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Original Article

Current Scenario of Erythema Nodosum Leprosum: Clinico-demographic Profile of Patients Attending Dermatology Clinic at a Tertiary Care Hospital in Vadodara, Gujarat

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Erythema nodosum leprosum (ENL), an inflammatory complication of leprosy continues to be important. This descriptive cross-sectional prospective observational study, conducted at a tertiary care hospital in Vadodara, Gujarat, India from December 2021 to December 2022, aimed to classify ENL using the ENLIST ENL Severity Scale (EESS). We have assessed the socio-demographic and clinical variables as well as correlated them with the severity of ENL. Sixty patients were sequentially recruited and results showed a male predominance, in age group 21-40 years, with lower education and socioeconomic status. Lepromatous leprosy and chronic ENL were most common, with a mean EESS score of 11.6. Patients were categorized into mild and moderate/severe ENL groups based on EESS scores, where severity correlated with the extent and number of nodules. Moderate/severe cases more frequently exhibited fever, complex lesions, oedema, bone pain, arthritis, lymphadenopathy, and neuritis, underscoring their statistically significant association with severity. Data from this study throws light on the current demographic scenario, clinical profile of ENL and evaluates its association with severity. It may aid in guiding evidence- based treatment strategies which can be tailored as per the individual's symptomatic needs. Regular EESS assessment during follow-up appears to be important for tailored treatment strategies targeting individual symptoms.

Keywords: Type II Lepra Reaction, ENLIST ENL Severity Score, Gujarat, India

Introduction

Leprosy, often considered a scourge of humanity since ancient times predominantly affects the skin and peripheral nerves (Bhat & Prakash 2012, Reich 1987, Santacroce et al 2021). Its relatively uneventful course may be interrupted by immunologically mediated episodes of acute or subacute inflammation, which are known as lepra reactions (Kar & Chauhan 2017). These can be of two types: type I (reversal reaction) or type II (Erythema nodosum leprosum-ENL (Sardana & Singh 2020). The inflammatory nature of lepra reactions causes nerve function impairment and permanent disability, which adds to leprosy associated morbidity (Negera et al 2017).

ENL is a type III hypersensitivity reaction affecting about 50% of patients with lepromatous leprosy and 10% of patients with borderline lepromatous leprosy (Negera et al 2017, Kumar et al 2004, Walker et al 2017) which can occur before,

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during or after successful completion multi- drug therapy (MDT) (Pocattera et al 2006). It may be triggered by high bacterial load, infections, pregnancy, vaccination, psychological stress and anti-leprosy medication (Voorend & Post 2013). The onset of ENL is acute, but it may pass into a chronic phase and can be recurrent (Negera et al 2017, Pocattera et al 2006, Walker et al 2014). As compared to Type I lepra reactions, multiple episodes and chronicity are more common in ENL, and this is likely the reason why more ENL patients require hospitalization (Padhi et al 2019, Levy et al 1973).

A prospective study from Gujarat observed that 10.6% of new leprosy patients developed reactions (Uikey et al 2019); while in another Indian cohort study, the overall incidence of ENL among MB cases was found to be 8.9% (Padhi et al 2019, Desikan et al 2007). However in the post-elimination era, there is need of clinic-epidemiological data on ENL, especially from leprosy endemic states, to understand the cumulative burden of leprosy. Clinically, ENL is characterised by crops of tender, erythematous, partially blanchable papules or nodules with secondary changes like ulceration and necrosis (Negera et al 2017, Walker et al 2014). In 2017, the Erythema Nodosum Leprosum International Study (ENLIST) Group published the first study with an objective severity scale of ENL, the ENLIST ENL Severity Scale (EESS) (Walker et al 2012). Such objective assessment is especially useful for determining outcomes in complex, multisystem diseases like ENL. The scale incorporates assessments of pain and wellbeing using visual analogue scale (VAS), fever, skin lesion, oedema, joint and bone involvement and neuritis (Walker et al 2017). With an aim to gather more clinical experience we have assessed the usefulness of this scale on sixty patients of ENL to assess, classify and correlate clinical symptoms with severity of ENL.

