Hansen's disease in association with immune reconstitution inflammatory syndrome

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ABSTRACT

Immune reconstitution inflammatory syndrome is characterized by a paradoxical worsening of an existing infection or disease process, soon after initiation of highly active antiretroviral therapy. The first case of leprosy presenting as immune reconstitution inflammatory syndrome was published in 2003. Here we report a case of Hansen's disease borderline tuberculoid presenting with type 1 lepra reaction 5 months after initiation of highly active antiretroviral therapy.

Key words: Borderline tuberculoid Hansen's disease, HIV infection, immune reconstitution inflammatory syndrome, type 1 lepra reaction

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INTRODUCTION

The cutaneous manifestations of leprosy in patients who are coinfected with leprosy and HIV are not different from those in conventional leprosy.[1] After the introduction of highly active antiretroviral therapy (HAART), the leprosy HIV coinfection has manifested itself as an immune reconstitution inflammatory syndrome (IRIS) or immune restoration disease or immune reconstitution disease. Some persons with HIV infection experience a clinical deterioration following initiation of antiretroviral therapy that is believed to be a consequence of the restored ability to mount an inflammatory response.[2] This has been described among HIV infected individuals coinfected with *Mycobacterium tuberculosis*, nontuberculous mycobacteria, cytomegalovirus, and hepatitis B and C viruses. The first report of leprosy presenting as IRIS was published by Lawn *et al*. in 2003.[3]

Here we report a case of Hansen's disease borderline tuberculoid presenting with manifestations of type 1 lepra reaction, one among the myriad manifestations of IRIS.

CASE REPORT

A 38-year-old male patient, diagnosed with retroviral infection and disseminated tuberculosis presented with weakness and numbness of the right hand of 2 weeks duration. He also noticed an edematous reddish raised lesion on the inner aspect of right hand, which he attributed to the topical agent he used for relieving the numbness. Pain was present on the right elbow and forearm. The patient had been on antitubercular therapy (ATT) followed by antiretroviral therapy (ART), 5 months prior to presentation at our department. The CD4 count was 67 cells/μL during initiation of HAART.

Dermatological examination showed a single well-defined erythematous plaque, 20 × 5 cm with raised borders on the ulnar aspect of right hand and distal forearm, extending to the palm [Figures 1 and 2]. A satellite lesion was present on the upper part of forearm, which also showed erythema and edema. All modalities of sensations were lost in these lesions. Both ulnar nerves were thickened with tenderness on the right side. Slit skin smears from the earlobe, lesional,

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and normal skin were negative. Histopathological examination showed dermal edema, diffuse granulomas composed of Langhans type giant cells, surrounded by epithelioid cells, lymphocytes, multinucleated giant cells, and fibroblasts with perivascular lymphocytic infiltrate, consistent with Hansen's disease borderline tuberculoid type, with features suggesting type 1 lepra reaction [Figures 3-6]. AFB stain was negative. CD4 count after 5 months showed a rise to 160 cells/μL. The viral RNA load was not measured due to lack of facilities.

