to our clinic over a period of three years. We evaluated their clinical presentation, histopathology treatment protocols followed and response to therapy.

Interesting findings will be presented.

Leprosy detection in a Private setup in Raigad District, Maharashtra

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*** *Uday Thakar – Hon Secretary - KRNS, Shantivan, Panvel.*

Introduction

Leprosy is still prevalent in the Raigad district of Maharashtra. Involvement of private practitioners and practicing dermatologists in leprosy is an important component in leprosy

elimination programme. We present below our experience with reference to participation in the leprosy eradication programme through a Private clinic in Panvel a semi urban and fast expanding area in Raigad District.

Methodology

Despite declaration of elimination of leprosy by Govt. of India, we have detected 740 patients since January 2006 and 121 patients since May 2010. The age ranged from 5 to 78 years. There were 47 pauci-bacillary and 74 multi-bacillary leprosy patients. Amongst the multi-bacillary cases, 9 were of lepromatous leprosy type with mostly nodular presentations and diffuse infiltration with > 4+ BI on skin smears.

Due to growing affluence of the population in this district, patients prefer personal attention available in private setups. In addition, anti leprosy treatment is quite inexpensive. Both these reasons contribute to high detection in a private clinic. Besides the skin smear facility, the clinic also provides supportive facilities like MCR footwear and provision of Thalidomide for management of lepra reactions at a concessional rate with the help of collaborating NGOs.

Conclusion

We believe that this model of an NGO - Private partnership in a semi urban set up like Panvel in reaching the expertise can help greatly to control the disease burden and eradication of the disease in an integrated scenario.

Critical Appraisal of WHO's Field Classification of Hansen's Disease – A Institutional Based Crossectional Study.

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Introduction: In Hansen's disease(HD), an infectious disease caused by *Mycobacterium*

leprae, the bacillary burden determines amount and duration of therapy. In year 1982, WHO classified paucibacillary (PB) and multibacillary (MB) depending on bacterial index (BI). In recent times (1998) classification is made simplified and noninvasive by judging clinical features only (>5 skin lesion or >1 nerve involvement considered MB and rest PB)

Aims and Objectives: To validate present date WHO field classification (1998) against Gold-standard classification (depending on BI) as proposed in year 1982.

Methods: HD was diagnosed and classified as per WHO's criteria. SSS was taken from active margin of skin lesion and stained by modified ZN stain. BI was determined by counting 100 high-power-fields. Clinical classification was validated by comparing with SSS (MB with BI ≥ 2 , PB < 2).

Results: Among 35 cases of HD, 30 were MB and 5 PB by clinical classification (1998). SSS found BI ≥ 2 in 22 and < 2 in 13. Among those BI ≥ 2 , all were clinically MB. Among BI < 2, 8 (61.5%) were clinically MB and 5 (38.5%) were clinically PB. For classification into MB using clinical criteria, sensitivity was 100% and specificity 38.5% (positive and negative predictive value of 73.33% and 100% respectively). Association between WHO field classification (1998) and Gold-standard classification (depending on BI, 1982) was found to be significant ($p < 0.0082$), though the inter-rater agreement was poor ($\kappa = 0.44$).

Conclusion: With present classification system, no cases of MB are misclassified as PB but we are over-diagnosing MB in 61.5%, imposing unnecessary increase in pill burden.

Study on the Household Contacts and Neighbourhood Contacts of Newly Reported Leprosy Cases from Tirukalukundram Area-A Preliminary Observation

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During the integration of Vertical programme in Leprosy with General HealthCare, the case load prevalence rate of leprosy was less and accepted by the programme. However, it was seen in the CLTRI Hospital that total No. of 128 cases reported to attend our hospital OPD during 2009, out of which 120 cases were from Tamil Nadu.

Hence, the preliminary study was taken up, to see the prevalence in the household and neighbour contact.

A Study of Clinical and Histopathological Correlation in New Case Detection from the Field Areas

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DLO Office, Navsari, Gujarat

In order to correlate the clinical and histopathological classification in new case detection of 50 cases a study was carried out. From the references to Dept. of Dermatology, with informed consent of patients skin biopsy was taken by punch from the latest or active lesion. The observations on age, sex, type along with Ridley Jopling classification and deviation or changes in the histopathology were seen as follows:

As against general ratio of 80:20 PB:MB in this study it was observed as 70:30. The histological sign qua non of atrophic epidermis with flattened and irregular rete ridges was confirmed in all cases, the basal layer was eroded by granuloma in 10 cases of tuberculoid type; it indicates erosion of epidermis is often valuable for identification of TT. In present study, sub epidermal zone, was involved in 13 cases of tuberculoid leprosy and 2 cases of borderline tuberculoid leprosy, it indicates that in Paucibacillary leprosy the granuloma forms in upper dermis while in Multibacillary leprosy, granuloma forms in mid and deeper dermis. Similar observations have been also made by other authors. Nearly 72% cases were found consistent clinically and histopathologically. The details of analysis will be presented.

BCG immunotherapy as an adjunct to chemotherapy in BL-LL patients – its effect on clinical regression, reaction severity, nerve function, lepromin conversion, bacterial/antigen clearance and 'persister' *M.leprae*

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Background & Objective: Multidrug therapy in leprosy has failed to eliminate the problem of persister bacilli; additionally—clearance of bacterial antigens is extremely slow which could predispose to continued nerve damage even after the release from treatment. In the present study, the immunomodulatory efficacy of BCG vaccine administered post-MDT in BL-LL leprosy patients was investigated with a view to determine, if augmenting chemotherapy with immunotherapy would help in faster clearance of *M.leprae* / antigens, bring down the level of persisters and minimize reaction and nerve damage.

Methods: The study was a randomized, case-controlled, double-blinded trial in BL - LL patients that were matched with respect to age, sex, bacteriological index and history of reaction in order to minimize confounders. One Group (Group A) received 2 doses of BCG-MOSCOW (3 to 33 x 10⁵ cells) and the other Group (Group B) normal saline (0.85%), injected intra-dermally at 3 months intervals. The outcomes at the end of 6 months (i.e., 3 months after the second dose), were assessed with respect to clinical regression, bacterial/antigen clearance, lepromin conversion, granuloma clearance, level of persisters, occurrence and severity of reaction and changes

in nerve functions, and compared between the 2 groups. The blind was broken at the end of analysis.

A total of 107 BL-LL patients comprised of 49 in Group A and 58 in Group B; of which 36 and 42 respectively completed the study as per protocol, and are included in the final analysis.

