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A 45-Year-Old Woman With 30-Year History of a Nodule of the Earlobe Diagnosed as Lupus Vulgaris (Cutaneous Tuberculosis)

Authors' Contribution:
Study Design A
Data Collection B
Statistical Analysis C
Data Interpretation D
Manuscript Preparation E
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Conflict of interest: None declared

Patient: Female, 45-year-old
Final Diagnosis: Lupus vulgaris
Symptoms: A chronic plaque on the right earlobe for over 30 years
Clinical Procedure: —
Specialty: Dermatology • Infectious Diseases

Objective: Unusual clinical course

Background: Tuberculosis is a chronic granulomatous infection caused by *Mycobacterium tuberculosis*, which can affect multiple organs in the human body. Lupus vulgaris is the most common clinical type of cutaneous tuberculosis in China. It typically follows a chronic course, with skin lesions that are difficult to heal, making it prone to misdiagnosis and missed diagnosis. This report presents a case of chronic lupus vulgaris that remained untreated over an exceptionally long duration, demonstrating that lupus vulgaris can manifest as a chronic inflammatory focus.

Case Report: This article reports a case of a 45-year-old woman with a rash on her right earlobe for more than 30 years without pain, with occasionally itching. The rash presents as a red, thickened plaque with yellow papules and pustules on the surface. She sought treatment at hospitals and completed a few examinations. The histopathology revealed multiple epithelioid cell clusters surrounded by dense lymphocytic and histiocytic infiltration in the dermis. The interferon gamma release assay was positive. The Xpert test was positive for *Mycobacterium tuberculosis*. Mycobacterial culture and acid-fast staining were positive, and the cultured organism was identified as *Mycobacterium tuberculosis*. The chest computed tomography showed a previous lesion in the right upper lobe. Based on these findings, the diagnosis was confirmed as lupus vulgaris on the right earlobe. After anti-tuberculosis therapy, the skin lesions improved significantly.

Conclusions: The case showed that patients with persistent skin lesions, nodules, or ulcers, particularly responding poorly to treatment, should undergo appropriate examinations to rule out cutaneous tuberculosis, including lupus vulgaris.

Keywords: Lupus Vulgaris • Tuberculosis • Tuberculosis, Cutaneous • Case Reports

Full-text PDF: https://www.amjcaserep.com/abstract/index/idArt/954366

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Introduction

Tuberculosis (TB) is a chronic granulomatous infection caused by *Mycobacterium tuberculosis* (MTB), which can affect multiple organs in the human body, most commonly the lungs. Among extrapulmonary TB cases, cutaneous tuberculosis (CTB) accounts for 1% to 1.5% of all [1]. Lupus vulgaris (LV) is the most common clinical type of CTB in China, which represents over 30% of all [2]. LV typically follows a chronic course, with skin lesions that are difficult to heal, making it prone to misdiagnosis and missed diagnosis. It frequently occurs in individuals with normal immune function and may persist for an extended period without resolution [3]. Non-healing skin lesions on exposed areas with mild symptoms should raise suspicion of LV and warrant early intervention. This report describes the case of a 45-year-old woman with 30-year history of a nodule of the earlobe diagnosed as LV (CTB).

Case Report

The patient was a 45-year-old woman who had had a rash on her right earlobe for more than 30 years. More than 30 years earlier, she developed a red, thickened plaque on the right earlobe without pain, although it occasionally caused itching. She applied topical corticosteroid ointment occasionally to release itching. The plaque gradually expanded over the past year. She sought treatment at another hospital, where a pathological examination was conducted, and sought further treatment at our hospital. Physical examination revealed a red, thickened plaque on the right earlobe with yellow papules and pustules on the surface, without tenderness (**Figure 1**). Management consisted of performing a biopsy, acid-fast staining, Mycobacterium Xpert testing, and mycobacterial culture. Histopathology revealed mild epidermal atrophy with multiple epithelioid cell clusters surrounded by dense lymphocytic and histiocytic infiltration in the dermis, without significant caseous necrosis (**Figure 2**). The pathology report suggested that LV could not be ruled out. The interferon gamma release assay was positive. Sputum smear showed negative acid-fast bacilli and negative Xpert test. The Xpert test was positive for MTB. Mycobacterium culture and acid-fast staining were positive, with Mycobacterium identified as MTB. Chest computed tomography (CT) showed a previous lesion in the right upper lobe, prompting pulmonary consultation and consideration of previous pulmonary TB. Based on these findings, the diagnosis was confirmed as LV on the right earlobe.

