CASE REPORT

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Tuberculous osteomyelitis of the scapula

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Abstract Tuberculous osteomyelitis is an uncommon disease entity. We report two cases of tuberculous infection of the scapula, one involving the acromion and one involving the body of the scapula. Tuberculosis is still an important differential diagnosis in unusual or chronic bone conditions.

Résumé Nous rapportons deux cas d'infection tuberculeuse de l'omoplate, l'un atteignant l'acromion, l'autre atteignant le corps de l'omoplate. La tuberculose est encore un diagnostic différentiel important des maladies rares ou chroniques des os.

Introduction

We report two cases of tuberculous osteomyelitis of the scapula. Extraspinal tuberculous osteomyelitis usually involves the tubular long bones and involvement of the flat membranous bones such as the scapula is extremely rare.

Case reports**Case 1**

A 33-year-old male manual worker attended the accident and emergency department complaining of right shoulder pain after a minor injury. Examination was unremarkable. An X-ray of the right shoulder was taken (Fig. 1). No abnormality was detected on physical examination and the patient was discharged with simple analgesics for pain.

About 3 months later the patient returned with persistent right shoulder pain despite taking analgesic medication. He had also noticed a discharging sinus that had developed just lateral to the acromial process in the previous few weeks. Physical examination of the right shoulder revealed full range of motion but a wasted deltoid muscle. X-ray examination of the right shoulder was repeated and showed a lytic lesion at the acromion (Fig. 2). The patient was then admitted to the hospital for further investigations.

Blood testing revealed a high erythrocyte sedimentation rate of 90 mm/h and normochromic normocytic anaemia (hemoglobin

12.3 g/dl). Biochemistry was otherwise normal. The patient had no chest complaints or other constitutional symptoms. Bacteriological culture of the discharging materials yielded *staphylococcus aureus*. Provisional diagnosis of a Brodie abscess of the right acromion was made.

Exploration under general anesthesia was then performed. The sinus tract was traced to the subacromial space, where an abscess was found. It originated from the acromion. There was a circular bony defect about 3 cm in size. Examination of the gleno-humeral joint was completely normal. The rotator cuff was intact. There

Fig. 1 X-ray of right shoulder at the first attendance of the patient (case 1). A suspicious lesion over the acromion can be seen

Fig. 2 X-ray of right shoulder 3 months later

was no communication between the lesion and the shoulder joint or the acromioclavicular joint. Debridement, curettage and placement of gentamicin beads was performed. Surgical specimens were sent for bacteriological and histological examination.

Ziehl-Neelsen stain revealed the presence of acid-fast bacilli. Subsequent culture identification confirmed the organism to be *Mycobacterium tuberculosis*, which is sensitive to rifampicin, isoniazid, streptomycin and ethambutol. Ordinary bacterial culture was negative.

Histological sections showed multiple pieces of granulomatous tissue with necrosis and microabscess formation. The granulomas were composed of Langerhans giant cells, epithelioid cells with necrosis that was consistent with mycobacterial infection. HIV status of the patient was negative, he had no history of pulmonary tuberculosis or contact with tuberculosis patients in the past. Postoperatively, the patient made a good recovery with full range of movement of his right shoulder. There was no recurrence of the discharging sinus. No significant side effects from the 9-month treatment with antituberculous drugs were noticed.

Case 2

A 22-year-old woman, previously enjoying good health, was a recent immigrant from the rural area of mainland China. She attended the accident and emergency department complaining of lower back pain for the previous few days without any history of injury. Mild local tenderness over the lumbar region was detected. A soft right supraclavicular lymph node was palpable. There was no neurological deficit of the limbs. Physical examination of other body systems, including thyroid, breast and abdomen was unremarkable.

X-ray of the lumbosacral spine revealed collapse of the L2 vertebra. Chest X-ray showed a clear lung field. Incidentally, a cystic lesion over the lateral border of the right scapula was noticed. Blood investigations revealed a normal full blood count but an elevated erythrocyte sedimentation rate of 80 mm/h. Biochemistry showed a mildly elevated alkaline phosphatase (126 IU/l) and a reversed albumin/globulin ratio (30/55 g/l), C-reactive protein was high (33.8 mmol/l), calcium level was normal, protein electrophoresis and immunoglobulin patterns were unremarkable.

