

Learning from errors

A 3-year-old boy with kyphosis, back mass and weakness

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Summary

Spinal tuberculosis (TB) in children is uncommon. The authors report a case of a 3-year-old boy who was diagnosed with TB spondylitis. He presented to the hospital with a back mass, back pain and inability to walk. He failed to receive TB prophylaxis after having been in close contact to his mother who had pulmonary TB. He received incision and drainage and continued on anti-TB regimens without complications. At 4-month follow-up, he was able to stand and walk without assistance. It is important to carry out contact investigations and provide TB prophylaxis to children who have had a history of contacting TB index cases to prevent TB disease and serious complications of TB infection.

BACKGROUND

According to the World Health Organization, in 2010 there were about 8.8 million incident cases of tuberculosis (TB) and 1.1 million deaths associated with TB without concomitant HIV infection.¹ Even though the Bacillus Calmette-Guérin vaccine can prevent disseminated TB and TB meningitis, its efficacy for preventing pulmonary TB is poor. When children are exposed to TB index cases, they can contract infections more easily and have a higher risk of developing disease than adults. Moreover, the diagnosis of TB disease in children is more difficult than that in adults because of non-specific clinical symptoms. We therefore report this case that failed to receive proper care and developed the rare condition of spinal TB. Without further treatment he could have become disabled from the sequelae of TB disease.

CASE PRESENTATION

A 3-year-old boy from the border region of Burma and Thailand was referred to the Chiang Mai University Hospital (CMUH) with the chief complaint of back mass and weakness. When he was 3 months old he was exposed to TB through contact with his TB-positive grandmother whose treatment status is unknown. The boy did not receive prophylaxis treatment. At 1 year of age, he was again exposed to TB through his mother who was diagnosed by positive acid-fast bacilli (AFB) smear. The boy did not receive prophylaxis treatment for TB. At 1.5 years of age, he was noted to have structural kyphosis without fever and weakness. He has an unknown vaccination history.

At 2.5 years of age, the boy presented to a provincial hospital in Chiang Mai with the chief complaint of back pain without fever and cough. The patient had a history of exposure to TB index cases and lateral and anterior-posterior (AP) radiography of the thoracic and lumbar spine showed osteolytic lesions. The AFB smear and culture from gastric washing showed no evidence of TB. The diagnosis of TB spondylitis was given on the basis of the patient's history of close contact to TB index cases,

clinical symptoms of back pain and radiological imaging. He was then treated with isoniazid, rifampicin, pyrazinamide, and streptomycin for 4 months. After treatment he developed a back mass (figure 1). An ultrasound showed a paravertebral and retroperitoneal abscess measuring $5.1 \times 4.7 \times 4.1$ cm. He was then referred and transferred to the CMUH with a history of back mass for 20 days, fever and onset of weakness.



Figure 1 Slight kyphosis and back mass measuring 10 cm in diameter.

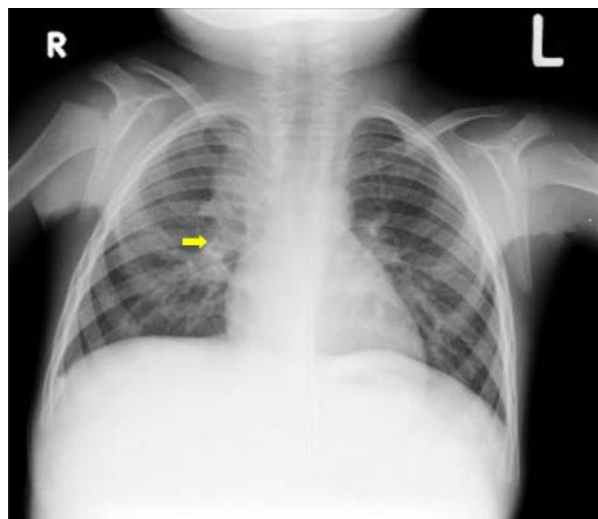


Figure 2 Hilar node enlargement (arrow) and right lung infiltration.

His physical examination on presentation to the CMUH was remarkable for a body temperature of 37.4°C. Inspection of his back revealed a sharp angulation of his lumbar back (Gibbus deformity). There was a 10 cm round fluctuated and tender mass at his left flank (figure 1). Both his legs were weak (motor strength: grade 4/5) and he was unable to walk and complained of severe pain.

