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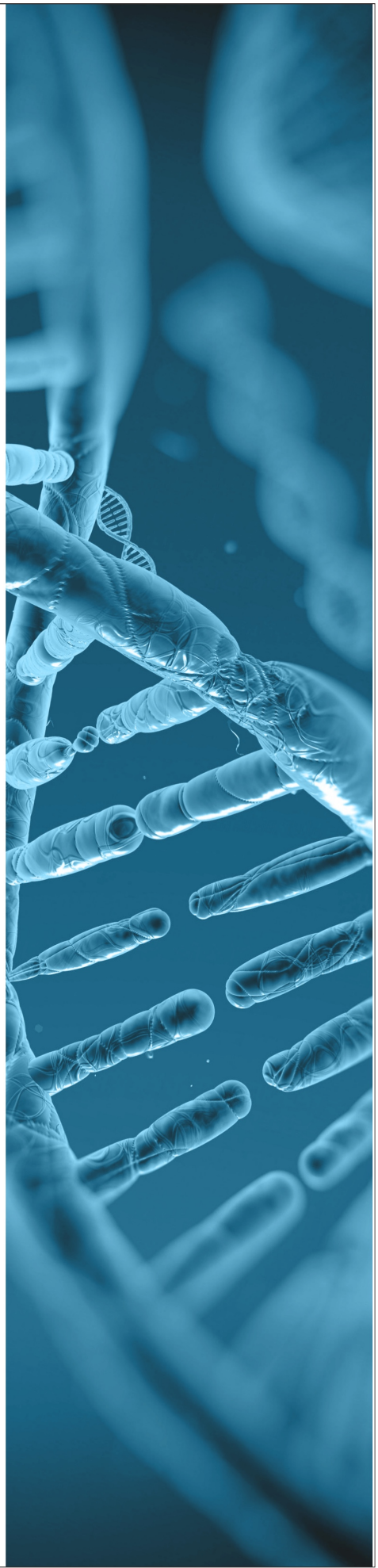

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JURNAL BIOMEDIKA DAN KESEHATAN
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CASE REPORT

Early manifestation of Pott's disease in a 3-year-old child: Case Report

Manifestasi Awal Penyakit Pott's pada Anak 3 tahun : Case Repot

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ABSTRACT

Pott's disease is an extra-pulmonary manifestation of TB described in 1779 by Percivall Pott, which is the most common form of skeletal TB, particularly in children. The manifestation leads to bony destruction, characterized by back pain, fever, anorexia, night sweats, weight loss, and paraparesis, in very low progression. In this case, a 3-year-old boy with an alternating gait pattern and pain in his lower leg when walking more than 100 meters, walking slightly bent over. A bony protrusion was slightly palpated in the thoracic area, and Mantoux test results were positive. A thorax X-ray revealed a paravertebral mass, and an MRI showed multiple-level vertebral body disintegration on thoracic 7 and thoracic 8 with a paravertebral abscess in the thoracic area. The patient is receiving conservative treatment, including TB drugs, thoracolumbar orthosis, and calcium. It is important to recognize early symptoms of spinal tuberculosis in children to prevent the deterioration of neurological status and kyphotic deformity. In these cases, a slight alteration in walking pattern without concomitant symptoms or significant laboratory findings yields significant changes on MRI. Early diagnosis might yield better results with conservative management. The conclusion of these cases is that the most prevalent type of skeletal tuberculosis is Pott's disease, and the incidence in youngsters varies. The majority of patients presented with anorexia, fever, night sweats, weight loss, rachialgia, and paraplegia. Early discovery of the disease's mild signs may help to stop its progression.

Keywords: Infection; Pott's disease; Spinal tuberculosis; Child; Kyphotic deformity.