Results and Interpretations: The findings reveal firstly that two doses of BCG administered post-MDT in Group A did not show a significant effect on clinical lesion regression, bacterial or antigen clearance, granuloma clearance, and lepromin conversion as compared with the saline-injected Group B. Neither did BCG alter the level of persisters bacilli. Secondly, the frequency of lepra reaction/neuritis following the intervention was also comparable in the 2 groups; however the severity of reactions was significantly higher in Group A. Thirdly, Neural functions assessed by nerve conduction studies showed that deterioration of motor nerve conduction was significantly lower in the BCG arm. Since all patients developing moderate to severe reactions, immediately received a course of corticosteroids (Cs), it is possible that timely use of Cs might have helped.

Impact of Political will and administrative support for Leprosy eradication

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Presenting Author: **Dr. Bhatpahre, State Programme Leprosy Officer, Chhattisgarh**

Organization: State Health Department, Chhattisgarh

Alarmel Mangai D - Collector, Mahasamund

Dr. Bhatpahre - State Programme Leprosy Officer, Chhattisgarh

Dr. S. L. Gupta - Consultant – NLEP, State Health Resource Centre, Raipur.

Chhattisgarh State is one of the endemic state for Leprosy. District Mahasamund in this state has high case detection every year.

Chief Minister of Chhattisgarh handed over Sankalp torch to Collector Mahasamund, President Jila Panchayat and Chief Medical & Health Officer.

Chairman of District Health Society, District Magistrate has taken initiative and planned sustainable strategy for early case detection mobilizing community and networking with partners.

Directorate of health services, State Programme Officer Leprosy, state Health resource Centre, Raipur, District Programme Manager, NRHM, Principal ANM training centre and Chief executive Officer, Jila Panchayat provided full support for this plan.

District Coordinator Mitani, DRP, M.T., KDS supervisors, Anganwadi workers, PRI members and students, Teachers provided full support in searching undiagnosed untreated new Leprosy Cases starting MDT and various NLEP activities including stigma removal.

10,64,426 population of District Mahasamund was screened on 7th April 2011 – World Health Day, 6033 persons were suspected to have Leprosy and 322 cases were confirmed and put on MDT. Committees were formed to follow the campaign and sustain the effort for Leprosy eradication.

Improved case detection through involvement of ASHAs.

Authors- **Dr. P.K. Mitra**, Medical Advisor, GLRA India, **Dr. Bapari**, DLO, West Midnapur.

Presenting Author – **Dr. P.K. Mitra**.

Background: Case detection at early stage is a week area in NLEP in almost every state. The tool at present is used is awareness generation so that patients reports voluntarily to PHCs. But IEC is usually not done routinely and particularly at grass root level. This has resulted late detection of patients which is evident as high disability rate among new cases.

In the district of West Midnapur which is a high burden district with a larger tribal population living in forest area, ASHA were involved to refer the suspects. There was marked improvement in case detection both in quantity and quality. Disability rate has come down among newly detected cases in 2011.

Objective: Improved case detection through ASHAs.

Intervention: ASHAs were appointed in 12 blocks. There are 7 to 10 ASHA workers in each sub centres. They were trained as per the guideline of Central Leprosy Division. ASHAs have been given a diagnostic photo card and a simple referral slips. Suspects are referred by ASHAs to sub centres and from there to MOs of PHCs and BPHCs.

Results: Cases detected from April, 11 to Nov, 11 in the district are more than 1000 having disability rate 60% less than that of in the period from April 2010 to March 2011.

Acknowledgement: SLO of West Bengal, DLO of West Midnapur.

An Unusual Case of Palmar Involvement in Leprosy

Dr. Neha O. Saboo

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Abstract:

Leprosy, like syphilis, can be protean in its presentations. This report describes atypical presentations of leprosy. The case is of a 10 year old male child who presented with an asymptomatic lesion over the right palm since the last 6 months. There was no history of trauma at the site. The lesion had slowly progressed without any ulceration or discharge. On examination, an erythematous annular scaly plaque of 7 cm x 4 cm in dimensions over the right thenar eminence. The plaque showed definite impairment of sensations especially over the central part of the lesion. In addition, there was also a mildly tender swelling over the radial aspect of the right wrist

about 1 cm x 1cm in dimensions which appeared to be along the course of the right radial cutaneous nerve. No other nerves were thickened or tender. A provisional diagnosis of Borderline Tuberculoid Hansen's disease was made which was confirmed by histopathology. This case is reported in view of the rarity of palmar involvement in paucibacillary leprosy and the possibility of such a lesion being misdiagnosed as granuloma annulare.

Leprosy, A Neurological Masquerador

Dr. Manjot Marwah, Dr. Sharmila Patil, Dr. Nitin Nadkarni, Dr. Kiran Godse

A young male farmer injured his left hand resulting in a deep wound on the ulnar border of the wrist, associated with weakness and numbness of the hand. An arterial repair was done elsewhere, neglecting the expected tendon and nerve injury.

An initial ultrasonography showed a sacular mass in the median nerve at the wrist. Nerve conduction studies suggested non functioning median and ulnar nerves.

At reexploration, a severed FDS tendon was seen and repaired. The ulnar nerve appeared normal. The mass in the median nerve was resected, with sural nerve grafting. This mass was histopathologically suggestive of a neuroma.

After 3 months, however, there was persistent numbness below the elbow and a flexion deformity at the fingers. A repeat nerve conduction study showed non functioning of ulnar and median nerves. A reexploration now

showed a thickened ulnar nerve at the wrist and a mass in the median nerve proximal to the previous graft. A biopsy from the ulnar nerve showed changes of borderline tuberculoid leprosy.

We feel that the patient was already suffering from neuritic leprosy which was missed initially due to the wrist trauma and was only uncovered at the 3rd operation, when a nerve biopsy revealed the diagnosis

ROM therapy in Paucibacillary leprosy – Observations on reactions

Vikas H, Ganapati R, Pai V V, Khanolkar S and Raja DV

Introduction

WHO instituted fully supervised monthly intermittent ROM therapy in three countries in 1996. Preliminary observations on reactions after intermittent ROM Therapy in PB leprosy have been reported (Ganapati et al 1997). We now present our observations in a open trial with ROM therapy (i.e Rifampicin 600 mg + Ofloxacin 400 mg + Minocycline 100 mg) as recommended by WHO on first episode of reactions and relapses.

Materials and Methods

A total of 533 cases of PB Leprosy were analysed. Patients recruited in the analysis included those with a follow up for minimum period of 6 months. Age ranged from 14 to 60 years and only those patients not received any steroids earlier (before 1st episode of reaction) were included.

Table showing the occurrence of reactions in various ROM regimens in PB leprosy

ROM Therapy	Patients	Reactions	Relapse	1st Episode (Average duration)
ROM - 1 (single lesion)	184	2 (1%)	2	=
ROM - 1 (2-5 lesion)	157	21 (13%)	2	< 6 Months
ROM - 3	121	20 (17%)	0	< 6 Months
ROM - 6	71	11 (16%)	0	< 6 Months

Conclusion

It is observed that there is an increase in the percentage of type I reactions in PB leprosy in proportionate to the number of lesions. In all PB cases, maximum reactions appeared within 6 months irrespective of treatment schedule with ROM. Number of relapses were found to be not alarming in various ROM regimen.