INVESTIGATIONS

At admission to the CMUH, laboratory findings were remarkable for a haemoglobin level of 10.9 g/dl, white cell count of 13.2×10^9 cells/l, erythrocyte sedimentation

rate of 40 mm/h, alkaline phosphatase of 159 U/l and aspartate aminotransferase of 133 U/l. A basic metabolic panel was normal. A tuberculin skin test revealed an induration of 30 mm at 48 h. An AP chest radiograph showed right hilar node enlargement and right lung infiltration (figure 2). Spine films taken in AP and lateral views showed osteolytic lesions at L3–L4 and upper L5 levels (figure 3). An AFB smear of the pus from the incision and drainage (I&D) was negative and the TB culture had no growth after 8 weeks. Gastric washing for AFB smear and culture was negative.

DIFFERENTIAL DIAGNOSIS

TB spondylitis with secondary paravertebral abscess.

TREATMENT

The patient received anti-TB treatment with isoniazid, rifampicin, pyrazinamide, ethambutol, ofloxacin and I&D.

OUTCOME AND FOLLOW-UP

After 4 months, the boy returned to the CMUH for a follow-up visit. Repeated AP and lateral films of the spine showed improvement of alignment (figure 4). He was able to stand and walk without assistance and denied any pain. The back mass resolved and he still had some residual kyphosis.

DISCUSSION

In a TB study done in a refugee camp in Thailand, 37 of 629 (5.9%) patients had TB spondylitis and 50% of these patients had neurological deficits.² Of the 27 patients who decided to continue the strict conservative treatment programme for TB spondylitis held at the camp, 24 had good response 2 died, and 1 had residual paraplegia. In a retrospective study that examined 26 cases of TB

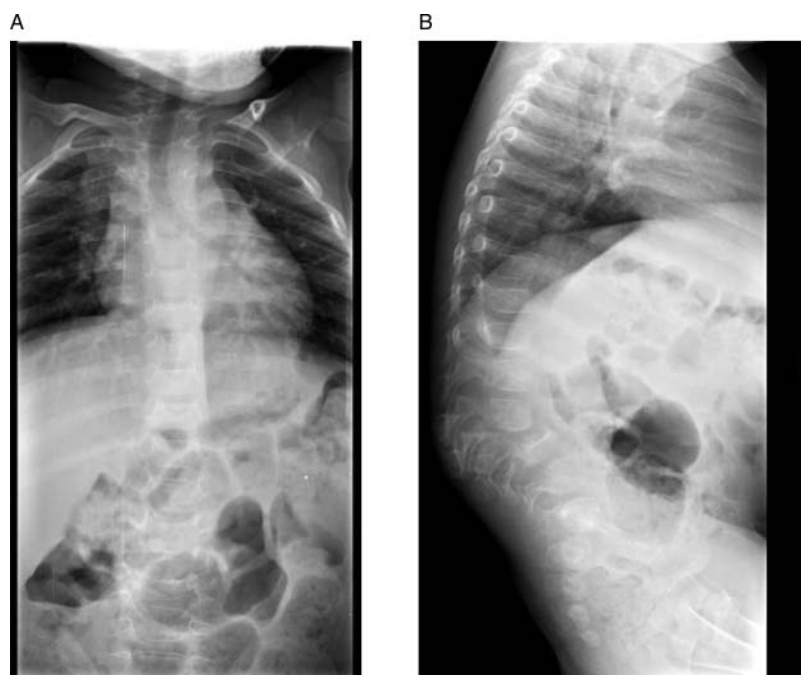


Figure 3 (A) Anterior-posterior spine film and (B) lateral spine film showing osteolytic lesions at L3–L4 and upper L5 levels.