Computed tomography (CT) scan of the L1-L3 revealed destruction of L2 vertebra but paravertebral soft tissue swelling was minimal. Whole body bone scan was performed, showing increased uptake in the following regions: lateral border of the right scapula; T12 and L2 vertebrae; upper part of the right sacroiliac joint. The findings were compatible with multiple bone metastasis. CT scan of abdomen and pelvis were normal.

Fine needle aspiration cytology of the right supraclavicular lymph node revealed necrotic material and cluster of epithelioid cells. Ziehl-Neelsen stain showed the presence of acid-fast bacilli. As a result, anti-tuberculosis chemotherapy was started. At that juncture, the provisional diagnosis was multiple bone secondaries with unknown primary and concomitant tuberculous cervical lymphadenopathy.

Formal biopsy of the scapula and iliac lesions was performed through a stab wound under radiological control. Gross appearance of the specimen showed caseating materials. Frozen section reported granulomatous inflammation compatible with tuberculosis. Diagnosis of disseminated skeletal tuberculosis was then made. Anterior spinal fusion L1-3 and L2 corpectomy through a thoracoabdominal approach was performed during the same anesthesia.

Subsequent examination of all the surgical specimens confirmed the presence of *Mycobacterium tuberculosis* while ordinary bacterial cultures were negative. The organism was sensitive to rifampicin, isoniazid and pyrazinamide. Postoperatively, the patient recovered uneventfully and chemotherapy continued. The back pain subsided and the patient became asymptomatic shortly. There was no history of BCG vaccination and HIV status was negative. The patient also denied any history of close contact with tuberculosis patients in the past few years.

Discussion

We reviewed two large series of extraspinal tuberculous osteomyelitis in the English literature [2,3], and both

have a case of tuberculosis in the scapula in their series; both were solitary lesions. Most of the other cases affected the tubular long bones. In Vohra's series, 6 of 28 lesions affected membranous bones of the axial skeleton, while in Martini's series, 14 of 125 lesions were found in membranous bone. In both, the pelvis was most commonly involved. Pulmonary tuberculosis was reported in 6 of 25 and in 2 of 11 and concomitant bone and joint lesions (i.e. the multifocal form) were reported in 2 of 28 and 12 of 111, respectively.

In Hong Kong the number of cases per 100,000 population remains around 100-110 and tuberculosis has been the tenth leading cause of death in this region for many years. For musculoskeletal tuberculosis, there is a predilection for the vertebral bodies and large synovial joints. Extraspinal tuberculous osteomyelitis is uncommon and mainly affects long tubular bones. Pure tuberculous osteomyelitis involving flat membranous bones, as illustrated in this report, is extremely rare. Because of that, and a low index of suspicion for its diagnosis, early lesions may be neglected. In Hong Kong, bone and joint tuberculosis constitutes about 8% of all cases of extrapulmonary tuberculosis [1].

Skeletal tuberculosis is primarily due to *Mycobacterium tuberculosis*. Atypical mycobacterium seldom causes skeletal involvement, and then mainly the in immunocompromised host. The organism isolated in our 2 cases was *Mycobacterium tuberculosis*. Both were sensitive to ordinary anti-tuberculous drugs. Despite being extraordinary in the presentation, the patients and the organism were not.

No pathognomonic X-ray changes were observed. Nevertheless, X-ray findings provide helpful diagnostic information. The classic description is a focal area of osteolytic lesion, located eccentrically with little or no surrounding reactive bone, i.e. with minimal marginal sclerosis. This will become more clearly defined in the healing phase. Pathologically, this cavity contains a sequestrum of necrotic bone, as in the findings in our first case. Features of soft tissue swelling and local osteopenia, though not specific, are also helpful.

The presenting clinical features were sinus, abscess, local tenderness and swelling in the first case. In the second case, the patient suffered from multifocal skeletal tuberculosis, which is a rare entity.

After the improvement of living standards and advent of new chemotherapeutic agents, the incidence of the disease has become under control. But it has never been eradicated and is actually still endemic in most of the developing countries. We are now facing more difficulties and uncertainties, especially due to the problem of drug-resistance and the rampant HIV epidemic.

References

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