

Institute for Pulmonary Diseases of Vojvodina, Sremska Kamenica¹

College of Vocational Studies for the Education of Preschool Teachers

and Sports Trainers, Department of Biomedical Sciences, Subotica²

University of Novi Sad, Faculty of Medicine Novi Sad,

Department of Internal Medicine³

College of Social Work, Department of Psychology, Belgrade⁴

College of Applied Studies "Sirmium", Department of Medical Sciences, Sremska Mitrovica⁵

Clinical Center of Vojvodina, Clinic of Otorhinolaryngology and Head and Neck Surgery, Novi Sad⁶

Case report

Prikaz slučaja

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A SPINAL TUMOR OR TUBERCULOSIS – A CASE REPORT AND SHORT LITERATURE REVIEW

TUMOR ILI TUBERKULOZA KIČME – PRIKAZ SLUČAJA I KRATAK PREGLED LITERATURE

Ana MILENKOVIĆ¹, Jovan JAVORAC¹⁻³, Dejan ŽIVANOVIĆ^{4,5}, Svetlana KAŠIKOVIĆ LEČIĆ^{1,3},
Vanja TOVILOVIĆ⁶ and Miroslav ILIĆ^{1,3}

Summary

Introduction. Among infectious diseases, tuberculosis ranks first in terms of morbidity and mortality. It mainly affects the lungs, but it can affect any organ in the body. **Case Report.** A 29-year old female patient, bacillus Calmette-Guerin vaccinated, human immunodeficiency virus-negative, non-smoker, active athlete, presented with magnetic resonance imaging of the spine indicating vertebral body collapse of Th10 with signs of intraosseous infiltration, extraosseous prevertebral, and extracorporeal spread into the spinal canal. Corpectomy of Th10 and Th11 with an anterior fusion of Th9-12 was performed by neurosurgical intervention. Histopathological examination of the vertebral body confirmed a necrotic granulomatous inflammation. No acid-fast bacilli were seen by Ziehl-Neelsen staining, while *Mycobacterium tuberculosis* culture was positive. Chest X-ray and computed tomography were normal, induced sputum smear microscopy was negative for *Mycobacterium tuberculosis*. The antituberculosis therapy lasted for 12 months. **Conclusion.** Spinal tuberculosis is a differential diagnostic problem in relation to pyogenic infections and metastatic bone tumors.

Key words: Spine; Neoplasms; Tuberculosis; Tuberculosis, Spinal; Diagnosis, Differential; Tuberculosis, Extrapulmonary

Sažetak

Uvod. Među infektivnim bolestima, tuberkuloza je na prvom mestu po broju obolelih i umrlih. Najčešće su zahvaćena pluća, ali svaki organ može oboleti. **Prikaz slučaja.** Pacijentkinja starosti 29 godina, vakcinisana be-se-že vakcinom, negativna na HIV, nepušač, aktivni sportista. Magnetna rezonancija kičme ukazuje na kolaps Th10 pršljenkog tela sa znacima intraosealnog infiltrata, ekstraosealnog prevertebralnog i retrokorporalnog širenja u kičmeni kanal. Neurohirurškom intervencijom urađena je korpo- rektomija Th10 i Th11 sa prednjom fuzijom Th9-12. Patohistološkim pregledom pršljenkog tela verifikovana je nekrotična granulomatozna upala. Bojenjem po Cil-Nilsenu (*Ziehl-Neelsen*) nisu viđeni acidorezistentni bacili, dok su kulture na *Mycobacterium tuberculosis* bile pozitivne. Radiogram i pregled kompjuterizovanim tomografijom grudnog koša bili su urednog nalaza, indukovani sputumi direktnom mikroskopijom i kulturama negativni na *Mycobacterium tuberculosis*. Lečenje antituberkuloticima je sprovedeno u ukupnom trajanju od 12 meseci. **Zaključak.** Tuberkuloza kičme je diferencijalno-dijagnostički problem u odnosu na piogene infekcije i metastatske tumore kostiju.

Ključne reči: kičma; neoplazme; tuberkuloza; tuberkuloza kičme; diferencijalna dijagnoza; ekstrapulmonalna tuberkuloza

Introduction

In terms of mortality, tuberculosis (TB) ranks first among infectious diseases, despite the fact that it has been around for over 4,000 years. Every year, about 10 million patients in the world are affected by TB, 1.2 million die, and 16% of patients have an extrapulmonary form of TB [1]. In 2019 in Serbia, the incidence of TB was 9.02 per 100,000 people with 14 fatalities (0.13 per 100,000) [2].

