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**Case Report**

# Type 2 Reaction Continuing after 15 Years of MDT in an Atypical Pattern: A Case Report

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Type 2 reactions may occur in the early stages of the anti-leprosy treatment, however, many cases may present 2–3 years after leprosy diagnosis. Some of such patients have been reported to develop episodes as late as 7 years after starting treatment. A 45 years old male, with a past history of intake of multi drug therapy-multibacillary (MDT-MB) pack 15 years back presented with fever, generalized bodyache along with development of vesiculo-bullous lesions over the existing annular lesions of borderline lepromatous (BL) leprosy. Possibility of relapse was ruled out clinically as well as histopathologically and the patient was successfully treated with tapering doses of steroids as a case of severe type 2 reaction. Type 2 reaction is less commonly seen in BL leprosy as compared to lepromatous lepromatous (LL) leprosy. Moreover, development of vesiculo-bullous lesions in an annular pattern over existing lesions of BL leprosy as a manifestation of type 2 reaction has rarely been reported in literature. This case is even rarer as the patient is continuing to get type 2 reaction even after 15 years of completion of MDT-MB and that too in an annular pattern over the existing lesions.

**Key words** : Type 2 reaction, Late, Annular, Vesiculo-bullous, MDT, Leprosy

## Introduction

Leprosy is a chronic granulomatous communicable disease caused by *Mycobacterium leprae* which usually affects the skin and peripheral nerves. It can also affect muscles, eyes, bones, testes and other internal organs. The disease runs a relatively uneventful chronic course unless it is interrupted by leprosy reactions. Leprosy reactions are immunologically mediated episodes of acute or subacute inflammation affecting the skin, nerves, and/ or other sites. Reactions are of three types i.e. type 1 reaction, type 2 reaction and Lucio phenomenon. (Kar & Sharma 2010).

Type 2 reaction (T2R) is an immune complex

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syndrome and is an example of Arthus phenomenon i.e. type three hypersensitivity reaction. It is characterized by erythematous papules and/or nodules on the skin which are painful and tender because of which type 2 reaction is also referred to as erythema nodosum leprosum (ENL) (Degang et al 2014). Type 2 reaction occurs more often in patients around the lepromatous pole of leprosy spectrum i.e. in patients with high bacillary load. It affects 20% of lepromatous lepromatous (LL) and 10% in borderline lepromatous (BL) cases, in which high bacillary load and diffuse infiltration in skin are regarded as risk factors (Walker & Lockwood 2006, 2007).

Type 2 reactions may occur in the early stages of the treatment, however, the majority of the cases present 2–3 years after leprosy diagnosis, while some patients developed episodes as late as 7 years after starting treatment (Saunderson et al 2000).

We hereby, present a case report of a patient who is continuing to have episodes of T2R even after 15 years of completion of MDT-MB. Moreover, this patient presented with vesiculo-bullous lesions occurring over the existing annular lesions of borderline leprosy which has again been rarely reported in the literature.

## Case report

A 45 years old male, native of Uttarakhand, working as a laborer in Himachal Pradesh, presented in March 2017 with complaints of fever with chills and rigors, generalized bodyaches associated with red raised painful lesions over the face, arms and thighs along with some fluid filled and few crusted lesions over the body. He also complained of bone pains in both the legs and arms for the same period.

The patient gave history of intake of multidrug therapy (MDT-MB pack) continuously for thirteen months fifteen years back but no history of immunotherapy. There was a history of heavy physical work prior to the onset of present illness and the patient denied history of any drug intake. Also, patient gave a history of similar episodes in the past.

General physical examination revealed fever (102ºF). There was tenderness over the bony prominences of both the legs.

