

Reactivation of cutaneous tuberculosis induced by trauma: A case report



Reactivación de la tuberculosis cutánea inducida por traumatismo: presentación de un caso

A previously healthy 63-year-old female reported falling down on her left arm four months ago, and development of two separate ecchymotic lesions within a couple of days. The arm was covered with her clothes and skin overlying the traumatized region remained intact. The lesions disappeared but 2 weeks later, two draining lesions were observed on the same region. There were two cutaneous lesions measuring 2 cm × 3 cm on her left anterior forearm and was a left axillary lymphadenopathy (LAP) of 1 cm × 1.5 cm. Her past and family history were negative for tuberculosis, tattooing or acupuncture. The analytical parameters were: hemoglobin 14 g/dl, leukocyte 5500/mm³ (50% neutrophils, 42% lymphocytes), erythrocytes sedimentation rate 13 mm/h, and CRP = 3 mg/L (normal: 0–5).

She had no fever. Chest X-ray, plain film of left arm, and thorax and abdomino-pelvic computed tomography were normal. Tuberculin skin test was positive (induration 35 mm × 30 mm). The magnetic resonance of the left arm revealed two subcutaneous nodular lesions. The samples from the skin and LAP remained negative for acid-fast bacilli (AFB) but both were positive for *Mycobacterium tuberculosis* DNA. Cultures on Löwenstein–Jensen (after 5 weeks of incubation) and MGIT media (after 3 weeks) yielded *M. tuberculosis* susceptible to isoniazid, rifampicin, streptomycin, ethambutol. Skin and LAP samples showed caseating granulomatous inflammation. Ehrlich–Ziehl–Neelsen staining of the granulomatous tissue were negative for AFB. The patient was treated successfully with the regimen (intensive phase: 2 months, and maintenance phase: 4 months). On follow-up, the discharge disappeared and LAP resolved in the 2 months of the treatment. She has been doing well for 12 months without any complication.

The patient had unhealing skin lesions for months and was diagnosed as cutaneous tuberculosis due to reactivation in the skin after microbiological and histopathological studies of the tissue samples. Trauma was thought to induce the reactivation by decreasing the local resistance since her skin was covered with clothes when she fell down and the overlying skin remained intact. Therefore, it was not considered as primary, exogenous source of tuberculosis. On the other hand, the environment contains non-tuberculous mycobacteria; our patient yielded *M. tuberculosis*.

During the period of primary tuberculosis, tuberculous bacilli may spread to all the tissues including skin. In this process, the disease can be controlled spontaneously. Tuberculin skin test can be turned to be reactive. One year after this primary infection, 5% of the remaining develops reactivation tuberculosis, unless they become immunocompromised.^{1,2} Cutaneous tuberculosis from hematogenous spread can develop due to either bacilleemia during the course of primary tuberculosis or reactivation of the bacilli previously disseminated and controlled. During the course of disseminated tuberculosis, uncontrolled severe bacilleemia may cause to the involvement of several organs including the skin.^{3,4} Therefore, cutaneous tuberculosis from hematogenous spread may present with primary tuberculosis, reactivation of tuberculosis or a complication of miliary tuberculosis.

Cutaneous lesions are frequently caused by some infections such as mycobacteria, fungi, bacteria, and parasites. These are often signs of localized or disseminated disease. Their appearance

may be pathognomonic but is often nonspecific. Therefore, skin biopsy is essential for definitive diagnosis. Microscopic, culture and histopathological examinations of tissue samples should be performed. Scrofuloderma results from the direct extension of the infection from a deep structure into the overlying skin.⁵ The neck is often involved, with the cervical lymph nodes. Lupus vulgaris is a chronic paucibacillary form of cutaneous tuberculosis that represents a reactivation of tuberculous infection.⁵ It may occur due to direct extension from an underlying focus of infection or by hematogenous spread. Nontuberculous mycobacteria are a group of bacteria naturally found in soil, water and dust and the incidence of their skin diseases is increasing.⁶ They develop after trauma, surgery, or a cosmetic procedure. Skin lesions include abscesses, nodules, or ulcers but may not be distinctive. A high index of suspicion is required in order to make the diagnosis. Tuberculids are commonly considered cutaneous hypersensitivity reaction to *M. tuberculosis* antigens in patients with moderate or high immunity against the tubercle bacillus.⁷ They are a group of dermatoses that tubercle bacilli cannot be isolated from the skin lesions.

In conclusion, cutaneous tuberculosis should be included in the differential diagnosis in lesions with a subacute-chronic course, not healing with antibiotics, negativity of non-tuberculosis cultures, and draining sinus.

Conflict of interest

There is no conflict of interest.

References

1. Rigaud M, Barkowsky W. Tuberculosis in children. In: Rom WN, Garay SM, Bloom BR, editors. Tuberculosis. 2nd ed. Philadelphia: Lippincott Williams and Wilkins; 2004. p. 609–24.
2. Friedland JS. Tuberculosis. In: Cohen J, Powderly WG, editors. Infectious diseases. 2nd ed. Edinburgh: Mosby; 2004. p. 401–17.
3. Munt PW. Miliary tuberculosis in the chemotherapy era: with a clinical review of 69 American adults. *Medicine*. 1971;51:139–55.
4. Rietbroek RC, Dahlmans RP, Smedts F, Frantzen PJ, Koopman RJ, van der Meer JW. Tuberculosis cutis miliaris disseminata as a manifestation of miliary tuberculosis: literature review and report of a case of recurrent skin lesions. *Rev Infect Dis*. 1991;13:265–9.
5. Franco-Paredes C, Marcos LA, Henao-Martínez AF, Rodríguez-Morales AJ, Villamil-Gómez WE, Gotuzzo E, et al. Cutaneous mycobacterial infections. *Clin Microbiol Rev*. 2018;32, e00069–18.
6. Gonzalez-Santiago TM, Drage LA. Nontuberculous mycobacteria: skin and soft tissue infections. *Dermatol Clin*. 2015;33:563–77.
7. Dhattarwal N, Ramesh V. Tuberculids: a narrative review. *Indian Dermatol Online J*. 2022;14:320–9.

Ali Mert^a, Abdurrahman Kaya^{b,*}, Sibel Yıldız Kaya^c

^a Infectious Diseases and Clinical Microbiology, Faculty of Medicine, İstanbul Medipol University, Turkey

^b Department of Infectious Diseases, İstanbul Training and Research Hospital, Turkey

^c Department of Infectious Diseases, Cerrahpaşa School of Medicine, İstanbul University-Cerrahpaşa, Turkey

* Corresponding author.

E-mail address: dr.abdkaya@hotmail.com (A. Kaya).

<https://doi.org/10.1016/j.eimce.2024.02.009>

2529-993X/ © 2024 Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica. Published by Elsevier España, S.L.U. All rights reserved.