Extrapulmonary TB has a non-specific clinical picture, which makes the diagnosis and treatment

more difficult. The aim of this study was to present such a case.

Case Report

A 29-year-old woman suffered a thoracic spine injury (Th10) in a traffic accident due to a sudden jerk during the impact. In the next three years, she felt occasional pain at the point of injury, without neurological or general problems. She was bacillus Calmette-Guerin vaccinated, human immunodeficiency virus (HIV)-negative, non-smoker, active bowler, living in good social conditions, and denied-

Abbreviations

TB	– tuberculosis
MRI	– magnetic resonance imaging
HIV	– human immunodeficiency virus
MT	– Mycobacterium tuberculosis
CT	– computed tomography



Figure 1. Sagittal section of T2 MRI showing expansive mass between Th10 and Th11 vertebral bodies

Slika 1. Sagitalni presek T2 magnetne rezonancije koji prikazuje ekspanzivnu masu između Th10-11 kičmenog pršljenja

previous contact with a TB patient. During this period, she was examined several times by a specialist in general medicine, neurologists, and orthopedists and was treated with nonsteroidal anti-inflammatory drugs. The neurological status was normal. Magnetic resonance imaging (MRI) of the thoracolumbar segment showed an inhomogeneous lesion in the body of the Th10 vertebra, which was radiologically characterized as post-traumatic. In the meantime, she got pregnant and gave birth to a healthy child by natural birth. After childbirth, the symptoms got worse, including increased pain intensity and development of deformities in the form of swelling at the level of the previous injury, which was clinically painful to palpation, without signs of skin inflammation or suppuration.

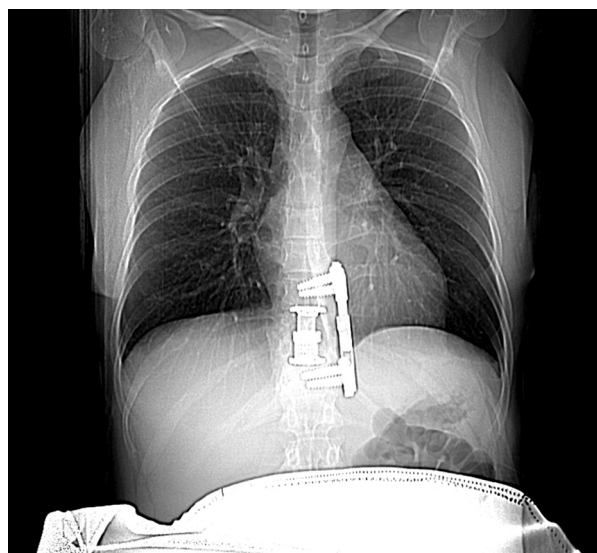


Figure 2. Chest X-ray before therapy without signs of active pulmonary tuberculosis

Slika 2. Radiogram grudnog koša pre započinjanja terapije bez aktivnih plućnih promena

The repeated MRI showed a complete collapse of the Th10 vertebral body with signs of intraosseous infiltration and extraosseous prevertebral and extra-corporeal expansion into the spinal canal, with a significant compressive effect on the spinal cord with absolute narrowing of the spinal canal (**Figure 1**). Partial collapse of the Th11 vertebral body was also confirmed. The neurological status was still normal. Considering the clinical and radiological progression, a corpectomy of Th10 and Th11 with an anterior fusion of Th9-12 was performed. No acid-resistant bacilli were seen by direct microscopy of the vertebral bodies. Bacteriological cultures remained sterile, while cultures for Mycobacterium tuberculosis (MT) were positive. Histopathological examination of the material verified necrotic granulomatous inflammation, while Ziehl-Neelsen staining did not show acid-resistant bacilli or Periodic acid-Schiff + microorganisms. A susceptibility test was performed to determine susceptibility to all antitubercular agents and treatment was started according to the scheme for category I patients. Chest X-ray computed tomography (CT) findings were normal (**Figure 2**). No acid-resistant bacilli were seen by direct microscopy of induced sputum, and MT cultures were negative. However, the QuantiFERON test was positive. No postoperative complications were observed and further treatment was uneventful. After the surgery, the patient denied the previously mentioned problem (pain in the affected part of the spine). The antituberculosis treatment lasted for 12 months.