Materials and Methods

This descriptive cross-sectional prospective observational study was conducted at a dermatology out-patient and in-patient of Department of Dermatology, Medical College Baroda, Vadodara, Gujarat, a tertiary care hospital in Central Gujarat, India. Duration of study was one year (December 2021 to December 2022). The permissions required for the study was granted by Institutional Ethics Committee for Human Research-Post-graduate Research (No. IECBHR/01-2022)

Clinical diagnosis of ENL was made when the patient presented with “erythematous, tender nodules or plaques that were evanescent and appearing in crops”. Patients having a minimum age of 18 years, and without cognitive and/or communication deficit were included in the study after taking an informed consent and signing an Informed Consent Form (ICF). Patients who were diagnosed with having type I lepra reaction and pregnant or lactating females were excluded from the study.

A detailed history in all patients regarding demographic details such as age, sex, religion, occupation, socio-economic status and literacy status as per modified Kuppuswamy scale 2022 (Sood & Bindra 2022) marital status, area of residence, family history of leprosy and history of hospitalisation for ENL was taken. Slit skin smear and histopathology for confirmation of diagnosis was performed in all cases. Bacteriological index-BI (graded as per Ridley’s logarithmic scale) and morphological index (MI) was estimated.

Clinical variables such as clinical form of leprosy, time duration of leprosy and ENL, disability grade (WHO 1988), presence of trophic ulcer and treatment given were analysed. ENL was categorised as acute, chronic or recurrent, based on the following definitions: “acute”, for a single episode lasting less than 24 weeks while on corticosteroids treatment; “recurrent”, if a

Pain Rating - Visual Analogue Scale (Ensure line is 100 mm long)

How severe is your pain today? Mark the line below with an X to indicate how bad you feel your pain is *today*

No Pain **Worst possible Pain**

ITEM		**SCORES**				
		0	1	2	3	**SCORES**
1	**VAS-Pain (mm)**	0	1-39	40-69	70-100	
2	**Fever (in °C)**	None (37.5 or less)	No fever now but history of fever in last 7 days	37.6-38.5	38.6 or higher	
3	**Number of ENL skin lesions**	None	1-10	11-20	21 or more	
4	**Inflammation of ENL skin lesions**	None tender	Redness	Painful	Complex	
5	**Extent of ENL skin lesions**	0	1-2 regions	3-4 regions	5-7 regions	
6	**Peripheral oedema**	None	1 site of Hands or Feet or Face	2-sites	All three sites (Hands and Feet and Face	
7	**Bone pain**	None	Present on examination but does not limit activity	Sleep or activity disturbed	Incapacitating	
8.	**Inflammation of Joints and/or digits due to ENL**	None	Present on examination but does not limit activity	Sleep or activity disturbed	Incapacitating	
9.	**Lymphadenopathy**	None	Enlarged	Pain or tenderness in 1 group	Pain or tenderness in 2 or more groups	
10.	**Nerve tenderness due to ENL**	None	Absent if attention distracted	Present even if attention distracted	Patient withdraws limb on examination	
	TOTAL					

Fig. 1 : The ENLIST ENL Severity Scale.

patient experienced a second or subsequent episode of ENL occurring 28 days or more after stopping treatment for ENL and "chronic", if ENL is occurring for 24 weeks or more during which a patient required ENL treatment either continuously or where any treatment free period had been 27 days or less (Negera et al 2017, Walker et al 2014).