Sustainable Strategy for Early case detection in Chhattisgarh state through Panch Prayas

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Presenting Author: **Dr. S. L. Gupta, Consultant NLEP, SHRC, Raipur**

Chhattisgarh State is one of the endemic state for Leprosy in India. New Case detection rates and disability grade 2 among new cases both are comparatively higher. Early case detection and MDT coverage is the key to reduce the burden of Leprosy and reduce the disability grade 2 among new cases is priority during next 5 year plan.

A sustainable strategy for early case detection has been tried in 2 endemic districts of Chhattisgarh State and found suitable. A unit of 5 persons – Mitanin, Anganwadi workers, ANM, Students and Panchayat Members (Local Government) representing 5 institutions has been involved and coordinated by District Program Officers.

This new approach of “Panch Prayas” was tried from last year in 11 gram Panchayats through Mitanin Trainers. Mitanin is a community Health Volunteer acting as a link between Health Care System and Community. Mitanin also holds an important position as Coordinator in Village Health and Sanitation committee (VHSC). Out of these 11 Gram Panchayats, one Gram Panchayat M K Behara of Mahasamund District has been made Kushta Gyani and Leprosy free.

This strategy also resulted in community participation and stigma reduction. This strategy seems to be effective, replicable and sustainable.

Integrated Basic Health Services for Persons Affected by Leprosy

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Presenting Author: **J. B. Singh**

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Abstract:

Basic health services for persons affected by leprosy remain inaccessible due to their inhibitions & fear of discrimination and no priority by provider of services. Treatment of common ailments of persons living in 6 leprosy colonies was extended to their door step by general health care system supported by Netherlands Leprosy Relief India.

Health camps for 1 day duration was organized in leprosy colony where provision of doctor, pharmacists, drugs, common laboratory test and counseling was provided by state government and Netherlands Leprosy Relief India provided organizational & logistic support. 14 such health camps were organized during 2010 & 2011. 1129 persons avail the facilities. Difficult cases were referred to hospitals and facilitated for further investigations & treatment.

Frequency of health camps to be organized in leprosy colonies is judged by need assessment, avoiding dependency on camps.

An integrated approach for DPMR services

Author/s: **G. Dixit, M.A. Arif, P. R. Manglani**

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Abstract:

Under National leprosy Eradication Program, an emphasis on “Disability Prevention and Medical

Rehabilitation” was provided since 2007. Netherlands Leprosy Relief India took the initiative to involve general health care staff in developing “Self-care Groups” with the objective to control the disabilities.

Protocol was developed & discussed with district program managers. General Health care staff were identified and trained to perform need assessment, providing training in self-care and supervise self-care practices. Quarterly review meetings to assess the progress and stake holders meeting to integrate rehabilitation services were organized.

2746 persons with disability due to leprosy living in self-settled colonies in NLR supported districts joined self-care groups and 769 persons from scattered villages from 36 blocks practiced self-care under supervision of GHC staff. MCR foot wears and assistive devices were provided to 1386 needy persons.

72% planter ulcer healed within a year. Complicated ulcers were referred to nearby hospitals. Recurrence of ulcer within two year was negligible.

GHC staff feels confident in carrying out activities related to self-care & DPMR. A further persuasion to GHC staff is required to continue this activity without NLR support.

ASHAKIRAN - A comprehensive care project for persons affected by leprosy

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Abstract:

Netherlands Leprosy Relief India is supporting National leprosy Eradication Program in Jharkhand state since year 2000. Services were extended to persons with disability due to leprosy

in the form of developing self-care groups in leprosy colonies and to those living in scattered villages too.

ASHAKIRAN project was started in 2010 in a group of leprosy colonies named as Ashadan in Bokaro city. Main activities include training in self-care by 112 persons, education support to 107 children, a library with computer coaching, tube wells for drinking water, 140 solar lanterns & 5 solar street lights, 32 cataract operations, vocational training to 4 eligible persons, 119 aids & appliances and counseling for better living.

More stake holders were identified & involved A committee was formed to monitor rehabilitation activities and sustain the care. Difficulties and achievements will be displayed.

Disability control by self-care at Home in Bihar

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Abstract:

Netherlands Leprosy Relief India is supporting NLEP in 5 districts of Bihar. It provided support to promote self-care with the objective to empower and enable the disabled persons affected by Leprosy to practice self-care in their respective homes/villages. It was supervised & monitored by General Health Care Staff.

Identified Persons affected by leprosy were collected at selected PHC and trained in self-care with the objective to learn how to take care of their disabilities themselves. Selected general health care staff was trained in supervising self-care. Essential logistics such as MCR foot wears & crutches were provided. 55 ASHA (village volunteer) helped the persons in learning and adopting self-care practices.

105 persons affected from 2 blocks joined self-care workshops. 80% of planter ulcer healed. Secondary impairments were controlled and recurrence of ulcer was checked. Further follow up is being done by general health care staff.

Impact of NLR support- few glimpses

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Abstract:

International Federation of Anti Leprosy associations (ILEP) is supporting NLEP in the state of Jharkhand. Support provided by Netherlands Leprosy Relief India (coordinating agency) in 16 districts during 11th five year plan included training of District nuclei, trainers, doctors & supervisors at PHC level, workshops on Result Based Management, coordination meetings with administrators & partners and supervisory visits to improve the quality of services.

Results of support are seen in the form of "Result Based Plan" of districts, own trainers from GHC system developed, district program officers trained in supervision & monitoring, better coordination among partners, improved DPMR services, treatment of leprosy reactions extended to more persons and referral services to complicated cases. Reconstructive surgery was started in government medical college hospital, Self-care practices started in all leprosy colonies.

ILEP support will continue during 12th plan period to sustain the achievements and further reduce the disease burden along with improving the quality of services.

Prevention of recurrence of ulcers in persons affected by leprosy

Author/s: **P. Patra, A.K. Som, P.R. Manglani**

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Abstract:

Recurrence of planter ulcer was a common problem of persons affected by leprosy living in leprosy colonies in West Bengal. A plan of developing "Self Care Groups" in 14 colonies of West Bengal developed by Netherlands Leprosy Relief India was implemented in 3 districts in collaboration with general health care staff under DPMR component of national program.

264 persons affected joined the groups. Each group had 10 members on an average. Groups were facilitated to select a leader among themselves. Each member was facilitated to learn self care practices and counselled to adopt it in their routine life activities. They were provided protective foot wears and assistive devices as per need assessment. Government staff supervised and monitored the activities periodically.