Considering no evidence for systemic tuberculosism, based on the physician's clinical experience, and to avoid potential hepatic impairment in the combination therapy, after reviewing relevant literature [4], the treatment was for anti-TB with oral rifampicin 0.3 g daily. During the follow-up visit 2 months later, the rash showed slight improvement with fewer pustules (**Figure 3**). Therefore, we continued with oral rifampicin to complete the full treatment course. At the second follow-up 4 months later, physical examination revealed scar tissue on the right earlobe without pustules (**Figure 4**). Rifampicin was resumed for a total of 6 months.

Discussion

This report showed a 30-year history nodule on the right earlobe diagnosed as LV (CTB). As the most common clinical type of CTB in China [2], LV predominantly occurs in immunocompetent individuals with prior MTB infection, typically affecting middle-aged women [3]. Its development results from the combined effects of host immune response, bacterial strains, and exposure levels [5]. The occurrence of LV may result from secondary lesions caused by the dissemination of distant TB foci through lymphatic vessels or blood vessels, or from the

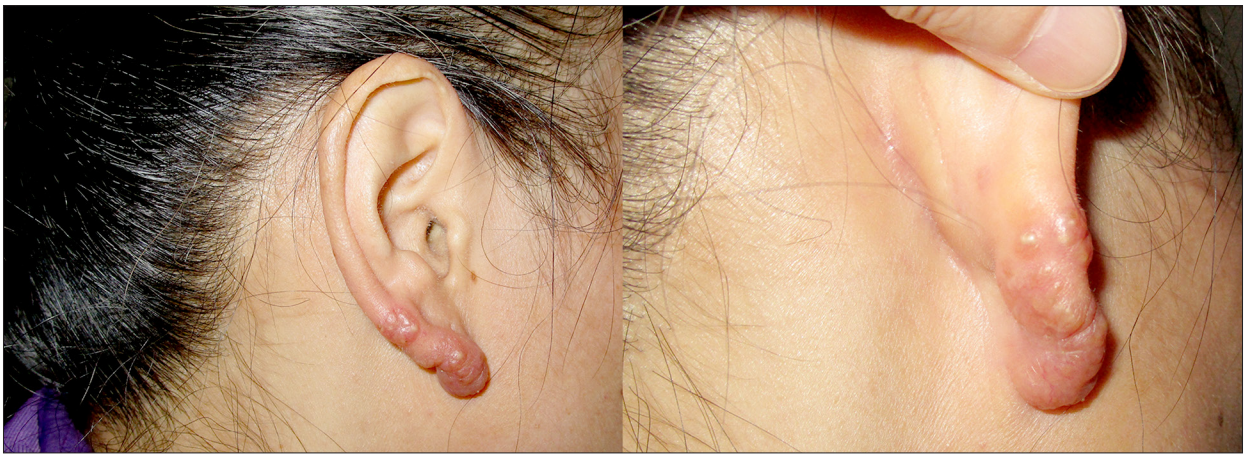

Figure 1. Clinical photos on the initial visit. The pictures showed a red, thickened plaque with yellow papules and pustules on the right earlobe, non-tender.

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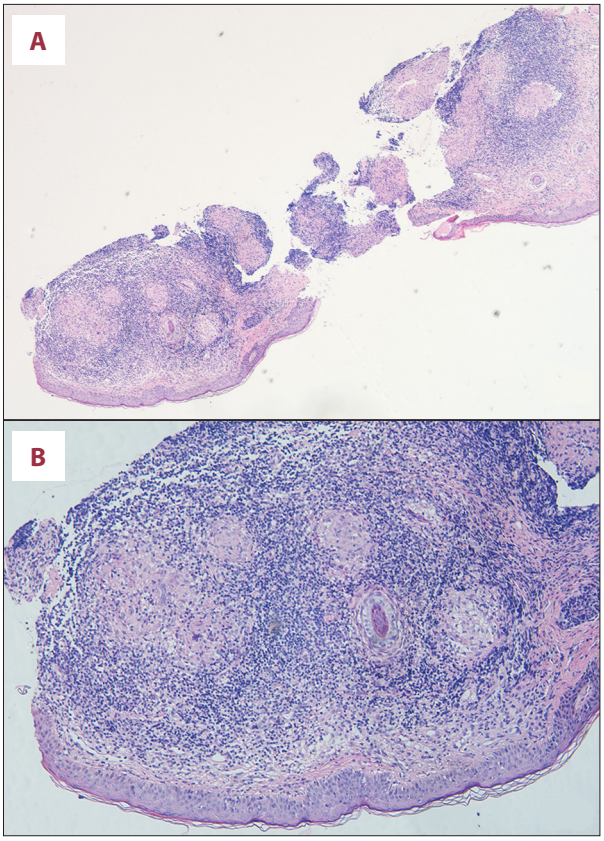

