Spondylitis Tuberculosis in Neurosurgery Department Bandung Indonesia

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Abstract

Spondylitis TB is an infection of Mycobacterium TB involving the spine. The course of spondylitis TB is relatively indolent (without pain), thus early diagnosis is challenging. This study was conducted to evaluate the clinical presentation and the goal of surgery in twelve patients who had been operated for spondylitis tuberculosis (TB) in the Department of Neurosurgery, Faculty of Medicine, Universitas Padjadjaran-Dr. Hasan Sadikin Hospital, Bandung, Indonesia between May 2012–2013 were reviewed retrospectively. This study analyzed the medical records of patients operated in our center. A clinical examination, spinal X-Ray, computed tomography scans were obtained before and after the operation is examined. Final diagnosis was based on histological characteristics and polymerase chain reaction (PCR) result of the Mycobacterium TB bacteria. The chief complaint of spondylitis TB patients admitted or consulted is lower limb weakness. There were 12 cases of spondylitis TB (5 women and 7 men with a ratio of 1: 1.4). The average age was 34.3 (the youngest patient was 17 years old and the oldest was 56 years) with a standard deviation ± 9.9. The infected spines are: one patient in the cervical, eight patients in thoracal and three patients in lumbar. The chief complaint of spondylitis TB patients admitted or consulted is lower limb weakness (83.3%). Gibbus is observed in 83.3% of patients. Anterior cervical discectomy and fusion was performed in 1 case and posterior was used in 11 cases. A comprehensive history taking, along with correct sampling using various imaging modalities and PCR, will certainly lead to the diagnosis of spondylitis TB. It must be noted that neurological deficit due to spinal tuberculosis is reversible in majority of cases, especially if decompression is achieved promptly.

INTRODUCTION

Spinal tuberculosis infection, or commonly referred as spondylitis tuberculosis (TB) or vertebral osteomyelitis tuberculosis or Pott's disease [1], caused by the Mycobacterium tuberculosis bacteria that attacks the corpus vertebrae, potentially causing serious morbidity, including neurological deficits and permanent spine deformity. The most common deformity is kyphotic deformity, known as the gibbus. The diagnosis is usually established at advanced stage, where severe spinal deformity and neurological deficits such as paraplegia are evident [2,3].

Indonesia is ranked after India and China as country with most population infected by TB [4]. Approximately 20% of pulmonary TB infection will spread outside the lung (extrapulmonary TB) [5]. Eleven percent of extrapulmonary TB is osteoarticular TB, and approximately half of the patients have spinal TB infection [6]. The management of spondylitis TB in general includes anti-TB drugs, immobilization with or without surgical intervention.

This study was conducted in order to evaluate the clinical presentation and the goal of surgery in 12 cases of patients with spondylitis TB treated in the Department of Neurosurgery, Faculty of Medicine, Universitas Padjadjaran (FK UNPAD)-Dr. Hasan Sadikin, Hospital (RSHS), Bandung from 2012-2013.

METHODS

This research was a retrospective cohort study examining the medical records of spondylitis TB patients operated in the Department of Neurosurgery, FK UNPAD-RSHS in May 2012–May 2013. A clinical examination, spinal X-Ray, and computed tomography (CT) scans were obtained before and after the operation is performed (Figure 1). Final diagnosis was achieved based on histological characteristics and outcome of polymerase
The infected spine are: one patient in the cervical, eight patients in thoracal and three patients in lumbar. The chief complaint of spondylitis TB patients admitted or consulted is lower limb weakness (83.3%). Gibbus is observed in 83.3% of patients. ACDF was performed in 1 case and posterior was used in 11 cases (Table 1). Diagnosis is based on histological characteristic (hematoxylin and eosin staining) and laboratory tests using PCR; the DNA samples were amplified using primers IS6110 with product result 123 base pairs (bp). Forward and reverse primer IS6110 consists of:

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\text{IS6110 forward: } (\text{5'} \text{– CCT GCG AGC GTA GGC GTC G– 3'})
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DISCUSSION

World Health Organization (WHO) has set TB as world emergency issues. WHO estimates that there are approximately eight million new cases annually and two million deaths each year. If the problem is not managed, WHO predicts that there will be approximately 200 million people infected by TB and 35 million deaths may be encountered in 2000 to 2020 [4].

