Tuberculin Skin Test Reaction and Sarcoidosis – An Unexpected Sequela

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Sarcoidosis is an idiopathic granulomatous multisystem disorder with protean manifestations and an unpredictable course, often posing a diagnostic challenge to the clinician.[1] A 55-year-old lady presented to our outpatient department with tender nodules over both legs of 3 weeks duration. Blood investigations showed leukocytosis (15 × 10^3/mm^3) and elevated erythrocyte sedimentation rate (58 mm/hr). Antistreptolysin O (ASO) antibody titer was normal and throat swab culture grew normal flora. Lesional biopsy showed septal panniculitis in the absence of vasculitis, consistent with erythema nodosum [Figure 1a and b]. She was started on 50 mg/day indomethacin and evaluated for underlying causes. Tuberculin skin test (TST) was administered and serum angiotensin-converting enzyme (ACE) level and repeat ASO antibody titers were sent to screen for tuberculosis (TB), sarcoidosis, and streptococcal infection, respectively. The TST reading on the third day was negative and the ACE level and ASO titers were normal. However, on the eighth day of TST administration she returned with pain and redness at the site. The TST site showed a 2 × 3 cm discrete erythematous plaque with pseudovesiculation [Figure 2a]. TB interferon-gamma release assay returned negative, ruling out the possibility of latent TB. Two weeks later she developed asymptomatic erythematous and purpuric eruptions over both the legs [Figure 2b]. The forearm plaque persisted and biopsies were taken from both the sites. Light microscopy of lesional biopsy from forearm showed multiple discrete naked granulomas composed of epithelioid cells, Langerhans cells, and foreign body giant cells, in the mid to lower dermis, extending to the subcutaneous fat layer [Figure 3a and b]. Mycobacterial and fungal stains were negative. Reticulin special stain showed intact reticulin fibers within the granulomas, a characteristic feature of sarcoidosis [Figure 3c]. Histopathology of purpuric lesions on the leg was consistent with early-stage livedo reticularis. Extensive workup for systemic involvement did not give any positive findings and a final diagnosis of cutaneous sarcoidosis was made. She was started on 1 mg/kg/day of oral prednisolone after which her skin lesions subsided [Figure 4]. She remains asymptomatic on follow-up.

Despite the presence of coexisting local immune hyper-reactivity, sarcoidosis exhibits an "immunological paradox" characterized by a state of anergy. Cutaneous anergy in sarcoidosis is characterized by absent delayed hypersensitivity to various skin test antigens, as exemplified by negative TST response. This has been postulated to be either because of defective dendritic cell function or the inhibitory effect of regulatory T cells.[2] On the other hand, delayed development (usually after 4 to 6 weeks) of sarcoidal granulomas at TST sites has previously been reported in established pulmonary and neurosarcoidosis.[3] Although the exact prevalence of such a response varies (possibly depending on the site involved and severity), these delayed "reactions" are not reproducible with other skin antigens in control testing.[4] Whether this represents a specific immune response to the purified protein derivative or reflects the pathogenic role of mycobacterial antigens in the development of sarcoidosis remains unclear. What is clear is that these granulomas are not merely a foreign body or scar-related granulomas, but a specific reproducible immunological response occurring despite anergy.[5]

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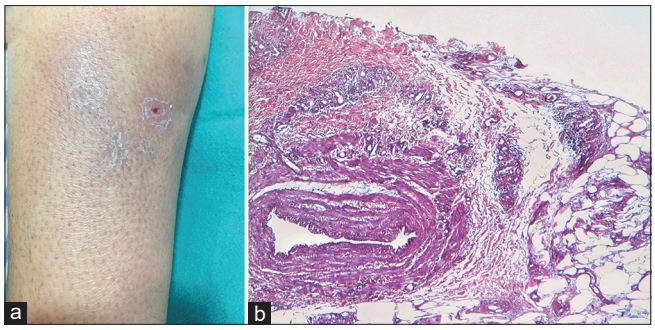

Figure 1. (a) Subsiding erythema nodosum over leg showing pigmentary changes, desquamation, and healing biopsy wound (b) Histopathology changes of septal panniculitis in the absence of vasculitis consistent with erythema nodosum (H and E, original magnification 10×)