Objective assessment of signs and symptoms was done using the ENLIST ENL Severity Scale (EESS), which consists of variables: Visual Analogue Scale for Pain, Fever, Number of ENL lesions, Inflammation of ENL lesions, Extent of ENL lesions, Bone Pain, Arthritis/Dactylitis, Peripheral Edema, Lymphadenopathy and Neuritis. EESS is simple and self-explanatory; it was applied to all patients and a score was calculated (Fig. 1, Walker et al 2012). The study participants were divided into two groups according to the severity of the cases as assessed by the EESS: group 1 (mild erythema nodosum leprosum) and group 2 (moderate/ severe ENL).

Collected data was tabulated in Microsoft Excel Worksheet 2019. Statistical analysis was done by the Chi Square Test and Fischer Exact test (performed for qualitative variables). A *p* value smaller than 0.05 was considered statistically significant.

Results

Sociodemographic variables : Sociodemographic characteristics of study population are summarised in Table 1.

Male predominance was observed in the study population, with 38 (63.3%) male patients and 22 (36.6%) female patients. Overall, male: female ratio was 1.72:1. Mean age of patients was 39.96 with standard deviation of 13.48 years. Pertaining to the level of education, out of 60 patients, 21 (35%) patients were illiterate. Among the literate patients, 16 (26.7%) had completed primary school, 10 (16.7%) had completed middle school, 5 (8.3%) had completed secondary school and graduation each, and 3 (5%) patients had completed higher secondary school. Thus, a low level of education and awareness was present. Among the literate patients, there was a majority of males. On occupation-wise grouping, 10 (16.7%) patients were unemployed and 50 (83.3%) patients were employed. Out of these, a majority was constituted by farmers 21 (35%) and unskilled workers 15 (25%). In our population 30 (50%) patients belonged to lower socio-economic class as per Modified Kuppuswamy scale. Thirty (50%) patients belong to rural and urban areas each. It was noted that 45(75%) patients were married while the rest were unmarried (11;18.3%) and separated/widowed (4; 6.7%). In 18 (30%) patients, there was at least one family member affected by leprosy.

Clinical parameters: The patients were classified according to the Ridley-Jopling classification (1966). For all patients we have done clinical assessment as well as histopathology both. The classification has been done according to that. We have excluded any case where there was discrepancy between clinical judgement and histopathology report regarding pole of leprosy.

There were 44 (73.3%) patients with lepromatous leprosy which formed the majority. 21/60 (35%) patients developed Type II lepra reaction within 1-6 months of diagnosis with Hansen's disease (Table 2).

Most patients, 32(53.3%) patients had chronic ENL, while acute ENL and recurrent ENL was seen in 17(28.33%) and 11(18.33%) respectively. In the study population, mean BI was 2.41±1.61 and mean MI was 3.52±2.31%. Notably, most patients of Acute ENL had MI>5% while majority of chronic and recurrent ENL, MI was 0%.

Treatment for leprosy was given as per the combination of drugs in MDT (multidrug therapy) available as a blister pack under the NLEP programme. Multibacillary patients received dapsone, rifampicin, and clofazimine for 12

Table 1: Socio-demographic characteristics of the study population (N=60).

S. No.	Characteristic		No. of patients (n)(%)
1	**Age**		
		0-20	6 (10)
		21-40	27(45)
		41-60	21(35)
		>60	6(10)
2	**Gender**		
		Female	22(36.7)
		Male	38(63.3)
3	**Marital status**		
		Married	45 (75)
		Unmarried	11(18.3)
		Separated/widowed	4 (6.7)
4	**Education**		
		Illiterate	21(35)
		Literate	39 (65)
		Primary school	16(26.7)
		Middle school	10(16.7)
		Complete secondary education	5(8.3)
		Higher secondary education	3(5)
		Graduation	5(8.3)
5	**Occupation**		
		Professional	0(0)
		Semi-professional	1(1.6)
		Farmers	21(35)
		Skilled worker	4(6.7)
		Semi-skilled worker	9(15)
		Unskilled worker	15(25)
		Unemployed	10(16.7)
6	**Socioeconomic class**		
		Upper	0 (0)
		Upper middle	1(1.7)
		Lower middle	12(20)
		Upper lower	17 (28.3)
		Lower	30(50)
7.	**Residence**		
		Rural	30(50)
		Urban	30(50)

Table 2: Clinical parameters as observed in the study population (N=60).