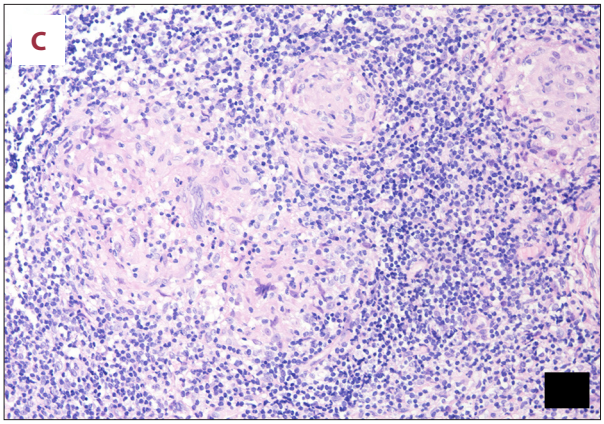

Figure 2. Histopathological findings: (**A**) hematoxylin and eosin (H&E) staining, ×40; (**B**) H&E staining, ×100; (**C**) H&E staining, ×200. The epidermis shows mild atrophy, with multiple epithelioid cell clusters surrounded by dense lymphocyte and histiocyte infiltration in the dermis. No significant caseous necrosis is observed.

spread of primary lesions [6]. In the present case, chest CT revealed findings suggestive of previous pulmonary tuberculosis (TB), raising suspicion that the right earlobe lesion could represent a secondary manifestation of a pulmonary TB focus. In rare cases, it may also arise as a primary lesion caused by exogenous TB inoculation [7].

In the early clinical stage, the lesions can present as solitary or multiple papulonodular changes. LV is most commonly found on the face and neck [8]. In the present case, the lesion was located on the right earlobe. There have been previous reports of discoid LV in similar locations [9,10]. The clinical presentations reported in these cases are similar, all involving erythema, papules, and pustules that were persistent, unresponsive to various treatments, and showed no significant expansion. The 1997 case described by Okazaki and Sakurai was classified as exogenous CTB caused by trauma, which is relatively rare in LV [9]. The 2025 case described by Wang et al was LV with atypical milia formation [10]. The course of the case in this article was extremely prolonged, with the symptoms milder than those in the other cases.

The disease progresses slowly, with recurrent ulcers and self-healing gradually forming atrophic scars [8,11]. In the present case, the patients skin lesions had remained undiagnosed for over 30 years. The initial clinical symptoms were mild and did not significantly impact daily life, leading to insufficient

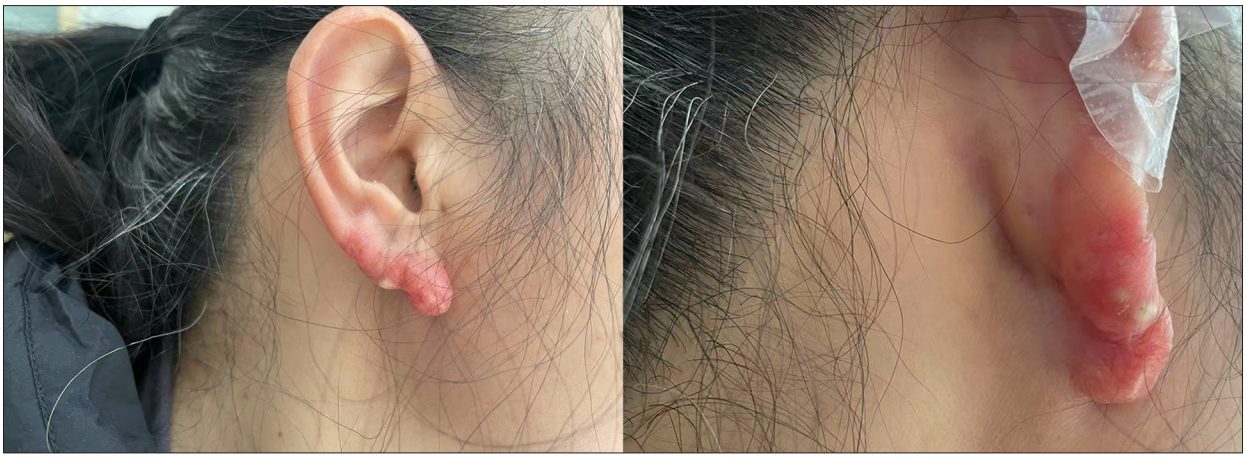

Figure 3. Clinical photos on the follow-up visit. The pictures revealed the same red plaque with fewer pustules.

