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Granulomatous Eruption of the Skin; A Diagnostic Dilemma Resolved by Imaging

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Abstract

Sarcoidosis is a multisystem disorder of unknown etiology. Definitive diagnosis of pulmonary sarcoidosis in tuberculosis endemic country like India poses a challenge especially in paucibacillary cases. As, the treatment of sarcoidosis may involve use of immunosuppression, it is important to rule out tuberculosis. A radiological diagnosis may be important in reaching a conclusion in such cases. We herein, report a case of a middle-aged female with granulomatous skin lesions. Imaging confirmed the diagnosis and showed classical radiological signs confirmatory of sarcoidosis.

Keywords: ***Sarcoidosis; Granulomatous; Tuberculosis; Imaging***

1. Introduction

Sarcoidosis is a multisystem disease of unknown etiology. Histopathology shows multiple non-caseating epithelioid cell granulomas [1]. Pulmonary involvement is seen in approximately 90% of patients, and account for most of the morbidity and mortality associated with the condition [2]. Definitive diagnosis of pulmonary sarcoidosis in tuberculosis endemic country like India is sometimes difficult especially in paucibacillary cases. As the treatment of sarcoidosis may involve use of immunosuppression, it is important to rule out tuberculosis. A radiological diagnosis may be important in reaching a conclusion in such cases. We herein, report a case of a middle-aged female with clinical signs suggestive of sarcoidosis. Imaging confirmed the diagnosis and showed classical radiological signs confirmatory of sarcoidosis.

2. Case History

A 45-year-old lady, resident of New Delhi, India, presented to the dermatology OPD with complaints of multiple, red raised lesions over face, trunk and upper limbs and multiple painful, nodules over shins. Lesions were initially present over the face and trunk and gradually progressed to involve the rest of body. The leg lesions appeared in crops and were painful.

However, there was no history of any constitutional symptoms like fever, shortness of breath, weight loss or decreased appetite. There was a history of total abdominal hysterectomy seven months prior to skin lesions (? placental trophoblastic tumour) in view of persistent bleeding during the post-partum period. Intraoperative findings revealed multiple, nodular lesions on peritoneum, adhesions over intestine, bladder and peritoneum. Omental and peritoneal biopsy revealed granulomatous inflammation with a suspicion of tuberculosis. The patient was diagnosed to have abdominal Koch's and started on anti-tubercular therapy.

General physical examination was within normal limits. Mucocutaneous examination showed multiple, erythematous to skin coloured papulo-nodular lesions over the forehead, face, trunk and bilateral upper limbs (0.5 *3 cm^2) (FIG. 1a). There were multiple nodular lesions ranging in size from 2- 4 cm^2, over both legs (FIG. 1b). The lesions were tender with elevated local temperature. Systemic examination was within normal limits. Thus, based on the clinical examination, differential diagnoses were kept for both the group of lesions viz. papulo-nodular lesions over leg and trunk (sarcoidosis, tuberculosis and histoid Hansen) and tender nodules over legs (erythema nodosum and erythema induratum).

Hematological and biochemical parameters were within normal limits. Erythrocyte sedimentation rate (ESR) was 30 (N- 0-20). Serum angiotensin converting enzyme (ACE) levels were raised; 126 U/L (Normal- 8-65 U/L). However, serum calcium and parathormome levels were within normal limits. Mantoux reading was 2*4 mm^2. Tuberculosis interferon gamma release assay (IGRA) was negative. Ultrasonography of the whole abdomen and pelvis did not reveal any abnormality.