S. No.	Clinical parameter	No. of patients (n)(%)
1.	**Clinical form (as per Ridley Jopling Classification)**	
	Tuberculoid	0(0)
	Borderline Tuberculoid	3(5)
	Mid-Borderline	0(0)
	Borderline Lepromatous	13(21.6)
	Lepromatous	44(73.3)
2.	**Temporal classification of ENL**	
	Chronic	32(53.3)
	Acute	17(28.3)
	Recurrent	11(18.3)
3.	**Time interval between diagnosis of leprosy and development of ENL**	
	At time of diagnosis	15 (25)
	1-6 months	21(35)
	7-12 months	8(13.3)
	13-18 months	8(13.3)
	19-24 months	6(10)
	>25 months	2(3.3)
4.	**Current Treatment**	
	Isolated oral corticosteroid use	20(33.3)
	Oral corticosteroids and thalidomide	23(38.3)
	Oral corticosteroids and clofazimine	7(11.6)
	Oral corticosteroids and methotrexate	1 (1.7)
	Thalidomide	5 (8.3)
	Clofazimine	3 (5)
	Untreated	1(1.67)
5.	**Trophic ulcer**	
	Absent	48 (80)
	Present	12 (20)
6.	**Disability**	
	Grade 1	44 (73.3)
	Grade 2	16 (26.7)

months. There were no PB patients. While 21 (35%) developed ENL within 1-6 months of leprosy diagnosis, it was interesting to note that 12 out of 60 patients developed ENL after they were declared to be released from treatment following completion of MDT for leprosy. Eight

Table 3: Patients grouped as per items on ENLIST ENL Severity Scale.

Sr. No.	Scale Item	Group I (n=27)	Group II (n=33)	*p* value
1.	**Pain score (according to VAS)**			0.0001
	0-40	25 (92.6)	15(45.5)	
	40-100	2 (7.4)	18 (54.5)	
2.	**Fever**			0.00001
	Absent/ present in last 7 days but not at present	25 (92.6)	11(33.3)	
	>37.6°C fever	2 (7.4)	22 (66.7)	
3.	**No. of lesions**			0.00001
	1-10	26(96.3)	7(21.2)	
	11 or more	1(3.7)	26(78.8)	
4.	**Inflammation of lesions**			0.00001
	Erythematous	25(29.4)	12(36.4)	
	Painful or complex	2(11.7)	21(63.6)	
	Complex			
5.	**Extent of lesions**			0.00001
	1-2 regions	12 (92.6)	5 (29.4)	
	3 or more	2(7.4)	28(84.8)	
6.	**Peripheral edema**			0.1022
	Yes	12(44.4)	30(90.9)	
	No	15 (55.6)	3(0.9)	
7.	**Bone pain**			0.00001
	Yes	12(44.4)	32(97)	
	No	15(55.6)	1 (3)	
8.	**Dactylitis**			0.00001
	Yes	9 (33.3)	32(97)	
	No	18(66.7)	1(3)	
9.	**Lymphadenopathy**			<0.00001
	Yes	4(14.8)	28(84.8)	
	No	23(85.2)	5(15.15)	
10.	**Neuritis**			0.00001
	Yes	4(14.8)	28(84.8)	
	No	13(85.2)	5(15.15)	

*Figures in parentheses are percentage.

out of these patients had been on ROM therapy (rifampicin, ofloxacin and minocycline) for variable durations after completion of MDT. Forty percent patients had required hospital admission for at least once for symptoms pertaining to ENL and treatment thereof. Grade I disability (as per WHO disability grading 1988) was noted in 73% patients and 12 patients presented with a trophic ulcer.