ABSTRAK

Penyakit Pott adalah salah satu TBC extrapulmonal yang pertama kali di temukan oleh Percivall Pott pada tahun 1779 dan paling banyak terjadi pada anak. Manifestasi akhir dari dari penyakit ini adalah kerusakan tulang yang berlangsung perlahan dengan gejala awal berupa nyeri ditulang belakang, demam, anoreksia, keringat malam hari, penurunan berat badan dan paraparese. Pada kasus ini anak laki-laki berusia 3 tahun dibawa orang tua dengan keluhan sulit untuk berjalan lebih dari 100 m, disertai nyeri pada kaki sehingga berjalan bungkuk. Penonjolan tulang teraba pada daerah thorasic. Pemeriksaan penunjang didapatkan hasil Mantoux positif dengan Gambaran paravertebral mass pada xray thorax. MRI thorakal menunjukkan destruksi dari thorakal 7 dan 8 dengan paravertebral abses disekelilingnya. Pasien menjalani konservatif management berupa pengobatan TB, Thoracolumbar spine Orthosis dan calcium. Untuk mengenali gejala awal TBC tulang belakang pada anak sangatlah penting untuk mencegah gangguan neurologis dan deformitas kyphotic. Pada kasus ini, gangguan berjalan hanya menjadi gejala awal tanpa disertai gejala pemberat lain namun hasil laboratorium dan MRI memberikan hasil yang bermakna. Karenanya diagnosis awal menjadi penting untuk meningkatkan keberhasilan tatalaksana konservatif. Kesimpulan pada kasus ini adalah penyakit Pott memiliki angka prevalensi tertitnggi pada kasus TBC tulang dan insidensi pada anak bervariasi. Secara umum gejala yang muncul berupa anoreksia, demam, keringat malam, berat badan turun drastic, nyeri ditulang belakang dan kelemahan tungkai. Deteksi awal penyakit ini menurunkan angka progresifitas penyakit.

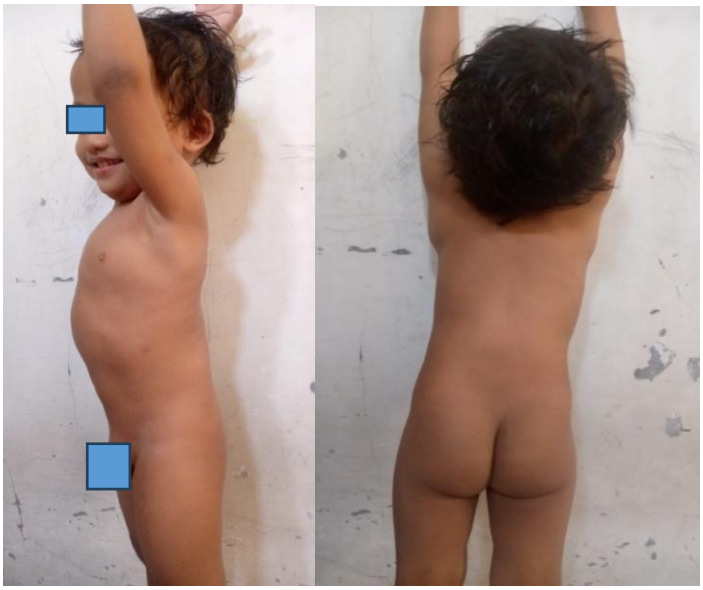
Kata Kunci: Infeksi; penyakit pott; Tuberkulosis tulang belakang; Anak; Deformitas kifosis.

