

Spinal intramedullary tuberculosis (SIMT) in 13 years old girl

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Abstract

Tuberculosis (TB) is one of top 10 causes of death due to communicable diseases worldwide. Indonesia is one of 30 countries with the highest cases of TB worldwide. In 2019, there were 63.111 (11%) cases of TB in children 0-14 years old. Central Nerve System (CNS) involvement in tuberculosis occurred in 10% of cases, but only 2% developed into spinal intramedullary tuberculosis (SIMT) among all cases of CNS TB. A 13 years old girl with progressive inferior paralysis, who was early diagnosed as intramedullary thoracalis tumor, suspected as epindymoma because in Magnetic Resonance Imaging (MRI) of spinal chord at T8-T9 level revealed a hypointensed lesion intradural intramedullary. A chronic granulomatous tissue with positive result of acid-fast bacilli (AFB) was obtained in histopathology result. Patient was diagnosed as Spinal Intramedullary TB and got anti-tuberculosis treatment (ATT). Spinal tuberculosis commonly occur in young-adult patient. Signs of depressed lesion of spinal chord frequently happen. Awareness to eliminate spinal TB in young patient with paralysis and mass finding from radiology result would be necessary in early diagnosis and intervention of SIMT.

Keywords

diagnostic; tuberculosis; spinal tuberculosis; SIMT.

Introduction

Tuberculosis (TB) is one of top 10 causes of death due to communicable diseases worldwide. In 2019, there were 543.874 TB cases in Indonesia and 63.111 cases (11%) occurred in children 0-14 years old [1].

According to anatomy location, TB is divided into pulmonary and extrapulmonary TB. Sign and symptom of extrapulmonary TB include systemic symptoms and specific symptoms of the location that had been infected [2].

Involvement of Central Nerve System (CNS) in tuberculosis occurred in 10% of TB cases, meningitis TB is a common manifestation. Intramedullary tuberculosis (IMT) occurs in two of 100.000 cases of TB and only 2% among all cases of CNS TB [3,4].

This case report presented a 13 years old girl with progressive inferior paralysis and who was early diagnosed as intramedular thoracalis tumor, suspected as epindymoma, then been diagnosed as Intramedullary TB from histopathology result.

Case Presentation

A 13 years old girl, was brought to pediatric outpatient clinic with weakness on both legs since 4 months before the hospital visit. In the beginning, weakness was perceived in her right leg, after 2 months the weakness of right leg was getting better but then she felt weakness in her left leg, and it settled on both legs in 1 months before the hospital visit. First time the weakness occurred, she could walk with help. However, since the weakness was getting worse, then she couldn't move her legs and feel numbness on both legs. She didn't have symptoms of fever, cough, rhinitis, hard of breathing, night sweats, weight loss, or appetite loss. She stayed in a boarding school since 2.5 years ago, had a complete immunization, and none of her family members had the same symptoms or history of TB.

From physical examination in neurology clinic, there was paresis in both legs, level of motoric value was 4444/4444, then it progressively became 2233/3333 to 1111/1111 in 3 weeks and accompanied with parasthesia as high as T10 level (Frankel Score A). There was no vertebral asymmetry. There was no autonomic nerve dysfunction, because she was able to hold an impulse to micturition or defecation.

There was no abnormality in blood laboratory result. From MRI revealed kyphosis curve, no listhesis, intact corpus vertebrae, no compression fracture, but a hypointens lesion was found in T1-T2 FSE and T2FS intradural intramedullary as high as T8-9, rounded, demarcated with irregular edge, intensity inhomogeneity with contrast, sized 1.7 X 1.3 X 1.4 cm (Figure 1).

She was diagnosed as intramedullary thoracalis tumor and a laminectomy-biopsy procedure was performed as diagnostic procedure. From histopathology examination of the tissue, there were small fragmented stroma pollinated by lymphocyte with epithelioid cells, datia langhans cells and necrotizing foci. It associated with a chronic granulomatous inflammation tissue and acid-fast bacilli (AFB) test showed positive result (Figure 2).

According to histopathology result, she was diagnosed as Spinal Intramedullary TB and got anti-tuberculosis treatment (ATT).

Evaluation after 2 weeks of treatment, paresis still occurred 1111/1111, however she could feel tactile impulse and pain.

After 5 weeks of ATT and rehabilitation, the improvement was significant. From physical examination, level of motoric value increased to 3344/3344. After 2 months treatment of ATT, she was able to walk with help and level of motoric value increased to 4444/4444 (Frankel Score D).