Results were very much encouraging. 92 persons out of 108 with planter ulcer healed within a year. Large ulcers, infected ulcers and those with pieces of dead bones were referred for surgical treatment. All 264 members were able to prevent secondary impairments.

Borderline Tuberculoid Leprosy – Clinical Diagnosis and Histological Correlation

Author/s: **Lakshmi Rajan, Joyce Ponnaiya and Mannam Ebenezer**

Presenting Author: **Lakshmi Rajan**

Institute/Organisation: Schieffelin Institute of Health Research & Leprosy Centre (SIHRLC), Karigiri.

The purpose of the study is to find out correlation between the clinically diagnosed Borderline Tuberculoid Leprosy with histopathology.

During the year 2010, a total of 475 skin biopsies were sent by various leprosy referral hospitals to

Pathology department of SIHRLC for leprosy diagnosis. Out of which 227 skin biopsies were clinically diagnosed Borderline Tuberculoid Leprosy and sent for histological confirmation. The skin biopsies were fixed in formalin; proceed in automatic tissue processor, embedded in paraffin wax, cut into 5 micron thin sections, stained with Haematoxylin & Eosin and also for acid fast stain for lepra bacilli.

Of the 227 clinically diagnosed Borderline Tuberculoid (BT) Leprosy, 138 (61%) were confirmed as BT leprosy histologically. Of the remaining, 59 biopsies has no evidence of leprosy, 30 biopsies were diagnosed histologically as Borderline Lepromatous leprosy and Borderline Borderline leprosy.

It can be concluded that there is a chance of misclassification and misdiagnosis, if the diagnosis is based only on clinical picture. It is essential to retain leprosy expertise in histopathology at Tertiary referral Centre.

Disability Prevention, Care and Rehabilitation in the Integrated setup: Initial Experiences.

Atul Shah, Neela Shah

Integration of leprosy in to general health care services can improve the reach of disability prevention and care activities to leprosy and non leprosy disabled patients at par without stigma or discrimination.

The training of general health care staff for the identification of primary cases, disability grading and appropriate referrals for reconstructive surgeries has benefits of reaching many leprosy as well as non leprosy cases at the same time.

Through the Novartis Foundation for Sustainable Development we had reached the general healthcare staff and trained them to care for leprosy affected not only at India but also at Sri Lanka. The poster explains the aims and methodology for sustaining leprosy services in the integrated set-up.

A System of Prevention and Care of Disabilities in Leprosy

Atul Shah, Neela Shah

The "System of Prevention and Care of Disabilities in Leprosy" has been developed by Novartis Comprehensive Leprosy Care Association to reach benefits of various modalities of disability prevention, correction and care from the point of public health angle.

Clear guidelines on management of such cases have been developed using WHO grades.

Stepwise approach is followed in field area for prevention of secondary disabilities in already established cases.

This system also empowers the affected person with simple and effective tools to prevent disability and understand the need for referral for RCS.

The system will be illustrated through appropriate pictures and diagrams.

RFT Surveillance of children show the need for continuing care of leprosy affected children

Neela Shah, Atul Shah, Aashish Sangvikar, Rajneesh Galwa

Leprosy still remains to be a social and public health issue; especially in our country, where alarming number of newly detected leprosy cases are found every year. Leprosy affects not just the lives of those suffering from this dreadful disease but also their family members. Children are all the more susceptible to this disease than adults. The reason is their still developing immunity and possible intra-familial contact. Childhood leprosy is mostly seen in age group 4 to 14 years of age. Today, India has the highest number of children detected with leprosy.

According to the latest estimate by WHO, India has reported 13,610 childhood leprosy cases. In a survey conducted at Thane district in July 2011, it was observed that there were in all 40 childhood leprosy cases registered from the area in that

month itself. 22 of these cases were male cases and 18 were female cases. These findings highlight not only the seriousness of leprosy amongst Indian children but also reveal the great need to address this issue at the earliest.

Leprosy in children, particularly with neural involvement leads to life-long suffering and associated stigma. In such cases, it becomes necessary, that these children receive whatever treatment necessary at the earliest possible. Awareness, active case detection especially among those with intra-familial contacts and motivation are the essential needs of the hour to prevent permanent deformities in leprosy affected children.

Hence, NCLCA has taken up "Looking After the Future" as a special Child Care Programme. This Child Care Programme constitutes of organising several DPMR camps across the country. They are examined to detect high risk cases which are likely to develop deformities. As per the requirement, these children are then provided with splints, Self-Care Kits, MCR footwear etc. Those in need of RCS are allotted a date and centre for surgery. Since most of these children come from a poor background their parents are given travelling compensation.

In the study carried out by NCLCA it was seen that nearly one third of children either had signs of disability or were at risk of developing disability. In other two third cases some of the cases did not exhibit any signs or symptoms of leprosy after cure. It is necessary to collaborate the findings with records as to they were detected and charted with disability or they have developed disability later i.e. after RFT.

Economic Rehabilitation Program for Income Generation following RCS

Neela Shah, Atul Shah, Ashish Sangvikar, PVDave

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A person affected by Leprosy doesn't only need treatment with drug therapy but also behavioral and social rehabilitation. Of these economic rehabilitation assumes more significance so that these persons are rehabilitated in sustained manner through low cost high yield programs so that they become self dependent & feel themselves as a part of the society. This is definitely applicable after RCS of the patient that he gets a gainful employment. Otherwise even general public may lose confidence in ability of RCS. One of the study has shown that satisfaction after RCS is good for correction of deformity. Our follow up in the past has shown that nearly 85% of patients had increased their daily income following economic rehabilitation program.

Economic rehabilitation is a low cost high benefit activity, boost the moral of the person, prevent being burden on the family/ society & gives sense of social obligation.

Grip Aids for Leprosy and Non-Leprosy patients

Neela Shah, Vilaben, Mahendra Patel, Nilesh Shah, Dilip Bhavsar

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Introduction: Claw hand is a characteristic crippling deformity in Leprosy. Combined sensory & motor dysfunction results in irreversible damage to fingers resulting in sever deformed hands which makes person difficult to carry out his/her daily activities. Grip Aid is a simple but innovative way which enables patients with advanced claw hand deformity to carry out the the activities of daily living.

Aim: A simple but innovative method for instant benefit in activity of daily living in advanced hand deformities.

Method: Patients given Grip Aids were the ones with grossly deformed hands, with fixed contractures of the fingers, loss of sensation with resultant slippage of objects from the hands.

Results: Grip Aids help in restoring functional mobility of the crippled hands and decrease dependence on others. It facilitates a grip even in most crippled hands & considerably improves the quality of patient's life instantly.