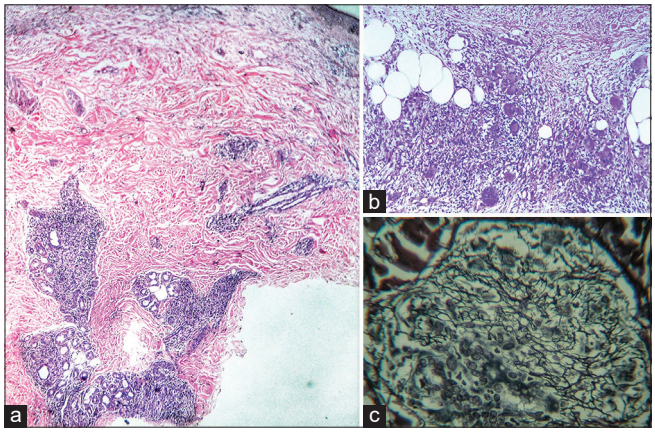

Figure 3: (a) Light microscopy studies of a skin biopsy specimen obtained from the lesion at tuberculin skin test site shows normal epidermis and multiple discrete granulomas present in the lower dermis (H and E, original magnification 40×) (b) Close-up view demonstrates naked granulomas extending to subcutaneous fat composed of predominantly epithelioid cells along with few lymphocytes and both Langerhans and foreign body type giant cells. No features of vasculitis or necrosis were seen (H and E, original magnification 100×) (c) Intact reticulin fibers preserved within the granuloma (Reticulin stain, original magnification 400×)

Our patient demonstrated the development of sarcoidal granulomas at site of TST much earlier than previously described cases, which was to our advantage, as easy tissue sampling led to early confirmation of her disease.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given consent for images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity.

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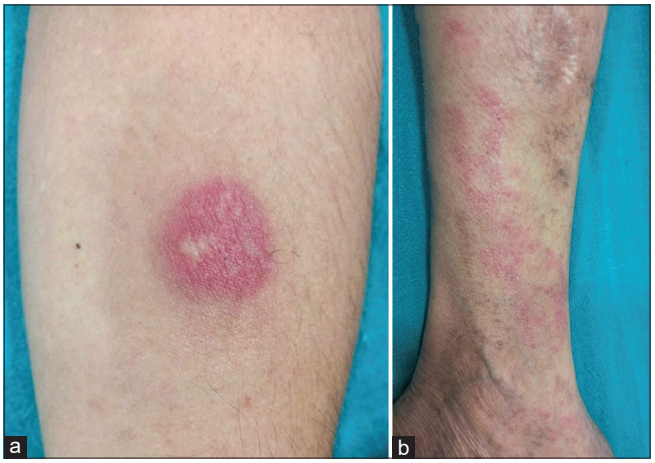

Figure 2: (a) Erythematous plaque with surface pseudovesiculation, which developed at the tuberculin skin test site on the left forearm, 7 days after the injection (b) Livedo reticularis on the lower limb that developed two weeks after the same

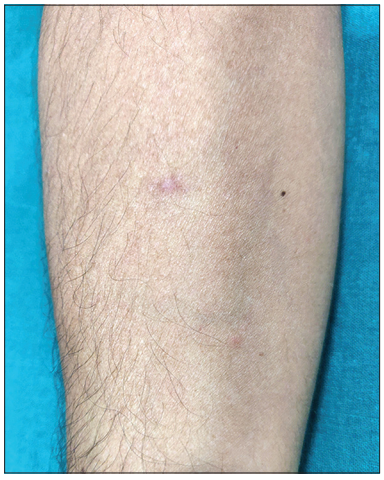

Figure 4: Forearm showing healed biopsy scar after complete subsidence of sarcoid plaque

Conflicts of interest

There are no conflicts of interest.

References

1. Iannuzzi MC, Rybicki BA, Teirstein AS. Sarcoidosis. N Engl J Med 2007;357:2153-65.
2. Mathew S, Bauer KL, Fischoeder A, Bhardwaj N, Oliver SJ. The anergic state in sarcoidosis is associated with diminished dendritic cell function. J Immunol 2008;181:746-55.
3. Mankodi AK, Desai AD, Mathur RS, Poncha FF. Diagnostic role of Mantoux test site biopsy in neurosarcoidosis. Neurology 1998;51:1216-8.
4. James DG. The early diagnosis of sarcoidosis. Postgrad Med J 1958;34:240-4.
5. Gupta SK. Mantoux test site granuloma: An appraisal of the diagnostic value in sarcoidosis. Indian J Chest Dis Allied Sci 1997;39:13-8.