**Clinical examination**: There was generalized body involvement. Over the face, extensor aspect of arms and thighs, there were multiple red, raised shiny papulo-plaque lesions, few of which were blanchable and mildly tender. There were multiple papulo-plaque lesions over the trunk and extremities, some covered with brownish crust (Fig.1, Fig.2). Over the abdomen and antero-

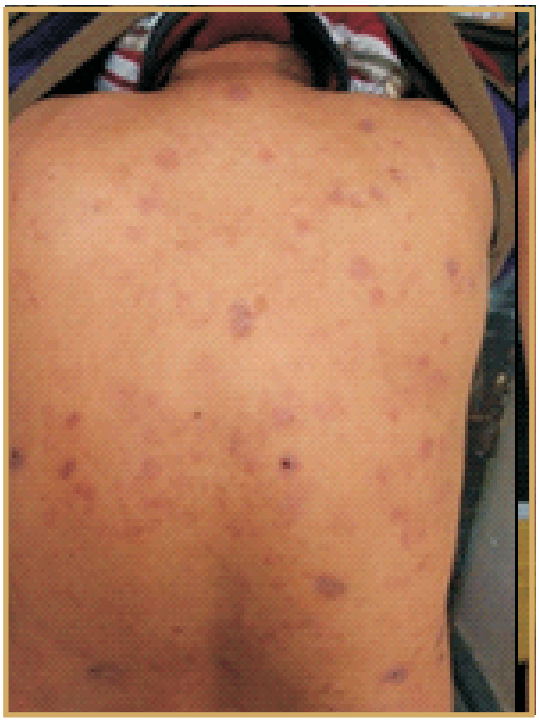

**Fig. 1 : Annular papulo-plaque lesions over the trunk**

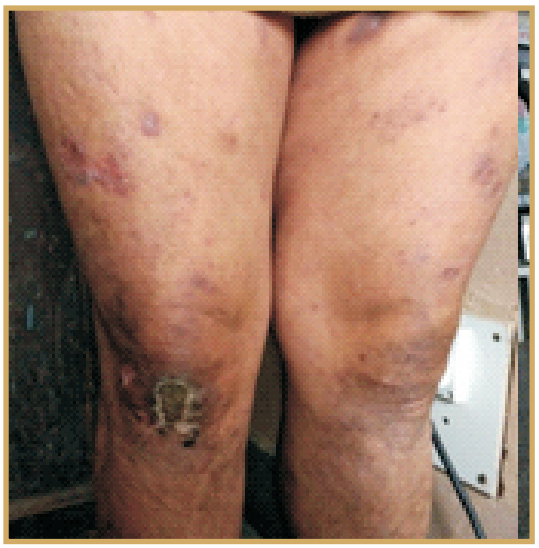

**Fig. 2 : Annular papulo- plaque lesions at places covered with crust**

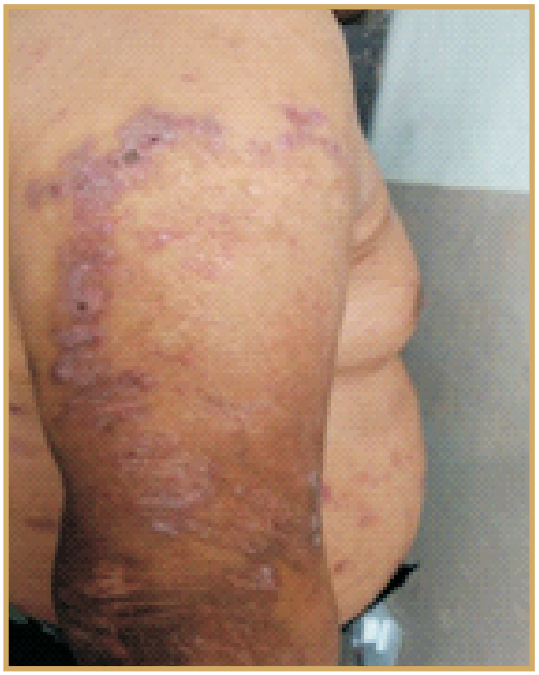

**Fig. 3 : Crusted papulo-plaque lesions in an annular pattern over the arm.**

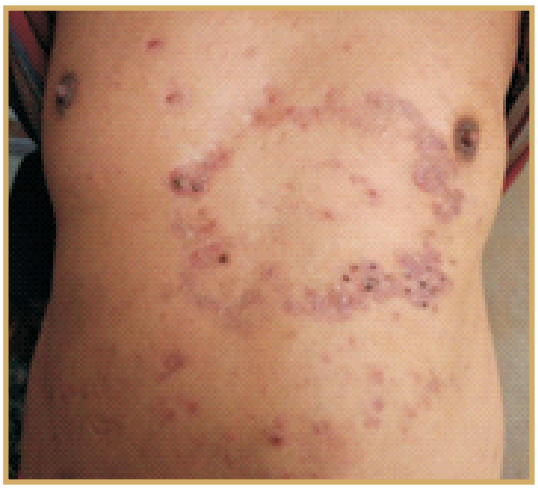