INTRODUCTION

Pott's disease or spine tuberculosis has recently shown a significant rise in developed nations due to global migration. The World Health Organization (WHO) stated that 10.4 million new cases occurred during 2016, mostly coming from South-East Asia (45%), Africa (25%), and the Western Pacific (17%)[2]. The top five countries were India, Indonesia, China, the Philippines, and Pakistan. Tuberculosis in children occurs between the ages of 0 and 14 years.[2] In developing countries, there are 40-50% or around 500,000 children aged less than 15 years in the world who suffer from tuberculosis every year.[3] The proportion of pediatric TB cases treated in Indonesia from 2010 to 2018 were 9.4% to 11%. From January to November 2022, there were 503,712 TB patients, of whom 61,594 were children. To be precise, there are 34,615 patients aged 0-5 years and 26,979 aged 5-14 years.[3] Fifty percent of all osteoarticular tuberculosis affected the spine.[2] Spinal tuberculosis can be divided into complicated or uncomplicated. In complicated cases, patients present deformity, instability, and neurological deficit. In Uncomplicated, the diagnosis was made before all complications appear[ed]. The commonest symptoms are backache, which is caused by an inflammatory reaction of the bone, and, rarely, radicular pain. The amount of bony destruction that leads to instability is characterized by resting pain at the involved level.[1-3] Paraplegia and kyphotic deformity developed as two major problems. Children with spinal tuberculosis should be managed comprehensively since spine deformity not only impacts the short-term but also affects morbidity in the long term. Every decision should consider the possibility of spinal growth disturbance, caused by increasing bony destruction or elevating the kyphosis deformity.[1-4] In this case, the symptom is very mild, consisting only of alternating the patient's gait, and the patient is very young, so early detection will yield significant results and prevent complications.

CASE PRESENTATION

Male, 3 years old, brought by parent owing to a change in walking pattern seen 3 months prior to hospital admission. The patient's parents claim that if he goes more than 100 meters without stopping, he would complain of being sore and in agony all around his lower leg. The patient underwent an appendectomy after receiving an appendicitis diagnosis. After the physical examination, the patient walked with a slight forward lean. There were no obvious deformities, but there was a small amount of bony protrusion on the thorax. Neurological function, according to the Frankel classification, is Excellent. The results of the laboratory test are normal. Mantoux favourable. Thorax X-ray revealed a paravertebral mass. We discovered multiple-level vertebral body disintegration on thoracic 7 and thoracic 8 with a paravertebral abscess in the thoracal area on an MRI, causing canal stenosis. In cases with very mild symptoms despite the destruction of vertebral bodies and the accumulation of paravertebral abscesses, these cases are discussed.



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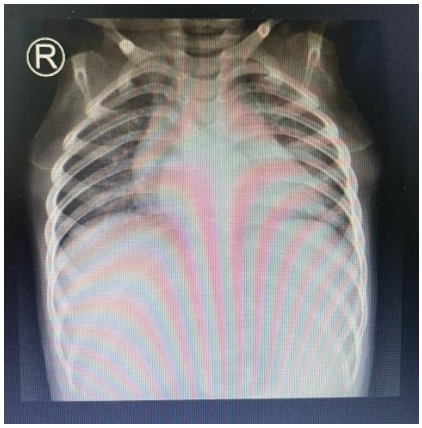

Figure 2. Thorax Xray: infiltrate on bilateral hemithorax with paravertebral mass

