A chronic ulcerative wound in the neck and disseminated tuberculosis: a case report and review of the literature

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Abstract

A 79-year-old woman was admitted to the emergency room with an ulcerated large wound in the lateral region of her neck. Computed tomography (CT) of the thorax revealed air bronchograms, nodular infiltration and areas of consolidation areas in both lungs. Multiple conglomerated lymph nodes, tending to coalesce with each other with areas of necrosis, were observed on the neck CT. Numerous acid-fast bacilli were seen on wound microscopy and in sputum. A case of disseminated tuberculosis is presented to draw attention to the dangers of delayed diagnosis despite improved tuberculosis treatment regimens.

Keywords

Tuberculosis; chronic ulcerative; neck; disseminated.

Case history

A 79-year-old woman was admitted to the emergency room with an ulcerated large wound in the lateral region of her neck, cough, and general poor health for about 1 week. She reported that there was a swelling in the lateral region of her neck 4 months before and that this swelling later became an ulcerative wound. She did not want to go to the hospital and had not received any treatment. She presented to a doctor because of neck wound ulcers 10 days before admission to our university hospital and was prescribed antimicrobial therapy. The patient had seen no benefit from this treatment. She was a non-smoker, did not use drugs and had no immunosuppressive diseases such as human immunodeficiency virus (HIV). She was living with her family in poor socioeconomic conditions. She could not remember any exposure to persons with tuberculosis (TB).

Diagnosis

There was an ulcerated skin lesion measuring $5 \times 2$ cm on the right side of the neck on physical examination (Fig. 1). Multiple palpable lymph nodes were found in the axillary region. Her

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breathing and cardiac sounds were normal and blood pressure was 110/80 mmHg. There were no neurological abnormalities. Body temperature was 36.5°C. Her laboratory evaluations were as follows: erythrocyte sedimentation rate 37 mm/h, white blood cell count 15.6 × 10^3/μL, hemoglobin 12.4 g/dL, hematocrit 35.4%, albumin 1.6 g/dl. Computed tomography (CT) of the thorax revealed air bronchograms, nodular infiltration and areas of consolidation in both lungs. Radiologic images were compatible with miliary TB (Fig. 2). Multiple lymph nodes were observed in both axillary areas; the largest was on the right and about 21 × 15 mm in size. Pleural effusion was observed reaching a thickness of 9 mm in the subpleural area. None of the mediastinal lymph nodes were pathologic in size. On neck CT, multiple conglomerated lymph nodes extended to the right vocal cord at the level of the hyoid bone, the largest approximately 22 × 18 mm in size and tended to coalesce with each other; a fistula to the skin with areas of necrosis was observed in the bilateral anterior-posterior cervical chain and bilateral supraclavicular area (Fig. 3). These lymph nodes showed intense heterogeneous enhancement in the solid components after intravenous injection of contrast material. Radiologic images were compatible with TB infection.

Numerous acid-fast bacilli were seen on wound microscopy (+++). The sputum smear was (+++) for acid-fast bacilli. The patient was admitted to the chest clinic. Medical treatment including anti-tuberculosis therapy (quadruple regimen including isoniazid, rifampicin, pyrazinamide, and ethambutol) and supportive treatment were initiated. The patient’s general condition gradually deteriorated within hours. Respiratory failure developed secondary to widespread parenchymal infiltration in the lung followed by cardiopulmonary arrest. Cardiopulmonary resuscitation was performed but the patient died despite all the interventions within 48 h of admission.

Clinical evidence and unusual features

TB is an infectious disease caused by the bacillus Mycobacterium tuberculosis. TB has been a problem in medicine since the discovery of Mycobacterium tuberculosis in 1882. TB is the second leading cause of death from an infectious disease worldwide (after HIV, which caused an estimated 1.8 million deaths in 2008)[1]. It typically affects the lungs (pulmonary TB) but can affect other sites as well (extrapulmonary TB). We report a case of disseminated TB (scrofuloderma and pulmonary tuberculosis) in a patient whose major complaint was a chronic ulcerative wound in the neck.
TB can involve any organ system in the body. Although pulmonary involvement is the most common presentation, extrapulmonary TB is also an important clinical problem in daily practice. Disseminated TB refers to involvement of 2 or more non-contiguous sites with TB. Dissemination can occur during primary infection or after reactivation of a latent focus/reinfection. Miliary TB is an advanced form of disseminated TB. However, according to many authors, miliary and disseminated TB are not different, and the terms are sometimes used interchangeably[2].