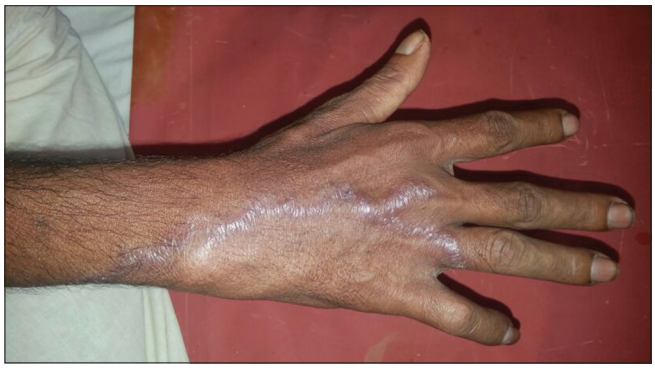

Figure 1: Erythematous plaque on the ulnar aspect of right hand

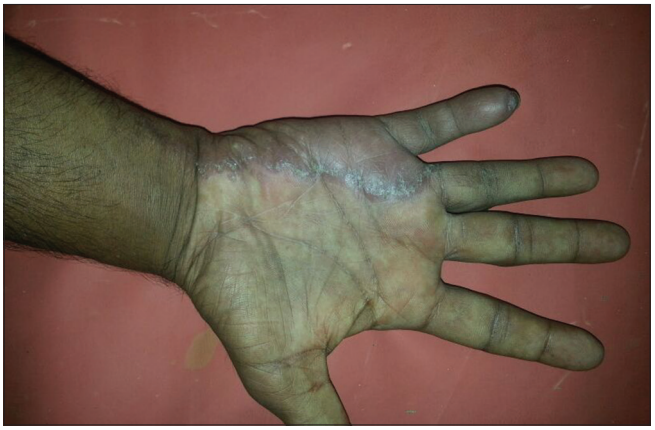

Figure 2: Erythematous plaque extending to the palm

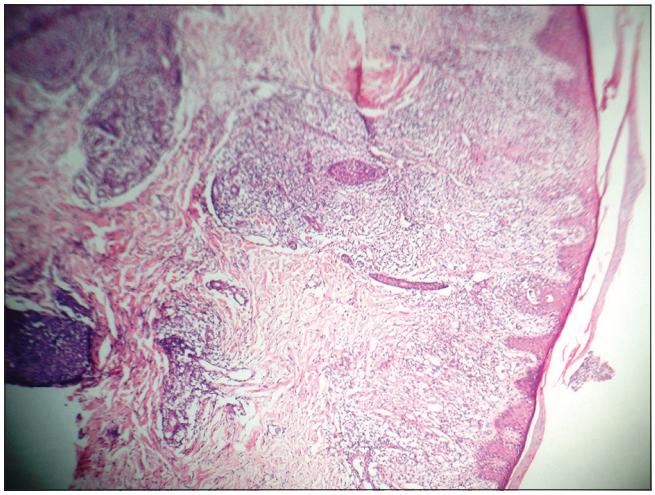

Figure 3: Diffuse granulomas in the dermis (H and E, x40)

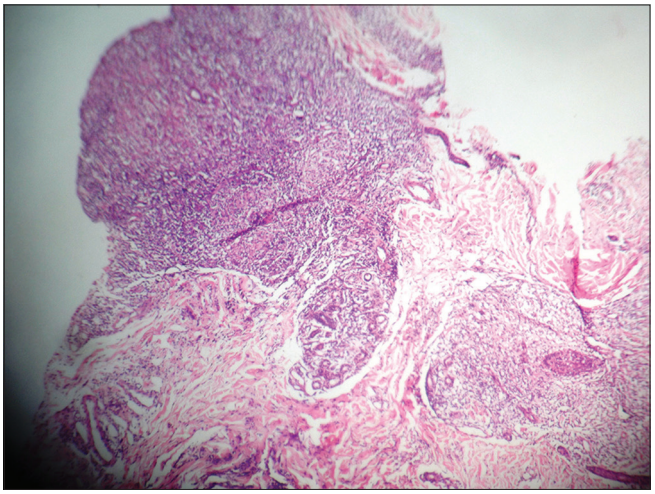

Figure 4: Dermal edema with Langhans giant cells, epithelioid cells and lymphocytes (H and E, x40)

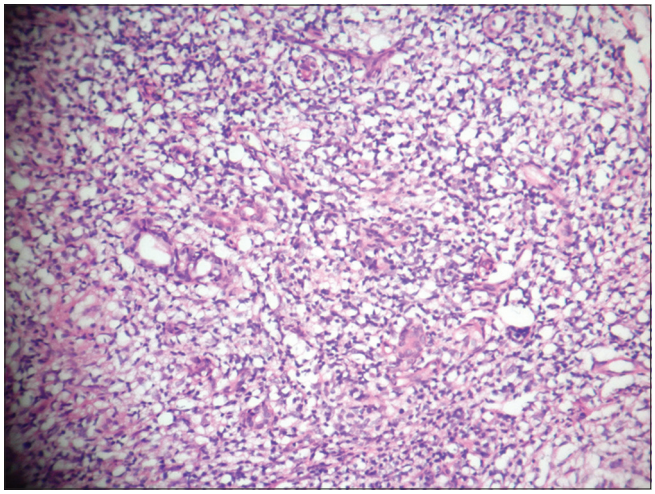

Figure 5: Section under high-power showing diffuse dermal edema and granulomas (H and E, x40)