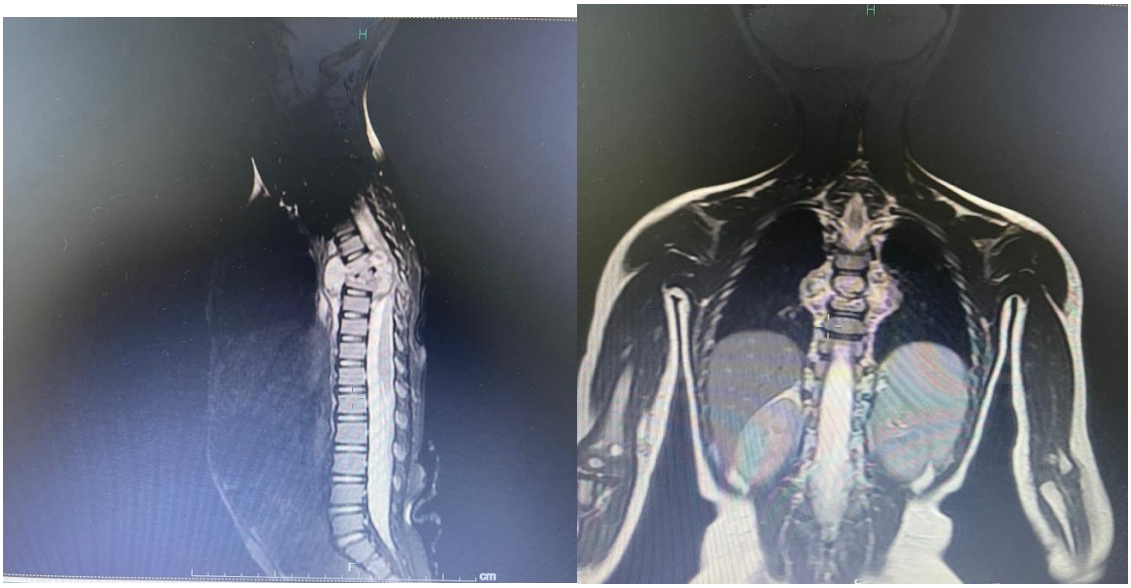

Figure 3. MRI Thoracal showing destruction of vertebral bodies at Thoracal 7 and Thoracal 8 with paravertebral abscess on the anterior and posterior that infiltrated the spinal canal and caused canal encroachment.

DISCUSSION

Spinal tuberculosis is the most common type of skeletal tuberculosis, accounting for half of all cases. In 2016, there were 10.4 million new cases worldwide, with India, Indonesia, China, the Philippines, and Pakistan having the most cases. Spinal tuberculosis usually affects children between 4 and 15 years old, with an average age of 9.1.[2]. Our case is quite young, at 3 years old, even though the youngest case reported is 11 months old.[5] The thoracic region is affected, which is unusual, as typically the lumbar spine is affected[6]. In this patient, the symptoms are only an alteration in walking pattern, which is concerning his parents, as the patient mostly came with anorexia, night sweats, fever, weight loss, back pain (rachialgia), and paraplegia.[6,7] An active pulmonary disease is present in <50% of the cases. In these cases, there are no significant changes indicative of pulmonary disease.[2] There is only a paravertebral mass that is suspected on the thorax X-ray.[8] Biological assessments commonly used for early detection are ESR, CRP, full blood count, hepatic assessment, and the tuberculin intradermal test. In this patient, there is no anomaly on laboratory findings; only the tuberculin test was positive (>6 mm of induration).[2] Spinal tuberculosis children, mainly spread through hematogenous. The deposited Mycobacterium in the vertebral body disrupted the infection and spread through the anterior and posterior longitudinal ligaments, causing destruction of the anterior part and growth disturbance in the posterior part of the vertebral bodies. The intervertebral lately affected. Soft tissue infection developed into epidural masses that compress the spinal cord, resulting in gibbous deformity in long-term cases. In children, vertebral destruction can be severe because most of the vertebral column is cartilaginous. The thoracic spine has relatively coronal and vertical facet joints and narrow, flat anteroposterior transverse processes. The flexion axis is centered ventrally, which allows kyphotic collapse.[3,7] In this patient, the kyphotic deformity involved thoracal 7 and 8 with a Cobb angle of almost 37 °. Some factors increased the risk of severe kyphotic deformity among children below 10 years of age,

including deformity involving more than 3 vertebral bodies and thoracic location. Severe kyphosis results in spinal cord compression, cardiopulmonary dysfunction, and is cosmetically unacceptable.[3,6,9] In these cases with Cobb angle 37 °, the patient does not have difficulties related to cardiopulmonary, and Frankel E.[10] Prospective studies are needed to define the surgical approach, steps, surgical stages, problems, and difficulties for correcting the kyphosis of 60° or more.[11-12] Children with spinal deformity due to tuberculosis can be corrected spontaneously as long as the endplate and apophyseal ring cartilage remain intact.[13-15] Conservative management for spinal TB in children consists of chemotherapy and orthopedic immobilization.[15] According to the WHO, the American Thoracic Society, and the Centers for Disease Control and Prevention, 12 months of tuberculous medication is required; this is why decompression surgery can be reserved for those who have failed 3-4 weeks of chemotherapy.[11,12] Kyphotic deformity can worsen with the growth of children. On average, a patient treated conservatively gains 15° of deformity. Many postulated that the reason for the increased kyphotic deformity is increased destruction and flexibility of the children, destruction of the end plate and growth plates, and mechanical forces of kyphosis on the growth of the anterior ½ fusion mass and adjacent healthy vertebrae. Continuing observation will be needed for these cases.[6,7]