For treatment of ENL, corticosteroids were prescribed in 51 out of 60 patients either in form of isolated use (n=20; 39.2%) or in form of combination with thalidomide (n=23; 45.1%), clofazimine (n=7; 13.7%) and methotrexate (n=1; 2%). Among the 9 patients who were not on corticosteroids, 5 patients (55.5%) were on isolated thalidomide use, 3 (33.3%) on isolated clofazimine use while 1 patient (11.1%) was untreated.

This study evaluated 60 patients with ENL, of which 27 (45%)patients had mild ENL (group I) and 33(55%) patients had moderate/severe ENL (group II).

ENLIST ENL severity scale

Regarding VAS, 57 (95%) patients marked some degree of pain. 24 (40%) patients had fever more than 37.6 °C and 17 (28.3%) patients did not have fever on examination but had experienced it in past 7 days. The cutaneous nodules were the most frequent clinical manifestation, observed in 52 (86.7%) patients. Among the patients who presented with nodules, more than ten lesions were seen in 29 (48.3%) patients, of which 26 were in the moderate/severe group. In other words, a majority of individuals in group II had at least 11 cutaneous nodules.

On examining the characteristics of ENL lesions, 19 patients (31.7%) were only erythematous, 20 (33.3%) were painful, and three (5%) were complex. The extent of skin involvement was from 1 to 2 regions in 22 (36.7%), from 3 to 4 regions in 20 (33.33%), and from 5 to 7 regions in ten (16.7%) patients. Peripheral edema was found in 45 patients (75%), with 30 of them (66.7%) having edema in only 1 place amongst hands, feet or face. Bone pain was reported by 50 patients (83.3%), and 22 (36.7%) had disrupted sleep or daily activities. Arthritis/Dactylitis due to ENL was present in 44(73.3%) patients but it was incapacitating in only one patient (1.7%). Lymphadenopathy and nerve tenderness constituted the least frequent symptoms. Both were absent in 28(46.7%) patients. Mean EESS score was 11.6 with a standard deviation of 6.04. The median score was 10.00 and absolute score range was 5-25.

Correlation of severity of ENL with EESS: Assessment of severity scores in mild (Group I) versus moderate to severe (Group II) as per ENLIST severity score is summarized in Table 3.

In the moderate/severe group, the pain, (measured by VAS) was most commonly observed to be in the range of 40 to 100 millimetres (54.5%). However, the difference was significant (*p* value is equal to 0.0001). Presence of fever was verified in 66.7% of group 2 and in 7.4% of group 1, so it was much more frequent in moderate/severe cases. Regarding the number of lesions, 78.7% group 2 patients presented with at least 11 nodules, while only one group 1 patients (3.7%) presented with 11 nodules. This comparative analysis was statistically significant (*p* value is equal to 0.0001). All patients having complex lesions belonged to moderate/severe group. The extent of lesions in three or more regions was 84.8% in the moderate/severe group and 7.4% in the mild group, and the difference was statistically significant (*p* value is equal to 0.0001). Bone pain, arthritis, lymphadenopathy, and neuritis were more frequent in the moderate/severe group, and the findings were significantly associated with the severity of the cases.

Discussion

EESS scoring aids to classify ENL into groups such as mild and moderate/severe which makes it easy to analyse multiple aspects of the disease activity including predicting outcome and complications as well as starting management.

Male predominance was seen in our study, with gender ratio of 1.72:1. This is similar to a majority of previous studies on Indian as well as Brazilian study population (Negera et al 2017, Walkar et al 2014, Baima De Melo et al 2020, Nayak et al 2023). Such gender disparity is attributable to gender-specific health seeking behaviours and occupational roles (Padhi et al 2019). In current study, patients in age group of 21-40 years were most commonly affected with mean age of 39.96 ± 13.48 years; a finding consistent with previous studies by various researchers (Pocaterra et al 2006, Padhi et al 2019, Baima De Melo et al 2020, Darlong et al 2020) India. The overall prevalence of ENL was 24%, 49.4% among cases of lepromatous leprosy (LL. ENL tends to affect individuals in the peak of their working capacity which has a direct social and economic impact on their lives (Baima De Melo et al 2020).

