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**Physiology**

# Clinical Profile of Lichen Scrofulosorum, a Cutaneous Manifestation with Focus on Tubercular Lymphadenitis in a 15-Year-Old Male- A Case Report

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**Abstract** **Case Report**

Lichen scrofulosorum (LS) or tuberculosis cutis lichenoides is a rare form of tuberculid, an immunological reaction to the Mycobacterium tuberculosis bacilli which may be occult or present with primary focus elsewhere in the body. Other typical recognized forms of tuberculid include erythema induratum and papulonecrotic tuberculid. We report a case of LS with tubercular mediastinal lymphadenopathy in a 15- year-old male who presented with asymptomatic, recurrent, multiple papular rashes on the proximal side of both arms, sides of trunk, chest, stomach area, and back, for the last 5 months. Skin biopsy revealed ill-defined epitheloid cell granulomas with moderate perivascular infiltrates of lymphohistocytes in the upper dermis and features compatible with LS. Chest radiograph showed round radiopacity obscuring right hila pulmonary vasculature and contrast-enhanced computed tomography (CECT) of the chest revealed multiple large conglomerated and necrotic homogenously enhancing mediastinal lymph nodes largest (2.6 x 2.3 cm) at the right hilar location. The patient was treated with standard 6 months of anti-tubercular therapy with a treatment extension of another 3 months until complete resolution of the skin lesions and significant reduction in the size of the hilar lymph node on X-ray examination was seen.

**Keywords:** Lichen scrofulosorum, tuberculids, antituberculosis treatment, tubercular lymphadenopathy, extrapulmonary tuberculosis.



## INTRODUCTION

Of the 10.6 million people across the world diagnosed with tuberculosis (TB) in 2021 about 28% of the cases were from India [1]. Extra-pulmonary tuberculosis manifests only in 8.4-13.7% of all tuberculosis cases and skin manifestations of TB occur between 1-2% of all extra-pulmonary cases [2, 3]. Nevertheless, as tuberculosis is a major public health problem in India, cutaneous tuberculosis is often a common diagnosis in the dermatology clinics.

Lichen scrofulosorum (LS) was first described in 1868, and is characterized clinically by small, grouped perifollicular papules and manifests as a lichenoid eruption of these minute papules in children and young adults with TB [4]. Mostly these lesions are located around the chest and abdomen, back, and proximal parts of the limbs. They are typically asymptomatic, closely grouped, skin to reddish-brown perifollicular papules. Histology reveals non-caseating, epithelioid cell granulomas in the upper dermis and around dermal appendages. In most of the histology specimens even when cultured, Mycobacterium tuberculosis bacilli are never seen. However, papulonecrotic tuberculid, a different type of more commonly observed tuberculid, has occasionally shown evidence of the M. tuberculosis antigen [5]. Patients with LS usually show a strongly positive tuberculin skin reaction. Correct diagnosis of LS may be frequently delayed as the lesions resemble many other dermatological conditions that are typically looked at first. When patients present with chronic papular lesions that are not improving with previous treatments, it should be taken into consideration and dermatologists need to show a high level of suspicion in order to identify and treat this serious underlying illness as soon as possible.

## CASE REPORT

We report the case of a 15-year-old male referred to our tertiary care district hospital for fixed dose combination (FDC) anti-tuberculosis treatment (ATT). He initially reported to the dermatology clinic of another hospital with complaints of asymptomatic, recurrent, multiple papular rashes on proximal side both arms, sides of trunk, chest, stomach area and back, for a period of 5 months (Figures 1 a and b).