CONCLUSION

Spinal tuberculosis or Pott's disease is the most common form of skeletal tuberculosis that effecting children[2]. The symptoms that commonly occur are anorexia, night sweats, back pain, paraplegia, and kyphotic deformity. Some examinations can be used for early detection of these infections, including laboratory and radiologic examinations. We reported a 3-year-old boy who presented with an altered walking pattern, with no significant changes on laboratory examination and a suggestive paravertebral mass on the thoracic X-ray. Further examination using MRI without contrast showed destruction of the vertebral body in the thoracic 7 and 8 region and a paravertebral abscess. Conservative treatment will be effective if the symptoms and anatomical changes are in the mild stage. Kyphotic deformity and paraplegia can be severely form if early detection and evaluation are misdone.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient's parent at the time of enrollment.

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AUTHORS CONTRIBUTION

Conceptualization, methodology, writing, data curation, analysis, and the final manuscript.

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CONFLICT OF INTEREST

The author declares no conflict of interest, financial or otherwise.

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by ira Juliet Anestessia FK

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CASE REPORT

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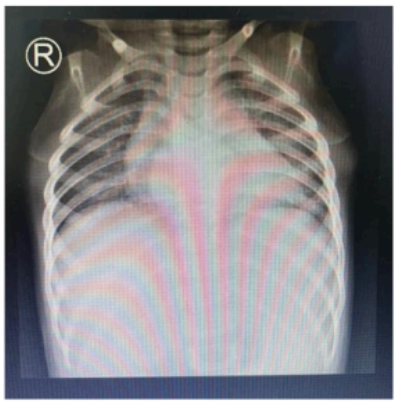

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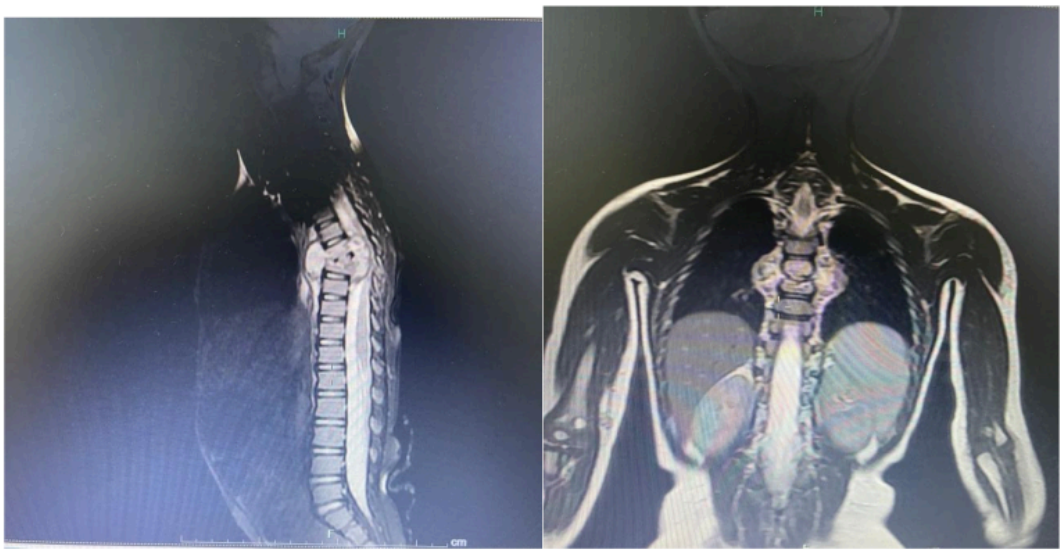