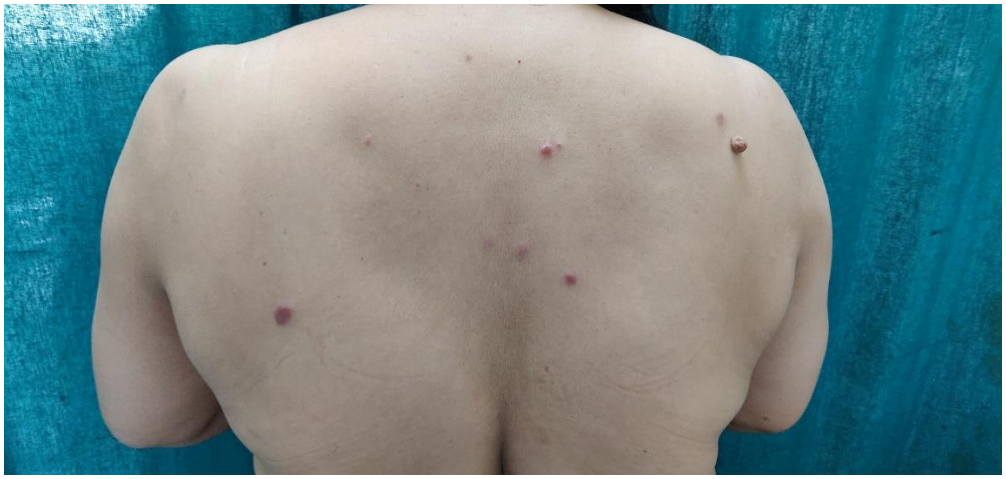

FIG. 1a. **Multiple, erythematous to skin coloured papulo-nodular lesions over the forehead, face, trunk and bilateral upper limbs.**

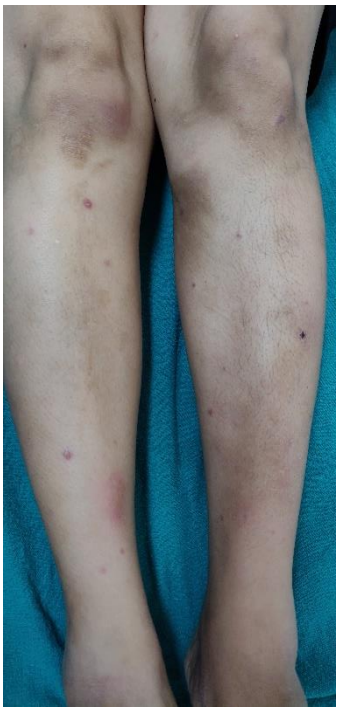

FIG. 1b. **Multiple papulo-nodular lesions over both legs.**

X-ray chest (AP view) showed increased hilar mass suggestive of multiple, confluent scattered lymph nodes. There was enlargement of right paratracheal, right and left hilar lymph nodes (FIG. 2a). High resolution computed tomography (HRCT) of chest showed perilymphatic distribution of nodules with congregation of nodes at the hilum. There were localized areas showing central core with peripheral nodules (Galaxy sign) (FIG. 2b). Paratracheal lymph nodes were also enlarged. There was no evidence of caseation or necrosis in any of the lymph nodes. Thus, based on HRCT imaging, differential diagnoses of sarcoidosis (perilymphatic distribution of nodules, 1-2-3 sign, galaxy sign, lack of caseation and necrosis), tuberculosis (congregation of hilar nodes) and lymphoma were kept.

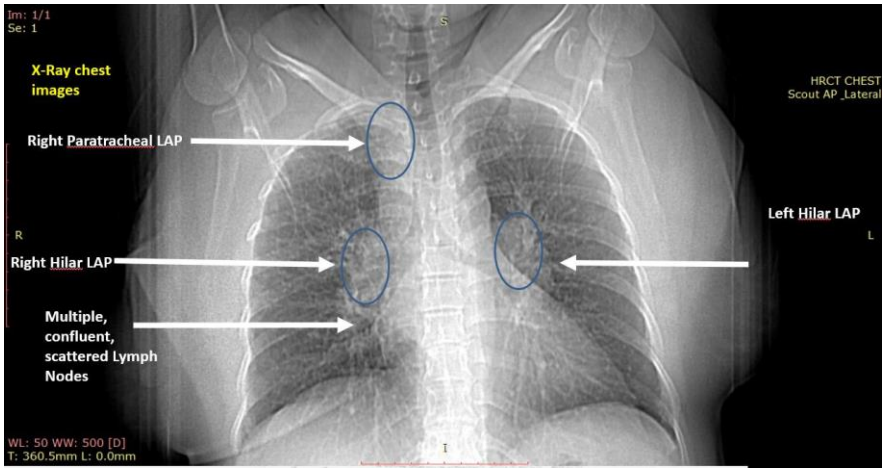

FIG. 2a. **X-ray chest (AP view) showing increased hilar mass with enlargement of right paratracheal, right and left hilar lymph nodes.**