A majority of our study population was literate but with a low level of education prevailed as consistent with other studies where a majority had completed only primary school (Baima De Melo et al 2020, Nayak et al 2023, Sales et al 2017). Similarly, farming was the most frequent form of employment and maximum number of patients belonged to lower socio-economic class. In such a scenario, development of trophic ulcers from unnoticed trauma in fields and secondary infections are not only a further trigger for ENL, but also cause considerable financial burden. This suggests that households impacted by ENL run the risk of falling into even deeper poverty (Negera et al 2017. Research conducted in rural India has revealed that families with one or more ENL cases lose more than 40% of their total household income compared to those without ENL cases. This is because these families must pay for treatment out of pocket and suffer revenue loss as a result of their members' lower working ability (Padhi et al 2019).

Lepromatous leprosy is a recognized risk factor for ENL due to the high multibacillary load (Kumar et al 2004, Walker et al 2014, Padhi et al 2019, Nayak et al 2023, Bowers et al 2017). In present study, a majority patients belonged to LL subtype (73.3%).

With regard to leprosy treatment, a majority of patients (35%) developed ENL within 1-6 months of leprosy diagnosis and initiation of MDT. This finding was similar to that observed in study by Padhi et al but dissimilar to findings of a 15-year retrospective study by Kumar et al who observed highest ENL in 2nd or 3rd year after diagnosis (Kumar et al 2004, Padhi et al 2019). A systematic review by Voorend & Post (2013) also suggested that the incidence of ENL during initial MDT months was two times more than the incidence at the time of leprosy diagnosis, however, this was not corroborated in our study. Few researchers have found episodes of ENL occurring in patients 7-8 years after MDT, which indicates that dermatologists must consider late ENL as an important differential diagnosis for painful nodules with systemic symptoms (Voorend & Post 2013, Padhi et al 2019, Walker et al 2012). Chronic ENL (53.3%) was most commonly observed in our study, in close concordance with Singla et al (2021) who observed 57.7% of chronic ENL patients while another cross-sectional study found this in 33.2% (Walker et al 2012). The frequency of chronic ENL in our study tends to be high because the hospital is tertiary, so it predominantly receives patients with recurrent or chronic cases of the disease. This suggests that higher doses and longer durations of corticosteroid therapy—which add to the pre-existing strain on the patient's physical and

mental health—are unavoidable in our scenario. Meanwhile, a case control study from Ethiopia by Negera et al (2017) and an international multicentric cross-sectional study by Walker et al (2012), found acute ENL and recurrent ENL in half of the patients respectively. Bacteriological index >4 is known risk factor for ENL (Kumar et al 2004, Walker et al 2017, Nayak et al 2023), however, in our study only eight patients showed BI>4, out of which seven had moderate/severe ENL.

A positive family history of leprosy was noted in 18 (30%) patients, which was quite higher than that reported by Padhi et al (7.2% n=97). Out of 18, 10 had mild ENL and 8 had moderate/ severe ENL. However, no significant association was found between family history and severity of ENL. All patients of our study had some grade of disability (grade 1=73.3%; grade 2=26.7%). A retrospective study by V.S. Santos et al identified leprosy reactions and NFI as the main risk factors associated with development of disability (Santos et al 2015).

Assessment of the severity of ENL by use of the ENLIST ENL Severity Scale helps to assign an objective score to the patient's clinical status after evaluation by a trained dermatologist. Data collected through EESS showed that 95% of patients in our study showed some degree of pain. Higher values of up to 96.5% have been reported by multicentric studies which stresses on the need to institute therapy that focuses on pain management in ENL patients (Walker et al 2012).