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DISCUSSION

Spinal tuberculosis is the most common type of skeletal tuberculosis, accounting for half of all cases. In 2016, there were 10.4 million new cases worldwide, with India, Indonesia, China, the Philippines, and Pakistan having the most cases. Spinal tuberculosis usually affects children between 4 and 15 years old, with an average age of 9.1.[2]. Our case is quite young, at 3 years old, even though the youngest case reported is 11 months old.[5] The thoracic region is affected, which is unusual, as typically the lumbar spine is affected[6]. In this patient, the symptoms are only an alteration in walking pattern, which is concerning his parents, as the patient mostly came with anorexia, night sweats, fever, weight loss, back pain (rachialgia), and paraplegia.[6,7] An active pulmonary disease is present in <50% of the cases. In these cases, there are no significant changes indicative of pulmonary disease.[2] There is only a paravertebral mass that is suspected on the thorax X-ray.[8] Biological assessments commonly used for early detection are ESR, CRP, full blood count, hepatic assessment, and the tuberculin intradermal test. In this patient, there is no anomaly on laboratory findings; only the tuberculin test was positive (>6 mm of induration).[2] Spinal tuberculosis children, mainly spread through hematogenous. The deposited Mycobacterium in the vertebral body disrupted the infection and spread through the anterior and posterior longitudinal ligaments, causing destruction of the anterior part and growth disturbance in the posterior part of the vertebral bodies. The intervertebral lately affected. Soft tissue infection developed into epidural masses that compress the spinal cord, resulting in gibbous deformity in long-term cases. In children, vertebral destruction can be severe because most of the vertebral column is cartilaginous. The thoracic spine has relatively coronal and vertical facet joints and narrow, flat anteroposterior transverse processes. The flexion axis is centered ventrally, which allows kyphotic collapse.[3,7] In this patient, the kyphotic deformity involved thoracal 7 and 8 with a Cobb angle of almost 37 °. Some factors increased the risk of severe kyphotic deformity among children below 10 years of age,

including deformity involving more than 3 vertebral bodies and thoracic location. Severe kyphosis results in spinal cord compression, cardiopulmonary dysfunction, and is cosmetically unacceptable.[3,6,9] In these cases with Cobb angle 37 °, the patient does not have difficulties related to cardiopulmonary, and Frankel E.[10] Prospective studies are needed to define the surgical approach, steps, surgical stages, problems, and difficulties for correcting the kyphosis of 60° or more.[11-12] Children with spinal deformity due to tuberculosis can be corrected spontaneously as long as the endplate and apophyseal ring cartilage remain intact.[13-15] Conservative management for spinal TB in children consists of chemotherapy and orthopedic immobilization.[15] According to the WHO, the American Thoracic Society, and the Centers for Disease Control and Prevention, 12 months of tuberculous medication is required; this is why decompression surgery can be reserved for those who have failed 3-4 weeks of chemotherapy.[11,12] Kyphotic deformity can worsen with the growth of children. On average, a patient treated conservatively gains 15° of deformity. Many postulated that the reason for the increased kyphotic deformity is increased destruction and flexibility of the children, destruction of the end plate and growth plates, and mechanical forces of kyphosis on the growth of the anterior ½ fusion mass and adjacent healthy vertebrae. Continuing observation will be needed for these cases.[6,7]

CONCLUSION

Spinal tuberculosis or Pott's disease is the most common form of skeletal tuberculosis that effecting children[2]. The symptoms that commonly occur are anorexia, night sweats, back pain, paraplegia, and kyphotic deformity. Some examinations can be used for early detection of these infections, including laboratory and radiologic examinations. We reported a 3-year-old boy who presented with an altered walking pattern, with no significant changes on laboratory examination and a suggestive paravertebral mass on the thoracic X-ray. Further examination using MRI without contrast showed destruction of the vertebral body in the thoracic 7 and 8 region and a paravertebral abscess. Conservative treatment will be effective if the symptoms and anatomical changes are in the mild stage. Kyphotic deformity and paraplegia can be severely form if early detection and evaluation are misdone.

CONSENT FOR PUBLICATION

Written informed consent was obtained from the patient's parent at the time of enrollment.

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AUTHORS CONTRIBUTION

Conceptualization, methodology, writing, data curation, analysis, and the final manuscript.

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CONFLICT OF INTEREST

The author declares no conflict of interest, financial or otherwise.

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