Discussion

Considering that this is a young person without risk factors for TB, we initially checked the HIV status (negative) since the increase in the number of

Table 1. Data from several studies investigating spinal TB**Tabela 1.** Rezultati nekoliko studija koje su istraživale spinalnu tuberkulozu

Authors <i>Autori</i>	Country <i>Zemlja</i>	Study design <i>Vrsta studije</i>	No. of patients/ <i>Broj</i> <i>pacijenata</i>	Symptoms <i>Simptomi</i>	Localization <i>Lokalizacija</i>	Surgery <i>Hirurgija</i>	Antitubercular agents <i>Antituberkulotici</i>
Lin L, et al.	China <i>Kina</i>	Meta-analysis <i>Meta-analiza</i>	851	ND <i>NP</i>	ND <i>NP</i>	All <i>Svi</i>	Short/Kratki režim: 397 Standard/Standardni: 454
Narayan V, et al.	USA <i>SAD</i>	Systematic review/ <i>Pregledna</i> studija	ND <i>NP</i>	Focal back pain, motor deficit/ <i>Lokalizovan bol u leđima, motorni deficit</i>	ND <i>NP</i>	All <i>Svi</i>	All <i>Svi</i>
Yuan B, et al.	China <i>Kina</i>	Systematic review/ <i>Pregledna</i> studija	456	Back pain <i>Bol u leđima</i>	Cervical spine <i>Vratna kičma</i>	329	All <i>Svi</i>
Bao D, et al.	China <i>Kina</i>	Meta-analysis <i>Meta-analiza</i>	247	ND <i>NP</i>	Cervical spine <i>Vratna kičma</i>	153	94
Li M, et al.	China <i>Kina</i>	Case series <i>Serijski slučajevi</i>	26	Back pain, general symptoms/ <i>Bol u leđima, opšti simptomi</i>	Lumbosacral spine <i>Lumbosakralna kičma</i>	26	26 (Standard Standardni)
Pu F, et al.	China <i>Kina</i>	Case series <i>Serijski slučajevi</i>	10	Back pain, spinal activity limitation <i>Bol u leđima, ograničeni pokreti kičme</i>	Thoracic 3, thoracolumbar 1, lumbar 5, sacral 1/ <i>Torakalna 3, torakolumbalna 1, lumbalna 5, sakralna 1</i>		
Wang P, et al.	China <i>Kina</i>	Retrospective study <i>Retrospektivna studija</i>	597	Back pain, sweating <i>Bol u leđima, prenožavanje</i>	Thoracic 50.19%, lumbar 40.09%, sacral 4.14%, cervical 2.59%/ <i>Torakalna 50.19%, lumbalna 40.09%, sakralna 4.14%, vratna 2.59%</i>	483	136

Legend: ND – No data

Legenda NP – nema podataka

patients with HIV correlates with the increase in the number of TB patients [1].

Spinal TB is the most common extrapulmonary TB, accounting for about 50% of musculoskeletal TB and 1% of all forms of TB [3]. It is caused by lymphohematogenous spread from the primary focus [4]. **Table 1** summarizes the most important data from several studies that investigated spinal TB [3, 5–10].

The main risk factors for the development of TB are HIV infection, low social status, alcoholism, and old age. However, our patient did not have any of these risk factors. In our case, the risk factors included the traffic accident (post-traumatic lesion), as well as active bowling (sports injury). Numerous studies have shown that there is a genetic predisposition due to which some people develop an active form of the disease and some do not [11].

As far as the clinical features are concerned, spinal TB compresses the spinal cord and leads to pain, limited mobility, kyphosis, paralysis, and even death [3]. When evaluating back pain, general symptoms should raise suspicion of a specific proc-

ess such as weight loss, night sweats, and persistence of pain after 6 weeks of treatment with nonsteroidal anti-inflammatory drugs [12].

The use of the QuantiFERON test in case of suspected active TB is justified if the lesion is not available for biopsy, or as an additional test to confirm or exclude the diagnosis [13–15]. In our case, the QuantiFERON test served for confirmation of spinal TB.

In addition to medical treatment as the basic type of treatment, in certain cases, surgery plays an auxiliary role, and in our patient, the surgical approach was both diagnostic and therapeutic.

Conclusion

Spinal tuberculosis is a differential diagnostic problem in relation to pyogenic infections and metastatic bone tumors. Histopathological and bacteriological examinations are a great challenge due to the localization of the disease and potential complications during invasive procedures.

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