Transverse Arch Correction - A new technique in ulnar claw hand

Atul Shah

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Majority of the techniques for correction of claw hand do not correct the transverse arch. Ranney therefore suggested that an extra tendon transfer may be carried out by use of Extensor Indicis Proprius. Since that entails substantially extensive RCS and post op re-education, the author has designed the new technique of using the FDS ulnar slip routed under the vascular bundle of ulnar hypothenar region to reach and be sutured to abductor digiti minimi and capsule of MCP joint. Excellent results are obtained. The limitation of the operation is that it may not be applicable in the total claw hand. However, in a personal communication Late Dr. Kazen said that he employs 5 slips instead of 4 from the FDS and sutures it to the same insertion and thanked author for demonstrating the new technique. This poster represents the steps and results.

DPMR- A camp and workshop approach- New beginning for old patients

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Disability prevention and medical rehabilitation includes the medical education for recognition of early disabilities, health services to prevent disabilities and physical improvement aimed at

social well being. The objective of DPMR have been to reach RCS to those who need, to transfer surgical skills to surgeons and to provide training to health care workers. The training of health care workers includes disability prevention, disability care services and criteria for selection of cases for RCS. The camp services involves provision of splints, selfcare kits, grip-aids, MCR footwear and selection for RCS. The workshop consists of demonstration of operations and training of resident doctors. The patients are carefully followed up and provided with economic rehabilitation post operatively. Collaboration with NGOs is essential in rendering assistance to patients for traveling and for loss of wages. Medical colleges play a pivot role in DPMR services and training of surgeons.

Drug susceptibility study of *M. Leprae* in Multi bacillary leprosy cases using Mouse Foot Pad model

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The Experimental study of *M. leprae* obtained from 31 clinical positive, highly bacilliferous Multi Bacillary type of Leprosy was inoculated into the hind foot pads of Balb/c mice using standardized, validated method. The study group consists of mice inoculated with *M. leprae* from the following type of leprosy patients. Group I (untreated n=8), Group II (leprosy patients treated with MDT n=10), Group III (cases of MDT relapse n= 7) Group IV (Type II Reaction n=3), Group V (Histoid type of Leprosy n=3). Our drug resistance study results indicate that MDT relapse is low (referring on drug susceptibility data). However, necessary vigilance and monitoring of MDT relapse is recommended in the years to come.

Unknown Science of Leprosy explored for the benefit of human society

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Keywords: *Leprosy, multispectral disease, multi-system disease, Ayurveda*

Abstract

Medical science has progressed beyond limits with new technology of investigation and treatment but scientists fail to see the human nature and his body changes in diseases with an open eye and concentrated mind and never tries to understand the real cause of human ailments. Leprologists so far are more concerned on the prevention and repair of the deformity. But it is only a tip of an iceberg. My paper deals with the manifold clinical infestations of Leprosy and the need for the coordinated approach among modern medicine and Ayurveda to cure diseases. The study is mainly based on the clinical history, the clinical manifestations of leprosy as far as disease is concerned. Mycobacterium Leprae affects peripheral nerve, autonomic nerve and reticulo-endothelial tissue either directly or indirectly through delayed type of hypersensitivity reaction or through transmitters. This type of affliction upset the metabolism, physiology and morphology of human system thus altering the balance of Thridoshas causing all type of disease. According to Ayurveda human ailments are due to the upset of "Thridoshas". This investigation reveals that cause for upset of thridosha being the infection of Mycobacterium Leprae, thus stating that the basic cause for almost all human ailments is Leprosy. It presents as a multispectral and multisystem disease and

not as a mere deformity and skin disease. The author concludes by stating that as man is borne out of "Panchabhoothas" remedy for Leprosy or the diseases – lay in the nature itself and nature should be utilized for curing ailments especially through Ayurvedic branch of Indian medicine for betterment of human society.

The burden of new leprosy cases in India: a population based survey in two states

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Scientist F

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The study was initiated to assess the burden of new leprosy cases along with disability burden in India. A sample survey of 800,000 persons was undertaken in 8 districts; 4 in Haryana (Low endemic for leprosy) and 4 in Uttar Pradesh (High endemic for leprosy) on the request of World Health Organization. The survey suggested that actual burden of new leprosy cases in India could vary from 4.41 to 10.74 per 10000 populations as against the combined reported figure of 1.09 in these districts. This amounts to the actual burden of leprosy may be 4.03 to 9.83 times of the reported figure. The survey data confirms that large numbers of early leprosy cases along with others do not reach the health facilities where leprosy treatment is provided or reach later and thus MB disease in passive reporting is high. However this could also be an indicator of knowing that either transmission is ongoing or large number of other cases are not sufficiently motivated or lack knowledge to utilize the diagnosis and treatment services of their own. Thus the programme needs to be designed to meet these objectives so as to help to reduce the leprosy burden in the community.

The profile of Leprosy seen in the post elimination period at a tertiary leprosy referral centre in Tamil Nadu

Author/s: **Nirmala Jyothi P, Mannam Ebenezer, David Prakash Kumar**

Presenting Author: **Nirmala Jyothi P**

Institute/Organisation: Schieffelin Institute of Health – Research & Leprosy Centre, Karigiri.

Abstract

Purpose of the study

The purpose of this study is to note the profile of Leprosy patients attending a Leprosy hospital in the post elimination period.

Methods used

A hospital based retrospective study of the changing profile of Leprosy patients in the post elimination scenario in a tertiary referral centre in Tamil Nadu was done. The institution has a database where the complete records of every patient are maintained and the data from these records was analyzed for the period from 2008 to 2011.

Summary of the results

A total of 649 patients were studied over a period of 4 years from 2008 to 2011. There was a drop in the total number of patients from 210 in 2008 to about 158 in 2011, which is a drop of about nearly 25%. The records show that there has also been a drop in the number of patients classified as Paucibacillary from 21.5% in 2008 to 8.5% in 2011. The number of patients classified as Multibacillary has seen an increase over the years from about 78% in 2008 to 91.5% in 2011.

There has also been a significant change in the number of patients who present with Grade 2 deformities. The percentage of the patients with Grade 2 of the total number in 2008 was 28.6% (60 out of 210). It was 26.1% in 2009 (41 out of 157) and it had decreased to 29 out of 132 (22%) in 2010 and further decreased to 13% in 2011 (18 out of 134). The percentage of grade 1 patients

identified in 2008 was 17 and it was 16 in 2009, 20 in 2010 and 29 in 2011. This change shows a significant decrease in the Grade 2 deformity patients over the years and an increase in the Grade 1 patients from 2008 to 2011.

Age wise distribution of the patients was analyzed and was found that the proportion of children identified with leprosy is similar over the years and is between 3 to 6% of the total patients identified. 34.8% of the patients were smear positive in 2008, 35.7% in 2009. In 2010, it decreased to 22%, but increased to 40% in 2011. The Female: Male ratio has been relatively static and was 1:1.2 in 2008, 1:2 in 2009, 1:1.8 in 2010 and in 2011 it was 1:1.3.