Fever of >36.7 C was seen in 66.7% in moderate/ severe ENL patients. This finding was similar to few other studies (Walker et al 2015, Feuth et al 2008). Cutaneous nodules were the most frequent finding; among these >11 lesions were seen in 78.8% of moderate/severe ENL and the increase in severity proportional to number of nodules was statistically significant in our study ($p<0.05$). This is in corroboration with Walker et al (2012) and Guerra et al (2004) who reported that patients having >20 lesions were more likely to develop severe disease (Walker et al 2012, Singla et al 2021). Our study had 5% patients with complex lesions which were more frequent (range of 13.4-35.7%) in data reported by other researchers (Padhi et al 2019, Walker et al 2012, Baima De Melo et al 2020). Melo et al(2020) found that 100% of study patients with lesions extending to more than 3 regions had moderate/ severe ENL, while this was true for 84.8% patients in our study. Peripheral edema in two or more sites in moderate/severe ENL has been considered a possible marker of severity (Walker et al 2012, Baima De Melo et al 2020). Our study observed presence of peripheral edema in 90.9% patients of moderate/severe ENL (Walker et al (2012): 52.4%; Baima De Melo et al (2020): 38.4%).

Thus, a discrepancy with various studies could be because a majority patients had chronic ENL, who, being on long term corticosteroids had co-existing renal and cardiac complications which possibly contributed to peripheral edema.

In our study, bone pain disrupting sleep and other activities (36.7% patients) was in agreement with other studies (30% in Feuth et al (2008) and Walker et al (2015). Arthritis/dactylitis was seen in 73.3% patients, slightly lower than what was observed by Padhi et al (79%; n=97) and higher than Singla et al (54.9%; n=134) and Walker et al (36.3% n=292) (Padhi et al 2019, Walker et al 2012, Feuth et al 2008). On the other hand, neuritis was absent in 46.7% of our patients, similar to Mendiratta et al (44.5%), Padhi et al (49.5%) and Walker et al (48%) (Padhi et al 2019, Walker et al 2012, Mendiratta et al 2023). Lymphadenopathy was invariably present in 53.3% patients, which was less than that reported by Singla et al (2021) (76.1%). Moderate to severe ENL was seen in 55% patients, slightly higher than as reported in systematic review by Voorend & Post (30-

50%) and a cross-sectional study in Bali (42.5%) (Voorend & Post 2013, Mendiratta et al 2023).

There is not much change in the socio-demographic features of ENL in endemic regions despite being in the post elimination era. Clinically, pain and skin lesions are the most common symptoms of ENL. Moderate-to-severe ENL was more common in our study. Assigning an objective score to symptoms and categorizing as mild or moderate/severe ENL by EESS helps in standardization of severity. This will not only help in formulating better patient care but also facilitate collection of clinical data for studies. The strength of our research was establishment of a significant relation between symptoms like pain, fever, skin lesions, joint involvement and neuritis and severity of ENL. Although, a larger sample size and a longer study period would have been more appropriate to further investigate the complex correlation between socio-demographic and clinical features as well.

Conclusions and way forward

This study revealed that the predominant age group of patients was between 21 and 40 years, with a male preponderance and a generally low level of education. The majority of patients were classified under the lepromatous pole of leprosy and presented with chronic erythema nodosum leprosum (ENL). The current study also proved a significant effect of isolated symptoms on severity of ENL. Routine evaluation with EESS on follow-up will aid in tailoring a symptom-specific treatment regimen for patients. Though a single centre studies like the present one cannot represent the entire patient population, pooling of experience/ metanalysis would be useful. Further research, with a comprehensive outlook on ENL, in current times from the leprosy endemic regions is essential to estimate the true burden of leprosy in form of reactions and disability which can eventually be reflected appropriately in national programs' management strategies.

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