Recently, Murdaca and colleagues emerged a very serious issue that tell us how the administration of pro-inflammatory cytokine inhibitor, such as tumor necrosis factor (TNF)-alpha inhibitor, for chronic immune-mediated diseases appears to be responsible (adverse event) for re-activation of latent tuberculosis (LTB) and the overall risk of opportunistic infections [10]. Murdaca and colleagues suggested that the clinician must have patient’s medical history, Mantoux test and chest x-ray should always be done before TNFalpaha inhibitor consider to be given to the patient with chronic immune-mediated diseases [10]. In Indonesia, TNFalpaha inhibitor for chronic immune-mediated diseases (such as rheumaotid arthritis, anlylosing spondylitis, psoriatic arthritis, and other inflammatory arthritis) is not our national protocol and will not covered by our national insurance; therefore no LTB associated with TNFalpaha inhibitor therapy reported in our country. The message that they want to underline is that, the clinician should be aware of TB in subjects undergoing TNFalpha inhibitor therapy, especially in countries with a high prevalence of TB, such us in Indonesia.

Clinical manifestations of spondylitis TB are relatively indolent (without the pain) [9]. The patients usually complaint unspecific local pain in the infected area of the vertebra. Infection begins in the subchondral epiphyseal vertebral area then extends to the bone ossification center that may devitalized the bone due to TB bacilli exotoxin that may cause loss of extracellular matrix also spread locally to the subligament longitudinal area. TB germ induce inflammatory reaction and the formation of granulation tissue. This granulation will start damaging and erodes the cartilage and even bone tissue resulting in demineralization and then spread to the disc that has a poor blood supply. This process may lead to deformity known kyphotic gibbus (83.3% patients are presented with gibbus in this study).

Spondylitis TB is most commonly located in thoracic areas, as many as 71% [11]; 66.7% in this study. The main artery that affects the spinal cord in thoracic segments is most frequently located in the left vertebra thorakal 8 to lumbar 3. Thrombosis of this artery may cause paraplegia. Another factor to be taken into account is the relatively large diameter of the spinal canal compared with vertebral canal. Lumbar vertebrae intumesensia begin to widen as high as ± vertebra thoracal 10, where vertebral canal in the area is relatively small. As vertebral canal in the first lumbar vertebra is large, it provides more space to move when there is compression on the anterior part. This may explain why paraplegia is common in vertebral thoracic lesions.

Gulhane Askeri Tip Academics (GATA) classification determines the best therapy for the patient. This classification system is based on clinical and radiological criteria, including: abscess formation, disc degeneration, vertebral collapse, kyphosis, sagittal angulation, vertebral instability and neurological symptoms; spondylitis TB is divided into three types (GATA I, II, and III) [12]. Surgical intervention is performed on patients with GATA IB-III. Meanwhile, the only contraindication of surgery is heart and lung failure.

The management of spondylitis TB aims to: (i) eradicate TB germs using anti-TB drugs, (ii) Improve the patient’s general condition, (iii) prevent or correct deformity, using decompression and stabilization, (iv) Prevent or treat complications such as neurological deficit such as paraplegi [13]. Treatment of spondylitis TB is generally divided into two parts that can be initiated concurrently, medical and surgical. Medical treatment is fundamental, whereas surgery and complementary medical therapy varies among patients [14]. Although medical treatment...
is the core therapy in the management of spondylitis TB patients, surgery play an important role in spondylitis TB cases with cold abscess, tuberculosis lesions, paraplegia, kyphosis progressive or bone or disc herniation in the neural canal. In this study, surgical therapy was performed in 83.3% of patients with cold abscess.

There are several surgical approaches; including (a) Anterior approach where abscess can be evacuated, necrotic substances can be disposed, anterior decompression of the spinal cord can be achieved. Tissue for histopathological examination and culture may be obtained easily and kyphosis can be corrected or stabilized with autogenous bone graft, (b) Posterior approach; indicated in cases where posterior elements are involved and posterior stabilization is needed before anterior decompression and arthrodysis, as well as in patients with stable or minimal spinal deformity with intramedullary tuberculoma or epidural abscess present. In this study, surgery was conducted, using posterior approach, due to progressive neurologic deficits and the progressive increase of spinal deformity (91.7%).

CONCLUSION

A comprehensive history taking, along with correct sampling using various imaging modalities and PCR, will certainly lead to the diagnosis of spondylitis TB. It must be noted that neurological deficit due to spinal tuberculosis is reversible in majority of cases, especially if decompression is achieved promptly. Appropriate fusion and stabilization may prevent pain and late deformity.

CONSENT

Informed consent was obtained from each patient on May 2012–2013 for publication of this study and any accompanying images

AUTHORS’ CONTRIBUTIONS

AF, IH, FY, RHD and MZA had examined, treated, observed, and followed up the subject of this research. AF, FY and RHD performed all the operation on the patient. All authors participated in writing the manuscript. All authors has read and approved of the final manuscript.

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REFERENCES