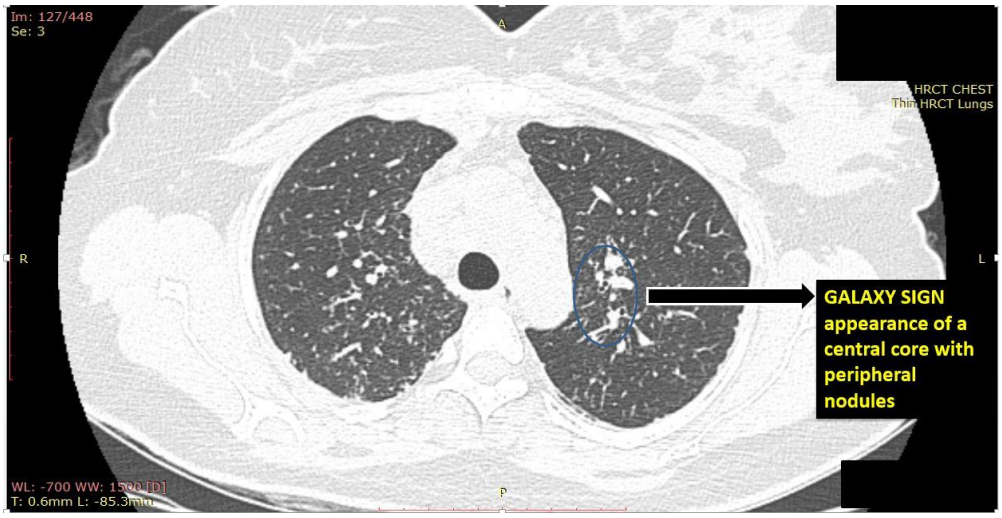

FIG. 2b. **High resolution computed tomography (HRCT) of chest showing perilymphatic distribution of nodules with congregation of nodes at the hilum. There are localized areas showing central core with peripheral nodules (Galaxy sign).**

Skin biopsy for histopathology sent from the lesion over upper back showed normal epidermis and multiple ill-defined superficial as well as deep granulomas extending till deep dermis (FIG. 3a). Granulomas were composed of Langhan giant cells and epithelioid cells without any lymphocytic cuffing. Biopsy from the leg lesion showed normal epidermis and dermis with septal panniculitis and inflammatory infiltrate around the subcutaneous fat (FIG. 3b).

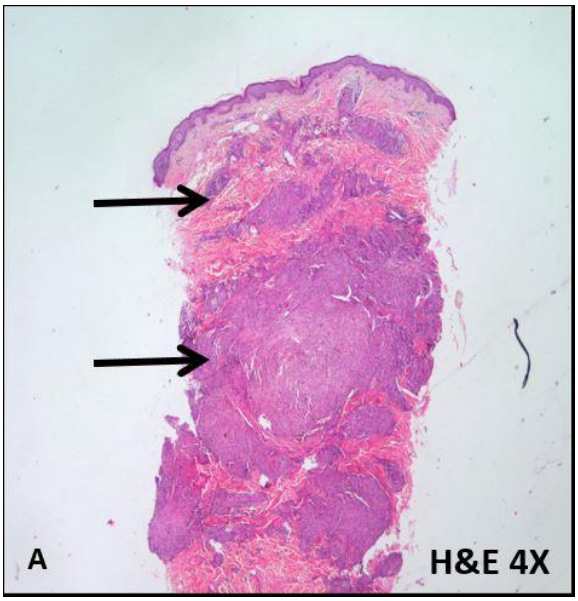

FIG. 3a. **Histopathology from the lesion over upper back showing normal epidermis and multiple ill-defined superficial as well as deep granulomas extending till deep dermis. (H&E, X4).**

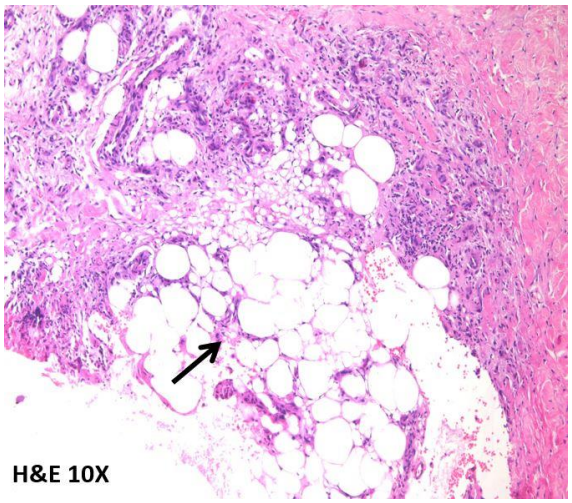

FIG. 3b. **Histopathology from the leg lesion showing normal epidermis and dermis with septal panniculitis and inflammatory infiltrate around the subcutaneous fat. (H&E, X10).**

Thus, based on clinical examination, imaging and histopathology, we arrived at a diagnosis of systemic sarcoidosis with cutaneous involvement.

The patient was initiated on Tab. Hydroxychloroquine 200 mg twice a day tab. Methylprednisolone 32 mg once a day. Steroid was tapered every two weekly and at 4 weeks Tab. Mycophenolate mofetil 500 mg twice a day was added. After 8 weeks of treatment, there was complete resolution of most of the lesions with disappearance of the leg lesions (FIG. 4a and 4b). The lesions over the face and trunk also resolved. Patient did not report any new lesions on one year follow-up period.