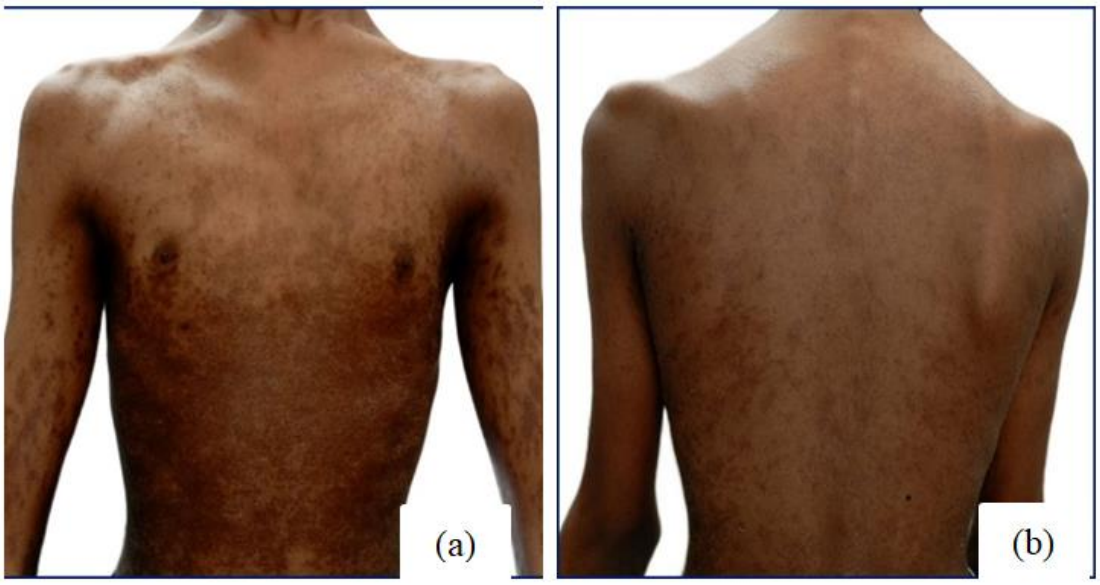


**Figure 1: Pre-treatment images- Erythematous to skin colored lichenoid papules with coalescing are seen (a) Anterior trunk (b) Posterior trunk**

The rashes were non-itchy, erythematous to skin-colored lichenoid papules coalescing mostly around anterior and posterior trunk region to form plagues along with scaling. There was no history of fever, cough, although he reported weight loss of nearly 2-3 kg in the last few months. Systemic examination of the respiratory, cardiovascular, abdominal, and central nervous systems revealed no abnormality. The patient's laboratory results from the initial investigations revealed normal blood cell count, renal and hepatic functions. Mantoux was strongly positive (25 X 30 mm) and his HIV test was negative. Skin biopsy showed ill-defined epitheloid cell granulomas with moderate perivascular infiltrates of lymphohistocytes in the upper dermis and features compatible with LS. Chest radiograph showed round radiopacity obscuring right hila pulmonary vasculature with nodular widening of lower right paratracheal strip (Figure 2).

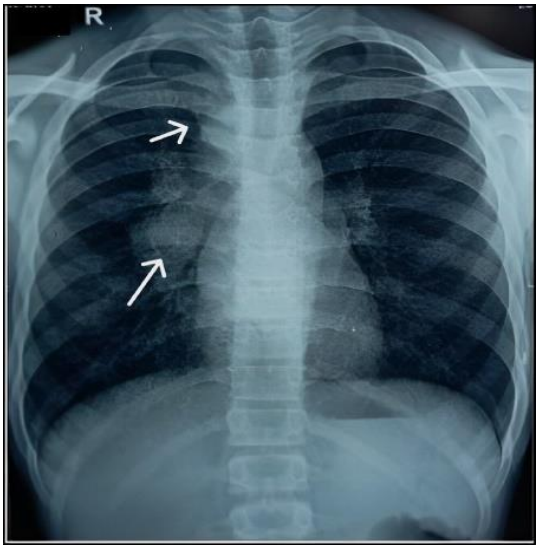


**Figure 2: Chest radiograph at beginning of treatment showing round radio opacity obscuring right hila pulmonary vasculature with the nodular widening of the lower right paratracheal stripe**

Ultrasound of the abdomen was normal while contrast-enhanced computerized tomography (CECT) of the chest revealed multiple large conglomerated and necrotic homogenously enhancing mediastinal lymph nodes at right paratracheal, left paratracheal, sub carinal, right hilar and para esophageal locations, largest (2.6 x 2.3 cm) at right hilar location. The diagnosis was made as a case of LS arising from a focus of tuberculous mediastinal lymphadenitis.

The patient was followed up regularly after treatment initiation and after one month the rashes had started resolving. As complete resolution of the skin lesions was not seen at the end of standard treatment of 6 months, the treatment was extended by another three months. However, at the end of nine months of ATT the patient showed complete clinical resolution of the skin lesions (Figures 3 a and b); as well as significant reduction in radiological regression in the size of the hilar lymph node as seen in repeat X-Rays from baseline (Figure 4).

