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PHOTO QUIZ

A soft-tissue mass on the forehead

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CASE REPORT

A 25-year-old Indonesian woman was referred to the surgeon for excision of a subcutaneous soft-tissue mass on her forehead. She noticed the swelling three months earlier, which seemed to progress slowly and was only slightly sensitive. She did not mention any other symptoms. On physical examination a 3-4 cm subcutaneous, fixed, soft-tissue swelling on the left side of her forehead was observed (*figure 1*). Magnetic resonance imaging (MRI) showed a small defect in the frontal bone underlying the subcutaneous mass. There was no involvement of the brain (*figure 2a,b*). She was referred to internal medicine for further analysis. A careful medical history revealed a backache, tiredness, 5 kg weight loss and night sweats without fever. Physical examination showed no further abnormalities except for a localised pain over the thoracic spine. Laboratory results were normal besides an erythrocyte sedimentation rate (ESR) of 79 mm/h and a C-reactive protein (CRP) of 14 mg/l. A human immunodeficiency virus (HIV) test was negative.

Figure 1. *Patient with soft swelling on forehead*

Figure 2a. *MR image showing the lesion in the frontal bone with some extension in the subcutis; no brain invasion is seen*

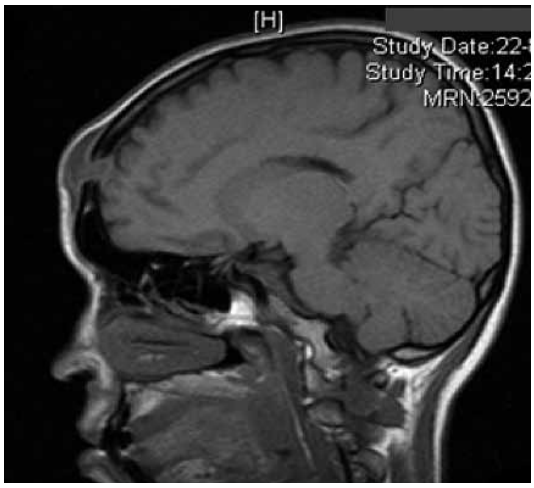
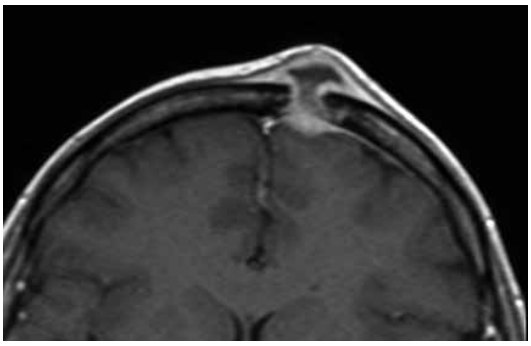


Figure 2b. *Axial image after gadolinium administration; rim enhancement of the lesion and some dural enhancement*



WHAT IS YOUR DIAGNOSIS?

See page 348 for the answer to this photo quiz.

ANSWER TO PHOTO QUIZ (PAGE 345)

A SOFT-TISSUE MASS ON THE FOREHEAD

DIAGNOSIS

This report describes a rare presentation of extrapulmonary tuberculosis (EPTB) localised in the frontal bone. Further examination revealed that she also had tuberculous spondylitis of Th5 and Th10, also known as Pott's disease, which is a more classical presentation of EPTB. Ziehl-Nielsen (ZN) and auramine staining of aspirates of the frontal swelling and of the epidural abscess were negative. Empirical tuberculosis (TB) treatment was initiated because the suspicion of TB remained high. Later, the diagnosis of EPTB was confirmed by PCR and *Mycobacterium tuberculosis* was cultured. She was treated with tuberculostatic drugs for nine months. She completely recovered and the osteolytic defect in the frontal bone restored spontaneously.

EPTB accounts for approximately 45% of TB cases in the Netherlands.[1] Skeletal tuberculosis accounts for 1 to 3% of all TB cases.[2] TB of the flat bone or skull is rare. The most common clinical symptoms of skeletal TB include low-grade fever, night sweats, weight loss and localised pain. Radiological imaging typically shows osteolytic defects in the bone, often in combination with a cold abscess in the adjacent soft tissue. Multifocal skeletal TB can easily be mistaken for a malignancy, due to the osteolytic defects in the bones in combination with only mildly elevated inflammatory markers.

EPTB is a serious clinical condition, which is difficult to diagnose. The tuberculin skin test (TST) is of limited value as it can be both false-positive due to cross reactivity with BCG vaccination and false-negative in case of extensive disease.[3] In our patient the TST was positive; however, this could as also be attributed to her BCG vaccination in childhood or a latent *M. tuberculosis* infection as she originated from a region where TB is endemic.

For diagnosis of EPTB a biopsy or aspirate of a suspected lesion should be taken for histological and microbiological examinations. Culture of *M. tuberculosis*, the gold standard test for diagnosing TB, takes weeks and is frequently negative, as the diagnosis of EPTB could be confirmed by culture in only 40 to 66% of the cases.[1,2]

Direct stains, ZN and auramine, have a low sensitivity,[2] as was illustrated by our case. Novel diagnostic modalities such as PCR are slightly more sensitive. The new *M. tuberculosis*-specific immunodiagnostic assays are highly specific for *M. tuberculosis* as they do not cross-react with BCG.[3] Although promising at first, several studies have now shown that these assays have a limited sensitivity (70 to 90%) for active TB.[4,5] Further, as with the TST, they do not discriminate between latent infection and active disease.[6]

This case illustrates that TB can manifest practically throughout the whole body. We emphasise the importance of considering EPTB in patients who present with osteolytic bone defects, in particular in persons from TB-endemic regions. If clinical suspicion of EPTB is high, empirical treatment should be initiated, even though ZN and PCR are negative. However, prior to initiating TB treatment adequate specimens should be collected for culture, as *M. tuberculosis* culture not only provides a defined diagnosis but also permits resistance testing.

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