



Tuberculous synovitis of the knee in a 65-year-old man

Tuberkulozni sinovitis kolena kod muškarca starog 65 godina

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Abstract

Introduction. Tuberculous (TB) synovitis is a rare, treatable, potentially lethal form of extrapulmonary TB resulting from massive lymphohematogenous dissemination of *Mycobacterium tuberculosis* (*M. tuberculosis*). We presented a case of TB synovitis of the knee in a Caucasian HIV-negative man from Romania, a high TB incidence country. **Case report.** A 65-year old man presented with cough, high fever, mild wheezing, and swelling of the left knee. Chest radiography was normal. Sputum smears were Acid Fast Bacilli negative and Löwenstein-Jensen (L-J) culture negative for *M. tuberculosis*. Tuberculin skin test was negative. Respiratory symptoms disappeared in a week under antibiotics. Positive L-J cultures of knee punctation and favourable treatment outcome following standardized antituberculous treatment regimen confirmed the diagnosis of specific synovitis, which was also demonstrated by Magnetic Resonance Imaging (MRI). **Conclusion.** Tuberculous synovitis is important differential diagnosis in patients with arthropathies and risk factors for TB in all the countries and all patients' ages even when tuberculin skin test is negative.

Key words: synovitis; knee; tuberculosis, osteoarticular; Romania.

Apstrakt

Uvod. Tuberkulozni (TB) sinovitis spada u retke, izlečive oblike vanplućne tuberkuloze sa mogućim letalnim ishodom. Posledica je masivne limfohematogene diseminacije *Mycobacterium tuberculosis* (*M. tuberculosis*). Prikazali smo bolesnika sa TB sinovitisom kolena, HIV-seronegativnog stanovnika Rumunije, zemlje sa visokom incidencijom TB. **Prikaz bolesnika.** Šezdesetpetogodišnji muškarac javio se sa kašljem, jakom groznicom, blagim šištanjem i otokom levog kolena. Radiogram pluća bio je normalan. Razmaz sputuma na acidorezistentne bacile bio je negativan, a kultura Löwenstein-Jensen (L-J) negativna na *M. tuberculosis*. Tuberkulinska kožna proba bila je, takođe, negativna. Respiratorni simptomi nestali su tokom jedne nedelje terapije antibioticima. Pozitivne L-J kulture punktata iz kolena i povoljan ishod lečenja uz primenjeno standardno antituberkulozno lečenje potvrdili su dijagnozu specifičnog sinovitisa koji je, takođe, pokazan snimanjem magnetnom rezonancijom. **Zaključak.** Tuberkulozni sinovitis predstavlja važnu diferencijalnu dijagnozu kod bolesnika sa artropatijom i faktorima rizika od TB širom sveta u svakom životnom dobu, čak iako je tuberkulinska kožna proba negativna.

Ključne reči: sinovitis; koleno; tuberkuloza, osteoartikularna; Rumunija.

Introduction

Although tuberculosis (TB) usually affects lungs, TB bacilli can spread through the blood stream and involve other sites, leading to extrapulmonary tuberculosis (EPTB). Increasing number of immunodeficient persons in the world makes EPTB incidences rise¹⁻⁵. Where these two infections, TB and HIV are prevalent, TB case rates rise dramatically and will continue to do so unless either infection can be curtailed⁶.

However, some forms of osteoarticular TB are rare and only a few cases have been reported⁷⁻¹¹. Trikha et al.⁹ re-

ported two cases of TB of the ilium as a rare form, accounting for less than one percent of all skeletal TB and both cases were immunocompetent individuals⁹. Recently, a Serbian case of TB synovitis of the knee, which was the first manifestation of life threatening generalized miliary tuberculosis, was published¹⁰. It was in 1981 when Borisov et al.³ reported a similar case, and the paper seemed to be less accessible. Diagnosis of TB infection in a joint is increasingly difficult¹². The main reasons for this are atypical clinical presentation, wide use of antibiotics and lack or low specificity of diagnostic tools, misdiagnosis, and sometimes, lack of clinicians' knowledge about TB epidemiology in a local setting.

Case report

A 65-year-old HIV-negative Caucasian man, a non-smoker without history of lung disease, presented to a doctor due to productive cough, mild dyspnea and wheezing, up to 39° C fever and painful swelling of his left knee (Figure 1).



Fig. 1 – Physical examination revealed painful swelling of the left knee. Accessory findings: trophic skin lesions and onychomycosis, bilaterally

Erythrocyte sedimentation rate was 85 mm in the first hour. Lung auscultation revealed signs of moderate wheezing. Chest radiography was within normal limits, i.e. without acute or active lung disease. Tuberculin skin test (Mantoux) PPD₃ was negative. Interferon Gamma Releasing Assays test for TB was positive. Sputum smears were Acid Fast Bacilli negative, and Löwenstein-Jensen culture negative for *M. tuberculosis*. The results of the immunological tests for systemic disease were within normal limits. Magnetic Resonance Imaging (MRI) of the knees showed synovial inflammation with intra-articular fluid (Figure 2). Löwenstein-Jensen culture of knee punctation was positive for *M. tuberculosis*. The treatment was initiated following standardized antituberculosis drug regimen during 6 months. At a 12-month follow-up, the patient was well, with a good range of motion in the knee.