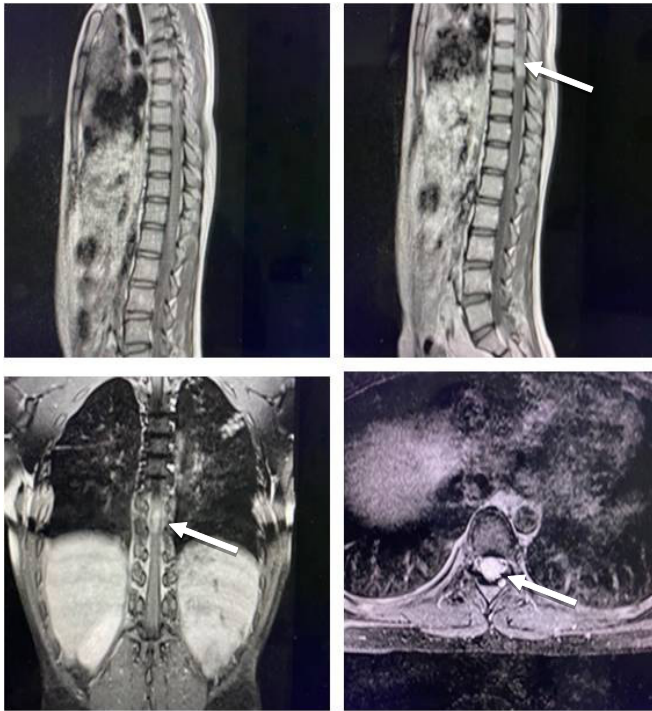


Figure 1: Spinal MRI (lesion marked by arrow).

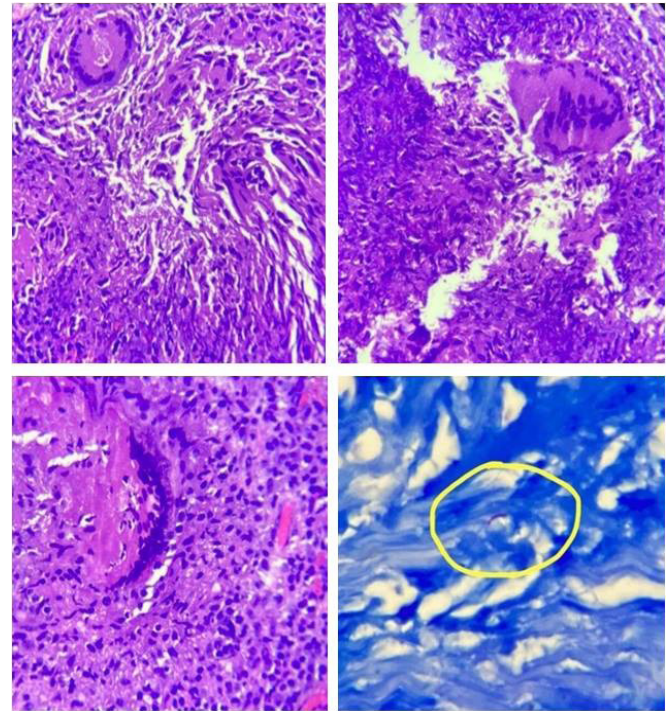


Figure 2: Histopathology and Acid Fast Bacilli (AFB) Test result.

Conclusion

According to WHO report in 2018, there were 10 million people had TB and Indonesia was one of 30 countries with the highest cases of TB worldwide from 2000-2018 [5].

Incidences of extra-pulmonary TB in Indonesia on 2019 were 55.711 cases(11%) [1]. Extra-pulmonary TB in children was suspected if a child had a specific sign and symptoms of organ involvement such as enlargement of lymph nodes in lymphadenitis TB, loss of consciousness or seizure in meningitis TB, sign of depressed lesion of spinal chord in tuberculoma, vertebral angulation (gibbus) inspondylitis TB, ulcer with skin bridgein scrofuloderma, symptoms of other infected organ and be confirmed with bacteriological findings of *M. tuberculosis* in acid-fast bacilli (AFB) and/or rapid molecular test (XPertMTB/RIF) [2].

TB infection of central nerve system (CNS) is divided into 4 categories : Potts disease (spondylitis TB), non-osseus spinal tuberculoma (extra-dural, intra-dural extra-medullary, intra-medullary), tuberculous arachnoiditis, and meningitis TB [3].

As Spondylitis TB, spinal tuberculosis resulted from the spreadness of *M. tuberculosis* through blood flow (hematogenous) of epiphyseal arteries or batson venous plexus from para-vertebral vein branches. It associated with spinal tuberculoma in young patient because the disc is rich of vascularization compared to old patient whose into a-vascularization as they getting older [6,7].

Spinal Intramedullary Tuberkulosis (SIMT) commonly occurred in thoracic spinal cord (55%), because this region have a function to endure a pressure and the mobilization is higher than other regions [7,8]. SIMT frequently reported in patient with HIV, autoimmune disease, and patient with imunosupresant therapy after heart transplantation [9].

Symptoms that regularly revealed is a weakness of legs, paresthesia, quadriplegia, paraplegia, and

urinary or gastro-intestinal tract dysfunction [8]. SIMT could be performed with or without systemic symptoms of TB or primary lung TB infection. Therefore, SMIT is difficult to diagnose early and often misdiagnosed as paravertebral tumor [6].

SIMT give a good response with ATT. Surgical intervention is needed in bone involvement cases, abscess formed or paraplegia. Rehabilitative treatment evidently increases a significant clinical improvement in Spinal TB infection. Hence, spinal TB cases commonly infected young patient, prevention is important to control the spreadity of TB [6,10].

SIMT prognosis will be better if the patient is diagnosed and get intervention early. This case bring to mind an awareness to eliminate spinal TB in young patient who has paresis or paralysis of extremities with para-vertebral mass from radiological finding.

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