Originally a pathologic and then a radiographic description, the term miliary TB is now used to denote all forms of progressive, widely disseminated hematogenous TB. Miliary TB can arise as a result of progressive primary infection or via reactivation and subsequent spread of a latent focus. Cutaneous forms of TB include lupus tuberculosis, tuberculous lymphadenitis, colliquative tuberculosis, verrucous tuberculosis and ulcerous tuberculosis[3]. Cutaneous TB was first documented in 1826, when Laennec reported his own “prosector’s wart”, a lesion that likely represented tuberculosis verrucosa cutis, a variant of TB[4]. But the causative organism was unknown until Robert Koch discovered *Mycobacterium tuberculosis*. The bacillus was subsequently detected in cutaneous lesions[5]. The primary inciting organism of cutaneous TB is *Mycobacterium tuberculosis*. Cutaneous TB may result from direct entry of the mycobacterium into the skin or from local or hematogenous spread of *Mycobacterium tuberculosis* from an endogenous focus. The immune response of the host to *Mycobacterium tuberculosis* is an important factor in the development of cutaneous TB. Mycobacterial cultures represent the gold standard for confirming active infection. Other diagnostic methods are direct smear microscopy,
histopathologic evaluation, tuberculin skin test, interferon-gamma release assays, and nucleic acid amplification tests. Several host characteristics such as age, sex, and health status can affect the formation of specific cutaneous manifestations of Mycobacterium tuberculosis. Tuberculous lymphadenitis is a common presentation of extrapulmonary TB. In one study, the cervical region was found to be the most common site (63%) of tuberculous lymphadenitis. Most cases of lymphadenitis are localized to the cervical region; less commonly the inguinal, axillary, mesenteric, mediastinal, and intramammary regions may be involved. Tuberculous lymphadenitis in the cervical region is known as scrofula. Tuberculous lymphadenitis is a common cause of lymphadenopathy in areas where TB is endemic, such as Turkey. Lymph node involvement arises from either hematogenous or lymphatic spread from the lungs. Three well-known characteristics are associated with tuberculous glands, ie, caseation, matting, and adherence to the surrounding tissues.

Scrofuloderma results from the direct extension of the infection from a deep structure (eg, lymph node, bone, joint, or epididymis) into the overlying skin. Scrofuloderma may occur at any age, but most commonly develops in children, adolescents, and elderly individuals. Early lesions of scrofuloderma are firm, painless, subcutaneous, red-brown nodules that overlie foci of tuberculous infection. The neck, axillae, and groin are often involved; the cervical lymph nodes are the most common source of infection. The suppurative nodules gradually enlarge, and eventually form ulcers and sinus tracts that drain watery, purulent, or caseous material. Lesions may be single or multiple. In the diagnosis of scrofuloderma, culture and the purified protein derivative test may be useful, and a clinical history of TB is supportive. The risk of extrapulmonary TB and mycobacteremia increases with increasing immunosuppression, due to HIV infection, diabetes, renal or bone marrow transplantation, anti-tumor necrosis factor-alpha treatment, Bacillus of Calmette and Guérin therapy, or idiopathic CD4 T-cell lymphopenia. Our patient had none of those risk factors. Extrapulmonary TB is more common in children, women and minorities (for unclear reasons) as well as in patients who are immunosuppressed. Our case was a 79-year-old woman but there was no known immunosuppression condition. The most essential component of TB control is early detection and adequate treatment of infectious cases also known as sputum smear positive pulmonary TB. The primary role of detecting infectious cases is to reduce the transmission of infection in the community. It is estimated that a single infectious person who remains undetected and therefore untreated can infect between 10 and 15 people every year, making a vicious cycle of failing control efforts. Delays in diagnosis and treatment initiation is a major impeding factor in the control of TB. Several factors such as gender, age, distance to the health center, level of education, and alcohol consumption have been investigated in the delayed diagnosis of TB. Substantial reduction in delays in case detection may be achieved with more specific and effective health education of the general public on TB to encourage individuals to seek appropriate medical consultation, target specific groups such as alcoholics and subsistence farmers to improve accessibility to TB treatment; continuing medical education about TB management procedures for health providers and improvement in the capacity of TB control services are also important factors. Our patient was a case of sputum smear positive miliary TB and scrofuloderma. A low level of education, advanced age and distance from the health center are factors in the delayed diagnosis. Consideration of the suppurative wound as a bacterial infection perhaps also delayed the diagnosis.

Even though effective chemotherapy was developed in the 1950s, TB continues to be a major pulmonary pathogen and is a leading cause of infectious death in adults worldwide. Our case was an elderly patient with a delayed diagnosis of disseminated TB who unfortunately died 48 h after admission to hospital.

Teaching points

Scrofula and secondary scrofuloderma are no longer common syndromes, but with a growing number of immunocompromised patients, they are an important diagnosis to consider. Tuberculous lymphadenitis and secondary scrofuloderma may be the presenting symptom for disseminated TB as in this case. These diagnoses may appear in emergency departments, and a high index of suspicion is crucial for early diagnosis. Early diagnosis affects both the patient’s prognosis and the risk of exposure posed to health care personnel and the population. Although these forms of TB are common in patients with immunosuppression, as in this case, they may occur in the absence of an immunosuppression condition. TB should be considered in the differential diagnosis of chronic, recurrent, and non-healing ulcers in the skin especially in...
endemic areas such as Turkey. Early diagnosis and treatment of cutaneous TB is important in terms of prevention of morbidity and mortality.

References