Conclusion:

The new case detection of Leprosy has decreased over the years. The increase of grade 1 disability in patients emphasises the need for adequate health education and self care to prevent worsening of the disability. The identification of a large number of patients with smear positivity is a cause of concern.

Incidence of relapse in multibacillary leprosy after 12 months fixed duration WHO multidrug therapy: The Agra field cohort study

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Abstract

Background: Reported low relapses after 24 months multidrug therapy for multibacillary leprosy led to recommendation of reducing duration of therapy to 12 months. However just a few reports exists based on 12 months fixed duration therapy. Present study reports incidence of relapse in MB leprosy patients after 12 months treatment.

Methods: The leprosy patients detected in field surveys during 2001-06, were put on 12 months FDT (WHO-MDT) and followed up for treatment completion, cure, relapse, reactions and development of disability. The assessment was done clinically. Data collected in years of follow up has been analyzed using SPSS software, risk and survival analysis was performed and test of significance used.

Results: The incidence of relapse was found to be 1.99/100 person years of follow up. The incidence of relapse by age, sex, delay in detection, clinical status, smear status was not found to be significantly different but patients with 2 or less nerve involvement were observed to have higher relapses than those with 3 or more nerve involvement ($\chi^2_{MH} = 5.50$, $p=0.02$). The study therefore suggests that observed incidence of relapse is as similar to the relapses in 24 months FDT for MB leprosy.

Conclusion: This field based study helps to conclude that relapses do occur and almost as much as in 24 months FDT for MB leprosy. Although, early relapses may be due to insufficient treatment, the late relapses may be due to persistent dormant mycobacterium. However, a long term study relating to immunological response of treatment and follow up changes in immunological profile may suggest more information on causes of relapses.

Comparison of two DNA Isolation methods for detection of *M. leprae* from water and soil samples by RLEP-PCR

Dheeraj Katara, Farah Naaz, Lama Misba, P. S. Mohanty, D. K. Dwivedi, Dillip Shakya, Kiran katoch

NJIL&OMD, Agra

Abstract

Two methods of isolating *Mycobacterium leprae* DNA from water and soil samples for testing by RLEP-PCR were compared for different concentrations of Tris-HCl, EDTA, sodium dodecyl

sulfate (SDS) and Triton X with and without sonication. Each extraction method was repeated three times. RLEP-PCR was performed on the Applied Biosystem thermal cycler using primers targeting 129-bp fragment. The limit of amplification of *M. leprae* DNA was 100ng with existing protocol whereas it was in between 50-70 ng with modified protocol. Isolation of DNA with Triton X failed to detect *M. leprae* in RLEP-PCR. The modified protocol yield comparatively more and pure *M. leprae* DNA than the existing protocol.

Detection of *Mycobacterium Leprae* DNA in Water and Soil Samples of Patient Dwelling Areas

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Abstract

The present study was conducted to investigate the role of environmental sources in the transmission of *Mycobacterium leprae*, the causal of leprosy. A total of 167 samples were subjected to PCR using RLEP specific primers that amplified a 129bp product. The samples were collected from 15 villages of Ghatampur region of Kanpur district (U.P.). Out of these, 62 samples were slit skin scrapings of the patients presenting different clinical stages of infection, 51 samples of water and 24 samples of soil were from patient dwelling areas and the rest were water (15 samples) and soil (15) samples from the areas of the same villages where no patient were found to live (non-patient area). On PCR, 20 percent of slit skin samples were found positive while 17 percent of water samples and 8 percent of soil samples from patient dwelling areas showed amplification, while no sample from non-patient area showed any amplification. The results suggest that further

investigations in this direction such as detection of viable *M. leprae* bacilli in environmental and clinical specimens and tracking of strain variation may provide important information in order to understand the transmission dynamics.

Keratoacanthoma – like ENL lesions as the presenting feature of lepromatous leprosy in a pregnant female patient

Dr. Nikita Lodha, Dr. Swapna Khatu, Dr. Resham Vasani, Dr. Akreti Sobti, Dr. Shital Poojary, Dr. Niranjana Nagpur

Presenting author – **Dr. Nikita Lodha**

K.J. Somaiya Hospital and Research Centre, Sion, Mumbai

Abstract- A 25-year-old pregnant lady, in 25th week of gestation, presented with abrupt onset of multiple erythematous, tender, papulonodular lesions with central umbilication over bilateral shins since 02 weeks. Lesions continued to increase in size and numbers involving the helices of the ears, dorsa and palms of hands over the next 05 weeks. There were no constitutional manifestations. Rest of the examination was within normal limits. Histopathological examination of a nodule revealed neutrophilic infiltration and vasculitis over a background of foamy macrophages in the lower dermis. Fite faraco stain revealed clumps of uniformly stained lepra bacilli confirming the diagnosis of lepromatous leprosy with ENL. Patient was treated with MBMDT and tapering doses of oral corticosteroids. She responded well to therapy with resolution of ENL lesions within 02 weeks of therapy.

Discussion- Women already infected and incubating leprosy are likely to show overt signs of the disease in pregnancy. Depression of CMI, stress and an increased susceptibility to infections are factors known to precipitate ENL in the third trimester and peripartum. A presentation of ENLs as umbilicated nodular lesions resembling keratoacanthomas has not

been reported till date. The case is being reported for its unusual manifestation of ENL as a presenting feature of lepromatous leprosy in pregnancy.

Promoting RCS in secondary and tertiary centers by LEPRO Society: experience from Odisha

Dr. SN Pati*, Dr. LK Karmi#, Dr. PKB Patnaik#, Mr. Kameswar Rao*, Mr. Esvar Rao#

**LEPRO Society*

#Govt. of Odisha

Introduction

Reconstructive surgery (RCS) is an important component of leprosy services. On RCS limited service was confined to pioneer institutions and NGOs in the past and only in recent years initiated in the GHC system, that too at tertiary centre level. LEPRO as ILEP coordinator, in Odisha has experimented promoting RCS in all types of in GHS institutions. Functioning in the secondary level referral centers at district level seems more patient friendly. The objective of this presentation is to present the learning in various centers.

Methods and results

To start with, some motivated surgeons have been identified from Medical Colleges and district hospitals. Some of them were highly proactive to equip the OT, mobilize beds and surgery consumables from the district hospitals. The physiotherapists now absorbed in the state service, and already trained in LEPRO centers supported in the process. From 2006, in total 1307 cases have been operated. In the special follow up initiated recently 285 (M 222 & F 63) cases have participated. Type of corrected deformities assessed were 314 which includes ulnar claw 149, median claw 30 triple nerve 1, drop foot 116 and lagophthalmos 18. The status of the operated persons was evaluated on some important parameters related to daily activities and socioeconomic status to be detailed during presentation. The result was found to be good in 249 (78.3%), fair 42 (13.4% and poor 23 (7.3%) of cases.