**Fig. 4 : Crusted papulo-plaque lesions in an annular pattern over the abdomen.**

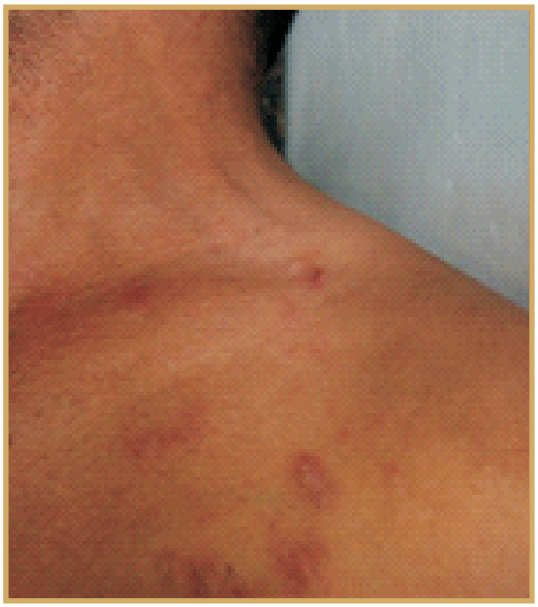

**Fig. 5 : Enlarged right auricular nerve**

lateral aspect of right arm, papulo-plaques were arranged in an annular pattern and were covered with brownish crust at places (Fig.3 & Fig.4).

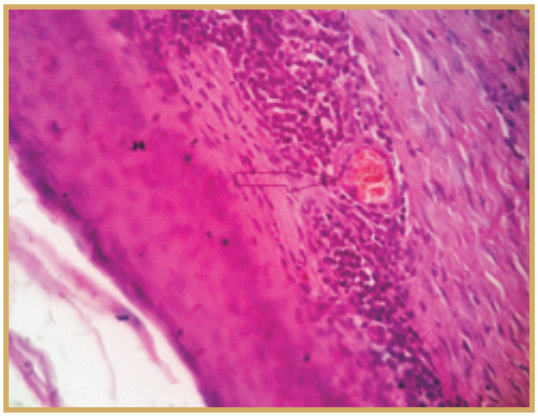

**Fig. 6 : Showing Neutrophilic Infiltrate in the Dermis & Perivascular Inflammatory Infiltrate. (x40, H&E)**

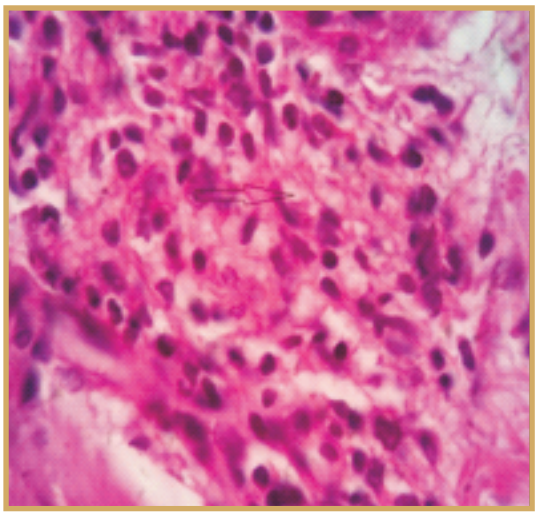

**Fig. 7 : Showing sheet of Foamy Macrophages. (x40, H&E).**

**Nerve examination**: Greater auricular nerve was thickened on left side (Fig. 5). Ulnar nerves at elbows and popliteal nerves were uniformly thickened bilaterally and were tender on palpation.