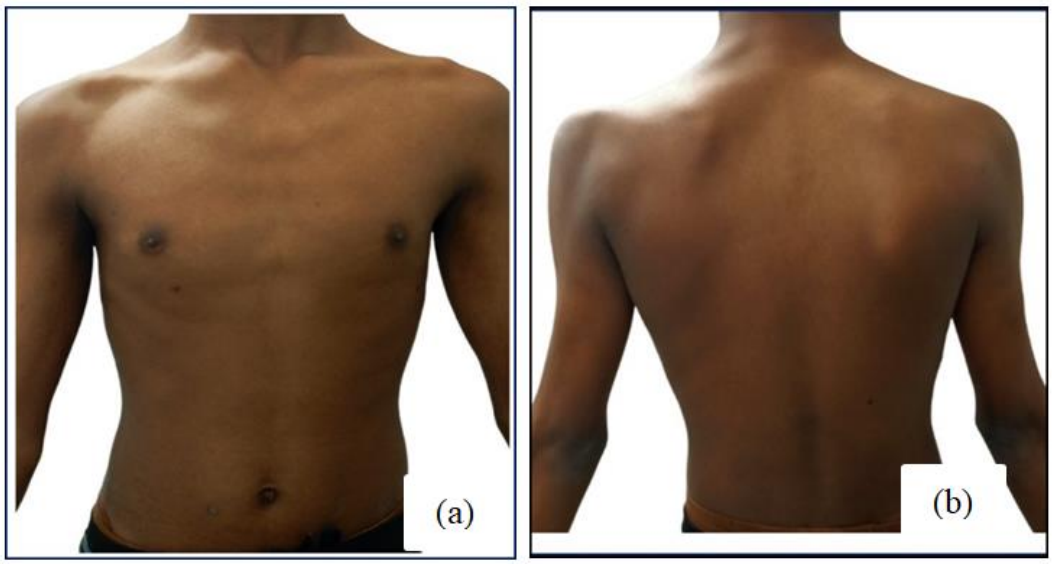


**Figure 3: Post-treatment images after 6+3 months of ATT- complete clearance of lichenoid papules is seen (a) Anterior trunk (b) Posterior trunk**

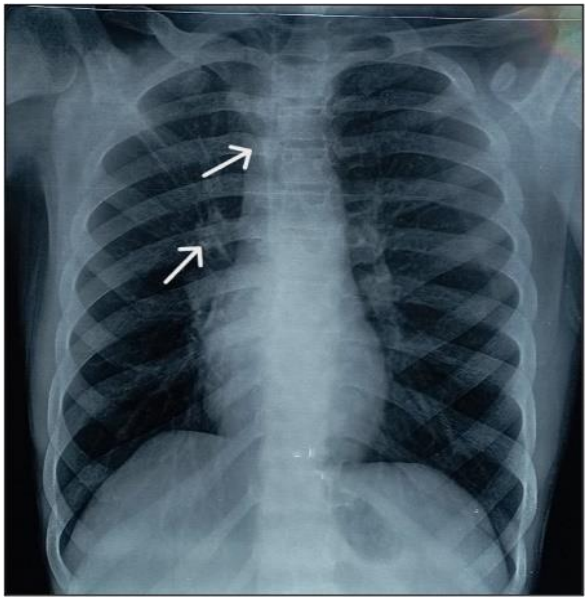

**Figure 4: Chest radiograph after 6+3 months of ATT showing significant reduction in radiological regression in the size of the hilar lymph node**

Although repeat blood tests and CT scan were also advised at end of treatment, the patient had refused for the same. Treatment was then stopped at 9 months on the basis of complete clinical resolution seen and CXR report. Appropriate assent from the subject as well as informed consent from the parent (due to subject being under 16 years of age) was taken for writing and communication of the case study. Ethical approval was

not required for the case report and treatment was provided as per the programmatic guidelines of the National Tuberculosis Elimination Program (NTEP).

## DISCUSSION

The concept of tuberculids was first introduced by Darier in 1896 as a cutaneous immunological reaction to the presence of occult tuberculosis in a patient with moderate to high immunity [6, 7]. LS is categorized as a tuberculid, meaning it is an immunologic or hypersensitivity reaction to the presence of the tubercle bacilli elsewhere in the body and is typically observed in young adults or children with systemic tuberculosis, either pulmonary or extrapulmonary [8]. It is clinically distinguished as tiny, smooth-surfaced, skin-colored perifollicular papules that are grouped together; and on rare occasions, spiny projections with fine scales may be visible. The lesions can be difficult to diagnose since they mimic a variety of different skin conditions that are frequently considered first and hence the diagnosis of LS can be delayed. Differential diagnosis may include lichen spinulosus, lichen nitidus, keratosis pilaris, pityriasis rubra pilaris, lupus miliaris disseminata faciei (LMDF) and lichenoid sarcoidosis.

In a study conducted at the skin, venereal diseases and leprosy of a teaching hospital in India, the overall incidence of cutaneous tuberculosis was estimated at 0.7% (131 of 18 720 outpatients) and LS was the fourth most common variant with 11.2% prevalence, after scrofuloderma (36.5%), lupus vulgaris (31%), tuberculosis verruca cutis (12.9%). A large study in Hong Kong found the incidence of LS was found to be lowest among the three tuberculids at 2%, highlighting the significance of this important marker of possibly undetected cases of tuberculosis [9]. Histopathology, tuberculin skin tests, and signs of systemic tuberculosis are the primary methods used to diagnose LS. The same treatment used for systemic tuberculosis also applies to LS.

## CONCLUSION

The presence of occult tubercular focus can be identified by a thorough history and physical examination, as well as by careful laboratory and diagnostic tests. To identify and treat this condition as soon as possible, prevent complications, and stop the disease from spreading, a high index of suspicion is necessary. Patients should be referred to a dermatologist for additional diagnostic assessment if they have a suspected TB-related cutaneous eruption. The highly efficacious conventional ATT can significantly reduce morbidity.

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