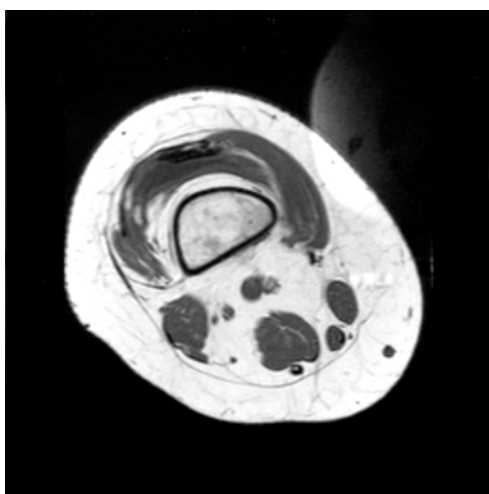


Fig. 2 – Magnetic resonance imaging of the knee shows synovial inflammation with intraarticular fluid

Discussion

We presented a rare case of specific synovitis of the knee, which was documented by MRI finding, culture positive result for *M. tuberculosis* in synovial fluid, and favourable course of the disease under antituberculosis treatment. Although extrapulmonary TB is increasing, the knee joint involvement still presents a rare manifestation of TB even in a TB high prevalence country. The patient comes from a rural part of Romania, one of the European TB "hot spots" with the success story in the disease management and control over the last decade. The reducing of TB incidence in Romania was the result of the effectiveness of the DOTS (directly observed treatment, short-course) strategy 13.

Although our patient was admitted to the Pulmonology Department due to prevailed respiratory symptoms related to acute tracheobronchitis, the rest of the symptoms were actually typical clinical initiation of specific synovitis of the knee: high fever and painful swelling of the joint. Sometimes, although an infectious disease, TB may be present without fever, especially in elderly and exhausted patients, and in those with diabetes mellitus 14. Apart from fever, joint swelling and pain, spasm, limping, and muscular atrophy are the most frequently described symptoms and signs 15–17.

Unlike TB osteomyelitis, which typically involves thoracic and lumbar spine, TB arthritis primarily involves large joints such as hips, knees and ankles. Since differential diagnosis of specific synovitis includes chronic traumatic synovitis, subacute synovitis and rheumatoid arthritis, the elimination process and high index of suspicion is needed for proper diagnosis of TB 11. Tuberculin skin test is not sensitive enough, and the test was negative in our patient with active TB disease 16.

Radiological signs are not characteristic and MRI is a highly sensitive technique to visualize synovitis and effusions, but not the specific one 18. It can help in distinguishing TB arthritis from other proliferating synovial arthropathies 19. Apart from presenting MRI images, we provided a bacteriological proof – Löwenstein-Jensen culture positive finding for *M. tuberculosis* in synovial fluid, the latter not always achieved in routine clinical practice but still the most valuable diagnostic criteria in TB. Histological finding itself, when it presents specific granuloma, would not be a better diagnostic criterion, having in mind many diseases which are characterized with a granulomatous process. However, diagnosis of TB synovitis may be based on clinical and radiographic signs only, and then, a successful treatment outcome serves as the best proof of TB etiology. In routine clinical practice, special methods for *M. tuberculosis* detection are available, including rapid bacteriological methods like polymerase chain reaction. All the particular methods of TB diagnosis include clinician's suspicion on TB firstly. Chen et al.¹² described the usefulness of arthroscopic operation for the management of synovial TB of the knee joint both in its diagnosis and treatment.

Nowadays, the greatest single risk factor for developing active TB is concurrent HIV infection. Our patient was HIV-

negative. Apart from his sex and age, history taking revealed the other TB risk factor – malnutrition due to living in poverty. Both elderly age and malnutrition have been proved to decrease immunity, which can lead to active TB disease in an infected person⁴. Incidence rates for TB in the age group of 65 years and over have been proven to be higher both in developing and developed countries with the tendency to further increase. This is due to increased aging of the population, decreased immunity, and/or poor socioeconomic status in some countries^{14, 20, 21}. Our patient used to live in poverty of a rural household in a high TB incidence country, thus the risk of being infected was also increased^{1, 4}. In Romania, the introduction of a clinical surveillance system of the persons aged 65 years and over with a risk to develop the disease remains to be realized along with the application of the National Programme for TB Control 2007–2011²¹.

Clinicians should keep in mind that the risk of developing TB depends both on the risk of being infected and the risk of infection leading to active disease. The former will depend on TB and HIV prevalence in the community in which an individual lives or works. The latter will depend on many factors affecting an individual both genetically and environmentally⁶. Thus, with an increasing awareness on TB in

all the countries in recent years, the cases on TB synovitis related to arthroplasty have been reported, and a case of successfully conservatively treated knee joint with TB after total knee replacement has been one of them^{22–31}. Diagnostic challenges and consequences of a diagnostic delay, especially in HIV-infected individuals have been highlighted²⁴. With the increasing use of immunosuppressive agents, including TNF-alpha inhibitors, it is likely that there will be an increase in the number of mycobacterial infectious disease of the knee. The presence of a multi-drug resistance of *M. tuberculosis* as a cause of infectious disease in an immune compromised host, makes the case management more difficult and the disease outcome uncertain³².

Conclusion

Clinicians should suspect TB synovitis in all patients with febrile condition and painful swelling of a joint, especially in the elderly. Keeping TB in mind can lead to proper diagnostic procedures and the therapy in a timely manner. It can lead to a successful disease outcome, decrease of patient's inability, and to prevention of further TB dissemination and possible death from a curable disease.

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