**Laboratory investigations**: The slit skin smears from bilateral ear lobes, eyebrows and lesions were negative for AFB. Complete haemogram showed raised total leukocyte count (18000/ $mm^3$) with neutrophilia (72%). ESR was 20mm in first hour. Urine examination along with other routine investigations were within normal limits.

Histopathological examination from a non reactive lesion was consistent with typical BL lesion but without any solid or fragmented bacilli whereas that from reactive lesions showed neutrophilic infiltration in the dermis and perivascular infiltrate (Fig. 6), and sheet of foamy macrophages (Fig. 7).

The patient was started on oral Prednisolone 50mg/day along with other supportive medications and measures. He responded well to the treatment and his general condition improved along with subsidence of ENL lesions within 72 hours of initiation of therapy. Nerve tenderness subsided by the end of second week of 50 mg/day prednisolone. Oral steroids were tapered gradually by 10mg every two weeks till 20mg/day and then by 5mg every two weeks.

## Discussion

Since this patient was treated with MDT 15 years back, the clinical picture raised a suspicion of relapse presenting with ENL. Therefore, slit skin smears from bilateral ear lobes, eyebrows and lesions were made and examined but neither solid nor fragmented/granular bacilli could be demonstrated. Similarly, acid fast bacilli (AFB) were absent in the biopsy specimens. In addition, the patient could not appreciate any extensions of the existing lesions. So, the possibility of relapse was ruled out.

Type 2 reaction is an example of type three hypersensitivity reaction (Coombs and Gell) which is an immune complex syndrome characterized by antigen-antibody reaction involving

complement. It occurs almost exclusively in lepromatous leprosy and only occasionally in borderline leprosy (Jopling & Mc Dougall 1996).

Intercurrent infections, injury, surgical intervention, physical and/or mental stress, protective immunizations are some of the precipitating factors for type 2 reaction. It occurs mostly during the course of anti leprosy treatment though some cases may present with the features of reaction before leprosy is diagnosed and treatment is initiated.

Type 2 reaction is characterized by sudden appearance of crops of evanescent, erythematous, painful papules, plaques or nodules which are tender on palpation associated with fever and other constitutional signs and symptoms. In classical episodes, no clinical changes are observed in the original skin lesions of leprosy. However, in older literature, term lepromatous exacerbation has been described for certain type of reactions in leprosy (Dharmendra 1978). This type of reaction presents with exacerbation of lepromatous leprosy skin lesions which become erythematous, oedematous, painful and tender. These lesions may ulcerate and may be associated with constitutional signs and symptoms. But such kind of presentation is seen in untreated cases.

ENL lesions may become vesicular or bullous owing to intense dermal oedema or leukocytoclastic vasculitis. They may at times become necrotic and breakdown to produce ulceration called as erythema nodosum necroticans. This type of type 2 reaction responds better to thalidomide as compared to corticosteroids (Couppié et al 1998, Rijal et al 2004).

However, ulceration of existing lesions of leprosy is rare and that too in an annular pattern is very rare. In review of literature, we could find only two cases of type 2 reaction presenting with vesiculo-bullous lesions arranged in annular fashion. First case was of a pregnant lady after ingestion of ofloxacin for urinary tract infection and was reported by Kamat and Shukla in 2007 Second case was reported by Kar et al (2009) in a young lady, an untreated case of borderline lepromatous leprosy who also had a history of intake of ofloxacin for urinary tract infection (Kar et al 2009).

In our patient, development of vesiculo-bullous lesions over the existing lesions of leprosy can be explained as acute lepromatous exacerbation of these lesions. However, the presentation of vesicles and bullae, some of which ulcerated over the existing erythematous, tender plaques in an annular pattern is extremely rare. Moreover, this patient is continuing to develop type 2 reaction even after fifteen years of completion of MDT-MB and to the best of our knowledge, such a long period has not been reported in the literature.

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