Conclusions

Accessibility for surgery and follow up is better in district hospitals. There is service of DNMO for easy coordination of surgery. Since RCS is fairly new in GHS, for some time the surgeons and other supporting staff must get some incentive from the grant provided to the institution.

Expression of CXC Chemokines during *Mycobacterium leprae* infection in human skin tissues

Authors: **D S Chauhan, K.D. Rawat, M. Chahar, V M Katoch** , Kiran Katoch, Mohan Natrajan, U D Gupta and Beenu Joshi**

Presenting Author: **D S Chauhan**

** *Secretary DHR and DG Indian Council of Medical research*

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Objective of the Study: Chemokines are small, mainly secreted, peptides about 8-12 kDa in size that are required for the correct mobilization and migration of immune cells at the site of infection. They are also required for a variety of essential functions, some of which overlap with their immunological effects. This study has focused on the expression of chemokine genes and to address the involvement of these chemokine in cell migration and granuloma formation during *Mycobacterium leprae* infection in human skin lesions.

Methods: 35 skin biopsy samples BT=6, BB=14, BL-LL=12 patients and 3 healthy volunteers were included in this study and experiments were performed. These biopsy were collected in RNA *latter* for mRNA expression study and equal part of biopsies were collected in 10% buffer formalin for histopathological analysis. Total RNA was isolated from the human skin tissue and cDNA was prepared. The expression level of Chemokines genes (CXCL8 and CXCL10) was

measured by Real-Time PCR. This was further confirmed by *in-situ* methods which demonstrated the expression of Chemokines inside infected tissue.

Results: Chemokines CXCL-8 was found significantly higher in lepromatous (BL-LL) patients as compared to BB leprosy patients, in BT it was down-regulated. CXCL-10 was found higher in lepromatous (BL-LL) than other cases (BT, BB) of leprosy. Maximum infiltration (59.38 %) was occurred in BL-LL cases of leprosy. *In-situ* RT-PCR was done to confirm the presence of these Chemokines. Interestingly, CXCL-8 and CXCL-10 showed higher expression in same category (BL-LL).

Conclusion: This study suggests that CXCL-8 and CXCL10 may have a role in lepromatous form of the diseases.

Impact of involving ASHA in Uttar Pradesh

Author/s: **M. Mahato, A. Siddiqui, M.A. Arif**

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Abstract:

Accredited Social Health Activist (ASHA) one of the key components of the National Rural Health Mission is functioning in village as an interface between the community and the public health system. NLR supported the training to 771 ASHA in 4 districts of U.P. for suspecting leprosy, improve patient compliance in MDT & self - care and spread awareness in her village. New cases brought by ASHA increased from 15% to 35%. Female to male ratio also increased. Results were encouraging There is slight decrease in disability grade 2 among new cases. 16 ASHA brought 27 disabled persons at PHC for workshops on self-care and monitored their practices at home in their villages mainly for disability control. ASHA is

the first port of call for any health related demands of deprived sections of the population, especially women, children, old aged, sick and disabled people. Investment in ASHA will prove useful in health of villagers & disabled.

Recurrence of lesions in leprosy after completion of treatment – Two case reports

Khanolkar S, Kute A and Pai V V

Introduction

Success of Multidrug therapy (MDT) is well known, however clinical problems like recurrence of lesions, relapses, nerve damage, late reactions continue to pose challenges. We report below two such cases in which recurrence of lesions posed clinical problems.

Case 1

SP, M /35 years diagnosed as BL leprosy treated by Private Practitioner with MB MDT and prednisolone (40 mg) from Aug 2005 to July 2006. In June 2006, he developed multiple new patches and also right ulnar neuritis with Grade 2 deformity, managed with second course of prednisolone. In Sept 2006, developed bullous ENL and treated with prednisolone. Smears were positive. In May 2007, presented with erythema multiforme and thalidomide was administered. From May 2007 to July 2009, developed acute right ulnar neuritis and put on prednisolone for fourth time. In Jan 2010, nerve decompression was done for right ulnar nerve abscess. In Jan 2011, developed Type I reaction and managed with Clofazimine and Prednisolone regimen. In August 2011, in view of recurrence of skin lesions (smears negative), skin biopsy was done to rule out Relapse. Histopathology was suggestive of doubtful BB with doubtful type I reaction.

Case 2

CJ, M/56 years diagnosed as BT leprosy was treated by Private practitioner with MDT (24 months) from June 2006 to April 2008 and prednisolone from May 2006 to Oct 2006. He

developed Right facial palsy and treated with Prednisolone from June to Dec 2007. Later in Sept 2009, he presented with Left facial palsy and treated with prednisolone from Sept 2009 to April 2010. In Dec 2010, he developed multiple new hypopigmented lesions (smears were negative) for which he was put on combination of prednisolone and Clofazimine.

Conclusion

Despite completing Multidrug therapy, lesions continue to recur and in absence of smear positivity, it becomes difficult to confirm as relapse. Occurrence of reactions and nerve function impairment during surveillance period also indicates need for strict vigilance and prompt management to prevent worsening of deformity.

Assessment of Disability care in Rural POD programme

Pai V V, Patkar S, Dhamale C B, Patil V and Patil R

Introduction

Extending its expertise and technology on POD care and services from urban slums, Bombay Leprosy Project has been offering POD care and services to rural areas of Bhiwandi taluka in Thane district since 2007. We present below our experience on the impact of POD services in rural areas.

Materials and methods

POD care and services were provided to patients distributed in rural population of 2,93,058 comprising 6 PHCs after series of campaign to identify patients with grade 2 deformity. Location of patients in villages with PHC as nucleus was shown in maps to study distribution for planning of services and follow up. Disability services in the form of various splints, wax therapy, MCR footwear, ulcer care for simple and complicated ulcers was provided to patients with 362 Grade II deformity (PR of Grade II 18/10,000). Services were provided by community volunteers and doorstep services in the field. Assessment of

impact on services using special format was undertaken to ascertain the status of deformity.

Results

Maximum improvement was seen in mobile claw hand (46%) and (31%) patients with abduction deformity and in 32% patients with fixed claw hand, deformity could be prevented from worsening. As regards foot problems, simple planter ulcers showed good improvement with healing in (57%) patients, while recurrence was observed in (9%) of patients.

Conclusion

The analysis reveals alarming dimensions of disease burden in rural community and community based POD care and services using simple aids and appliances to patients with deformity practiced in rural areas can provide reasonable improvement for correction of deformity and as well prevent further worsening of deformities.

Role of Clofazimine in type I reactions in Leprosy

Pai VV, Vikas H, Rathod V, Shinde M and Khanolkar S

Introduction

Utility of Clofazimine in view of its anti inflammatory effects is well known in the management of chronic and recurrent ENL reactions. Its role in type I reactions is not studied fully. We present below our observations on the role of Clofazimine in type I reactions in leprosy.