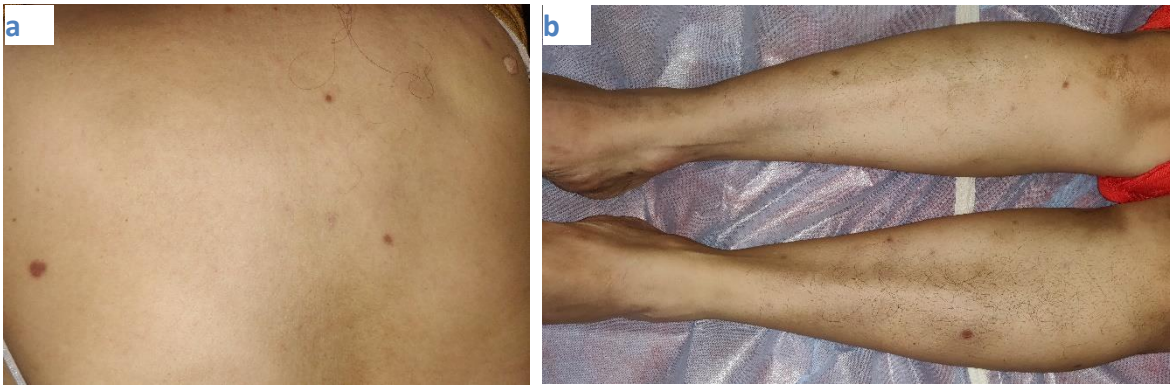

FIG. 4a and 4b. **Resolution of lesions after 8 weeks of treatment.**

3. Discussion

Sarcoidosis is a multi-system disease of unknown etiology [1]. The commonly affected organs include lungs, lymph nodes, liver, bones, eye and skin. Pulmonary involvement is seen in more than 90% of the patients [2]. Cutaneous sarcoidosis is one the great imitators in dermatology [3]. Clinical presentation may vary from asymptomatic lesions and incidental findings to

organ failure. Diagnosis mainly relies on histopathology findings and imaging. Histopathology shows non-caseous granulomas composed of a central core of histiocytes, epithelioid cells, and multinucleated giant cells surrounded by lymphocytes, scattered plasma cells, and varying quantities of fibroblasts and collagen in the periphery [3].

Imaging has a prominent role and diagnosis and predicting the treatment outcome and prognosis. Garland triad was described in sarcoidosis by Leo Henry Garland, an Irish born American radiologist and refers to the lymph node enlargement on chest radiographs (right paratracheal, right and left hilar nodes) [4]. This is also known as 1-2-3 sign or pawn broker sign. Pawn broker sign, a rarely reported sign in literature is pertinent in sarcoidosis and was well evident in our patient [5]. These radiological signs act as soft pointers in differentiating from close mimic like tuberculosis [6,7]. Radiological differences between pulmonary sarcoidosis and tuberculosis have been highlighted in TABLE 1.

TABLE 1. **Radiological differences between pulmonary sarcoidosis and pulmonary tuberculosis.**

Pulmonary sarcoidosis	**Pulmonary tuberculosis**
Bilateral hilar symmetrical lymphadenopathy	Unilateral hilar lymphadenopathy
Garland sign present	Garland sign absent
Galaxy sign seen	Galaxy sign absent
Perilymphatic distribution of nodules	Randomly distributed nodules
No necrosis/caseation	Necrosis/ caseation seen

In a developing country like India, where tuberculosis is endemic, it can be a great challenge to distinguish sarcoidosis from pulmonary tuberculosis. Both the diseases are granulomatous. Tuberculosis shows caseating granulomas while sarcoidosis shows non-caseating epithelioid cell granulomas. There is a prominent clinico-radiological similarity between these diseases therefore, patients receive repeated courses of anti-tubercular therapy (ATT) while there the lung damage continues to increase.

4. Conclusion

The diverse presentation of sarcoidosis poses a diagnostic dilemma and treatment challenges among the clinicians. In a developing country like India where tuberculosis is a common infection and presents with granulomas on histopathology. The presence of non-caseating granuloma alone is not enough to establish a definite diagnosis of sarcoidosis, and other possible causes of granuloma formation must be excluded. Though radiological signs are not absolute, they tilt the balance towards one disease. Once the diagnosis is established, a systematic evaluation for the extent of disease should be conducted.

5. Acknowledgement

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6. Funding Sources

None.

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