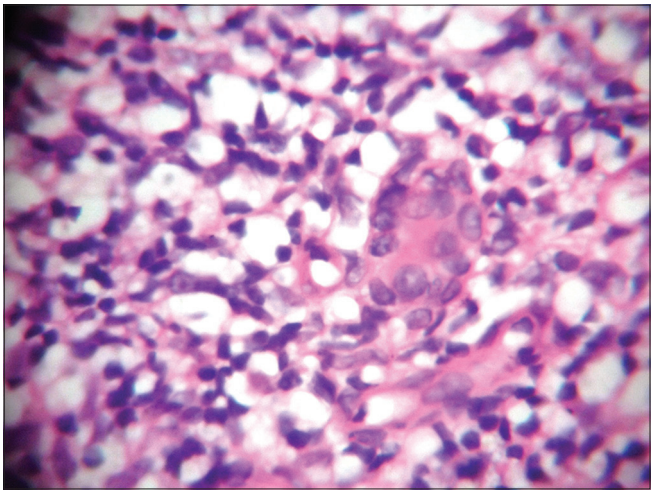

Figure 6: Granuloma surrounded by lymphocytes and epithelioid giant cells (H and E, x100)

Thus correlating the clinical, bacteriological, and histopathological features, a diagnosis of Hansen's disease borderline tuberculoid with type 1 lepra reaction presenting as IRIS was made. MB-MDT was started, avoiding rifampicin from the regimen, as patient was also on ATT. HAART was continued and systemic steroids were also given in tapering doses. On follow up there was marked alleviation of his symptoms. However, the patient succumbed within 3 months to a brain tuberculoma.

DISCUSSION

IRIS is characterized by a paradoxical worsening of an existing infection or disease process, soon after initiation of HAART. The immunopathogenesis of the syndrome is unclear and appears to be the result of unbalanced reconstitution of effector cells and regulatory T cells, leading to exuberant inflammatory response in patients receiving ART. Biomarkers including INF-γ, TNFα, CRP, and IL-2, 6 and 7 are the subject of intense investigation at present. The most common forms of IRIS are associated with mycobacterial infections, fungi, and herpes viruses.

Certain minimum criteria should be fulfilled in order to diagnose IRIS. There must be temporal association between initiation of ART and subsequent development of symptoms (usually within 3 months), with evidence of immune restoration (viral and immunological response demonstrated by a decrease in plasma HIV RNA level by more than 1log10 copies/mL and an increase in CD4 T-cell count from baseline), and must exhibit clinical symptoms and signs consistent with an inflammatory process. The clinical course should neither be consistent with the usual course of a previously diagnosed opportunistic infection or a new infectious process, nor should the symptoms and signs be explained by drug toxicity.[4]

The first case of Hansen's disease presenting as IRIS was reported in 2003 by Lawn *et al*. in a previously healthy 37-year-old man from Uganda, who also had pulmonary tuberculosis.[3] Furthermore, there have been several reports of HIV and leprosy coinfections in which IRIS occurred after initiation of HAART. In the study by Pereira, *et al*., a significant percentage of co-infected patients were classified as the borderline tuberculoid leprosy.[5]

A review of the Indian scenario revealed only five cases of Hansen's disease presenting as IRIS. All were of the borderline tuberculoid type and were asspciated with type 1 lepra reaction.[6-9] Thus our case adds to the Indian scenario.

CONCLUSION

Our patient had pre-existing immunosuppression; features of lepra reaction occurred within 5 months of initiation of HAART. The diagnosis of Hansen disease borderline tuberculoid with type 1 lepra reaction in this patient indicates an improvement in the cell-mediated immunity, specifically the low CD4 count at initiation of HAART.

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Conflicts of interest

There are no conflicts of interest.

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