Materials and methods

Analysis to study role of Clofazimine in management of patients with type I reaction was undertaken. Leprosy patients with recurrent reaction attending Main Referral centre and satellite clinics of Bombay Leprosy Project were recruited. Thirty patients with type I (14 patients) and type II (16 patients) with chronic and recurrent reaction were included. 24 were males and 6 females. All patients were subjected to detailed clinical, bacteriological and neurological

examination. Clinical photographs taken in selected cases. Patients were then put on a standardized anti inflammatory regimen of clofazimine and followed up for one year.

Results

Out of 30 patients, all completed course of clofazimine regimen and follow up of minimum period of six months. Amongst 30 patients, 24 improved with no recurrence during follow up period of six months to one year, while 6 (20%) developed recurrence. Recurrence was seen in both type I and type II reaction mostly after six months of stopping Clofazimine. No major adverse effects observed. With this regimen reactions could be controlled in most of patients and could be kept reaction free and nerve damage prevented.

Conclusions

We believe Clofazimine when used in higher doses over long adequate period of time is an excellent drug to control type I and II reaction and also prevent recurrences while the need to administer steroids is obviated greatly. It also helps to wean patients dependent on steroids.

To eliminate leprosy, finds the leprosy

Authors: **S.R. Dhote, Dr. Keshari Prasad, Ku. Ulka Yadav**

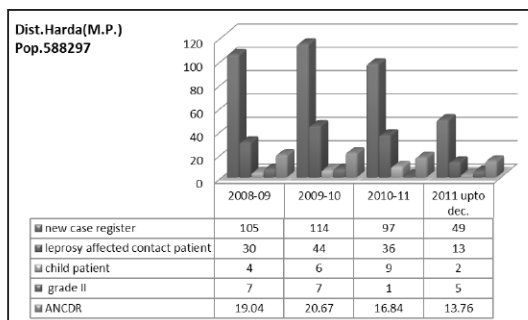
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*Institute/organization: District nuclease team
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Introduction/Objective: A huge work done to eliminate leprosy in M.P. in the form of MLEC/SAPEL and other activities but then also **Annual New Case Detection Rate** was not decreasing but actually, it was very constant, every year the **ANCDR** was near the last year.

Strategy: we were thinking about the constant ratio and suddenly, a surprising fact came in front of me that the most of the new patients were



having residence near the **MB, RFT** and **UT** patients and from the group where the awareness about the leprosy was still very low. And thus we started a new activity to aware the people about leprosy in **RFT&UT** patient areas.

Methodology: Now our District nucleus team scheduled our every month with new case door-to-door validation and RFT&UT patients home visits at the marked area of our district and shows the symptoms of leprosy patient and the relief he/she got after the treatment among the crowd.

Conclusion: As a result, people started coming at our centre with query about their skin lesion, we got patients of early stages, and now we have surprisingly raised ratio of **LACP** and decreased ratio of **ANCDR & child** cases this year.

Detection of *M leprae* DNA from nasal and slit skin smears from paediatric leprosy patients using RLEP PCR

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National JALMA Institute for leprosy and Other Mycobacterial Diseases (ICMR), Taj Ganj, Agra

Background: Early leprosy is difficult to diagnose, more so in paediatric age groups as the signs of early disease are subtle, difficult to elicit and unpredictable co-operation which is expected in the age group. More over sensory loss is difficult to assess in this population. Early diagnosis and

treatment are mandatory as if left undiagnosed and untreated it may lead to paralysis and deformities.

Objectives : Assessing the feasibility and efficacy of detection of *M leprae* DNA using RLEP PCR in nasal smears and slit skin smears in leprosy.

Patients and Methods: Twenty three clinically diagnosed cases of leprosy were included in the study after taking their informed consent. The patients included 1 case of Indeterminate leprosy, one of TTT type, 7 of BT type, 12 of BB type, and 2 of LL type. Slit skin smears were taken from the active site and smears prepared and stained by ZN staining and read under light microscope for presence of AFB. In addition one more smear was done from each of the above patients and blade immersed in sterile tubes containing TE buffer. Nasal swabs were also taken from each patient using sterile swabs from one nostril and swab put in separate tubes containing TE buffer. DNA of *M leprae* was extracted from pellet of material obtained after centrifugation from each of the samples by method described by van Embden and RLEP PCR performed using specific primers. LEP1 and LEP2. Ten non leprosy skin disease paediatric patients were also subjected to the same tests after obtaining their consent for the same and these acted as controls for the study. The results obtained were tabulated for each patient and compared.

Results: Only one patient was skin smear positive while the others were negative for AFB. RLEP PCR was positive in 16 of the 23 patients skin smear scrapings examined and was also found positive in 10 of the 23 nasal swabs examined using the same methods and probes. None of the controls were positive for *M leprae* RLEP PCR in the study.

Conclusion: RLEP PCR detection of DNA of *M leprae* is a sensitive method for early detection and definitive diagnosis of leprosy

Detection of hidden Leprosy cases in High ANCDR Districts of Maharashtra.

Maj. Dr. Pradip Gaikwad

Joint Director of Health Services, TB & Leprosy, Pune

Leprosy has been a major public health problem in some of the States in India and so in Maharashtra. The awareness in the population for self reporting of the lesions is still very poor. But the ANCDR of Maharashtra as on March, 2011 is 13.79 per lac population and by the end of September, 2011 it is 14.22 (for the period October 2010 to Sept, 2011.) In some districts ANCDR is more than 10 per lac population. Therefore it was necessary to look for the hidden cases so that they will be brought under treatment. Hence Govt. of Maharashtra has taken a drive during 3rd October, 2011 to 10th October, 2011 in 173 blocks of 19 districts and 24 urban area showing ANCDR more than 10 per lac population.

Results –

Total 2247 new cases were found during House to House Survey. Amongst them 894 MB and 1353 PB cases in which 1146 male, 1101 female and 308 children were found.

Conclusion –

It seems that such type of survey in all districts is frequently necessary to find out hidden cases due to reasons like stigma, social discrimination etc.

Is Leprosy Eradicated From India Misnomer

Dr. Gyan Prakash

Member Central Council of IAL

Ex. State Leprosy Officer, Addl. Director, U.P. H.S.

Can We Stop Transmission of Micro Bacterium Leprosy

Dr. Gyan Prakash

Member Central Council of IAL

Ex. State Leprosy Officer, Addl. Director, U.P. H.S.

I am presenting before you consolidated report of districts, where MDT Program was launched with full vigour and ability i.e. Endemic Districts of Leprosy before 1989. The tables in the poster clearly shows transmission of disease is going on every district as children are getting affected.

Is our immunity level is lowered - against the disease? When we will be more prone to disease, how much time is more needed for stop over transmission?