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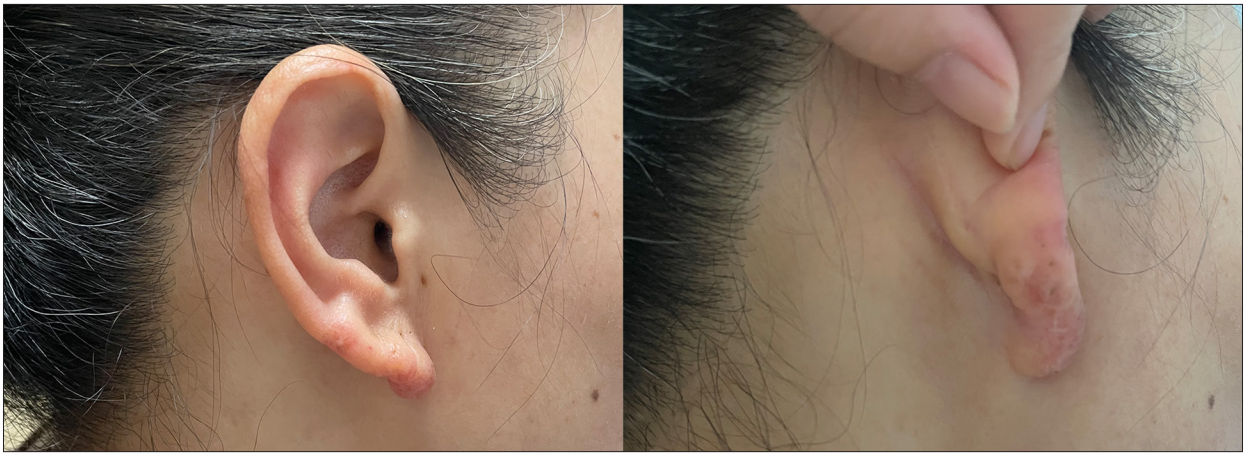

Figure 4. Clinical photos on the second follow-up visit. The pictures showed scar tissue without pustules.

attention from the patient, which resulted in delayed diagnosis and treatment. We speculate that this prolonged course may be related to several factors [1,12]. First, the persistence of the lesion may be associated with the patient's stable immune status. After cells are infected with MTB, chemokine and cytokine signals are released, attracting monocytes, macrophages, neutrophils, and dendritic cells to the infection site. Monocytes and lymphocytes surround the infected macrophages, forming the granuloma. MTB that disseminates via the lymphatic system or bloodstream to other sites may form new granulomas at these locations [13,14]. When immune function remains stable, the granulomas may contain MTB at these secondary sites, preventing further dissemination. Cases of sudden changes in the clinical manifestations of LV often involve immune system changes, including comorbidities such as HIV infection or malignant tumors [15]. Finally, compared with frequently rubbed areas, like the hands or face, the right earlobe rarely experiences physical irritation. In cases in which chronic LV evolves into squamous cell carcinoma, recurrent non-healing ulcers are often the precipitating factor [16,17]. The absence of medical consultation for 30 years demonstrates that the clinical symptoms of this lesion are mild and do not affect the patient's daily life. However, the mild clinical symptoms would also lead to delayed diagnosis and treatment, increasing the risk of disease progression.

Diagnosis relies on medical history, clinical manifestations, and histological examination, including skin lesion biopsy, comprehensive pathological examination, Mycobacterium nucleic acid testing, Mycobacterium culture, acid-fast staining smears, and TB immunological tests. The pathological features are highly specific, typically showing epithelioid cell granulomas composed primarily of epithelioid cells, surrounded by lymphocyte-formed tuberculous nodules, with or without central caseous necrosis [18]. Treatment involves anti-TB therapy using conventional drugs such as isoniazid, rifampicin, pyrazinamide, and ethambutol [19]. The effectiveness of empirical anti-TB therapy can also support the diagnosis. During treatment, attention should be paid to adverse reactions of anti-TB drugs, mainly including gastrointestinal reactions and hepatotoxicity.

Conclusions

Patients with persistent skin lesions, nodules, or ulcers in exposed areas, sites of trauma or friction, or Bacillus Calmette-Guérin (BCG) vaccination sites, particularly when lesions respond poorly to treatment and cause few or no subjective symptoms, should undergo appropriate diagnostic evaluation to exclude CTB, including LV.

Institution Where Work Was Done

The work was done at the Fifth People's Hospital of Suzhou, Suzhou, Jiangsu, PR China.

Informed Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Declaration of Figures' Authenticity

All figures submitted have been created by the authors who confirm that the images are original with no duplication and have not been previously published in whole or in part.

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