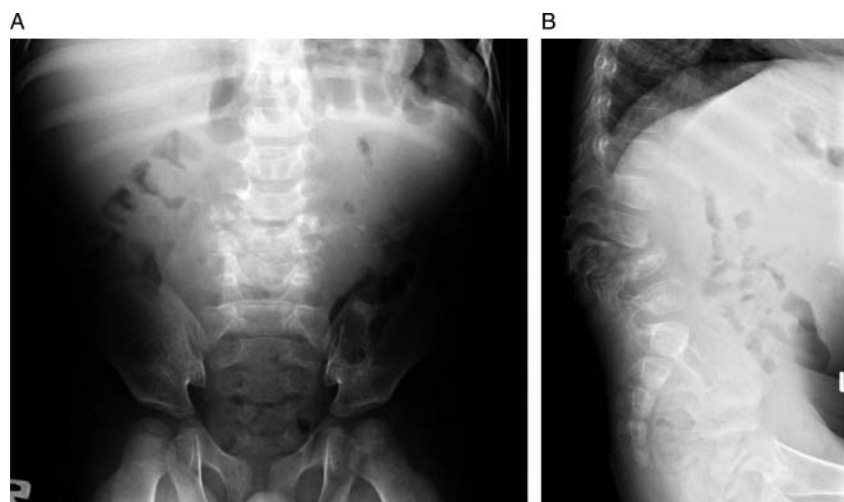


Figure 4 (A) Anterior-posterior spine film and (B) lateral spine film at 4-month follow-up.

spondylitis with abscess or neurological deficits in developed countries, 15 patients (58%) had abscesses and only 1 patient was treated by conservative methods.³ Most patients had late detection because of the poor recognition of the disease in non-endemic areas. In a case series study of 100 children with TB spondylitis who were treated between 1955 and 1959, 96% of these children had kyphosis and 43% had various degrees of paraplegia.⁴ A more recent study from Morocco that included 37 children with TB spondylitis between 2001 and 2006 confirmed that early treatment helps prevent serious complications.⁵

Spinal TB is generally a diagnosis based on high suspicion and radiological evidence of osteolytic lesions.⁶ The clinical features primarily have a gradual onset including back pain, stiffness and possible fever. Health-care workers should consider that TB is a potential diagnosis for children who have had a history of close contact to TB index cases, and do a diagnostic workup for TB. In addition, they should provide standard anti-TB drugs and ensure that patients adhere well to the regimen. The pitfalls of care for this case were as follows: (1) health-care providers did not initiate contact investigations even though the boy's history of close contact to his mother who suffered from pulmonary TB was clearly known, and (2) the boy did not receive a full standard course of anti-TB drugs and I&D from the provincial hospital and thus developed severe complications. However, after admission to our hospital, I&D of his paravertebral abscess was carried out and the patient continued to be given isoniazid, rifampicin, pyrazinamide, ethambutol and ofloxacin which helped him to recover from serious illness.

Learning points

- ▶ It is necessary to carry out contact investigations among children who have a history of contact to acid-fast bacilli positive index cases, as in the present case.
- ▶ A history of close contact to tuberculosis (TB) index cases, clinical symptoms and radiological imaging consistent with TB is sufficient for diagnosis of TB spondylitis and anti-TB drug therapy should be started promptly.
- ▶ TB spondylitis with abscess should be treated with conservative methods unless the abscess is causing neurological symptoms or is persistent and non-resolving, at which point surgical intervention should be considered.

Competing interests None.

Patient consent Obtained.

REFERENCES

1. **World Health Organization.** *Global tuberculosis control 2011*. Geneva: World Health Organization, 2011. http://whqlibdoc.who.int/publications/2011/9789241564380_eng.pdf (accessed 14 Jan 2012).
2. **Rieder HL.** Tuberculosis in an Indochinese refugee camp: epidemiology, management and therapeutic results. *Tubercle* 1985;**66**:179–86.
3. **Janssens JP, Haller R.** Spinal tuberculosis in a developed country: a review of 26 cases with special emphasis on abscesses and neurologic complications. *Clin Orthop Relat Res* 1990;**257**:67–75.
4. **Bailey HL, Gabriel M, Hodgson AR, et al.** Tuberculosis of the spine in children. *J Bone Joint Surg Am* 1972;**54**:1633–57.
5. **Benzagmout M, Boujraf S, Chakour K, et al.** Pott's disease in children. *Surg Neurol Int* 2011;**2**:1.
6. **Teo ELHJ, Peh WCG.** Imaging of tuberculosis of the spine. *Singapore Med J* 2004;**45**:439–44.

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Oberdorfer P, Kongthavonsakul K, Lochungvu HP. A 3-year-old boy with kyphosis, back mass and weakness. *BMJ Case Reports* 2012;10.1136/bcr.02.2012.5918, Published XXX

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