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APPROACH TO PEDIATRIC HIP PAIN: WHAT TO EXPECT?

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REZUMAT

Durerea de șold debutată subit la copil, reprezintă deseori un obstacol de diferențiere diagnostică multidisciplinară clinică și paraclinică. Printre principalele diagnostice presumptive la copilul primar debutat cu durere în articulația șoldului în țările în curs de dezvoltare cu rată endemică sporită se enumeră și tuberculoza extrapulmonară articulară. Tuberculoza extrapulmonară este mai frecventă în cazul copiilor mici. Odată instalată, este deobicei monoarticulară, afectând în special articulațiile mari. Sinovita tuberculoasă izolată este paucisimptomatică, cu limitarea mișcării, fiind diagnosticată tardiv. Artrita tuberuloasă se asociază cu un grad de osteită, amiotrofie progresivă a grupelor musculare adiacente și distrucție ireversibilă a articulației. Diagnosticul este stabilit în funcție de stadiul clinicoradiologic, examenul bacteriologic pentru Mycobacterium tuberculosis din lichidul sinovial sau examenul histopatologic din biopsia sinovială asociate cu IDR pozitivă la tuberculină. Evoluția este favorabilă sub tratament antituberculos asociat cu imobilizarea articulației. Studiul de caz curent marchează importanța diagnosticării precoce prin metode specifice și nespecifice, diagnostic diferențial cu maladiile reumatice din copilărie, a afectării articulare tuberculoase la copiii din grupele de risc.

Introduction

Hip pathology in children may include a variety of non-specific symptoms. Transient synovitis and septic arthritis have similar early symptoms with the spontaneous onset of progressive hip pain, limping and ankylosis. Untreated joint infection can lead to a permanent loss of hip function making it extremely important to differentiate possible infection from benign cases of transient synovitis. [2,3,4]

Tuberculosis remains a major cause of skeletal infection in developing countries and skeletal tuberculosis accounts for approximately 35 percent of cases of extrapulmonary tuberculosis worldwide. [2,4] The second most common form of musculoskeletal tuberculosis is tuberculous arthritis, followed by extraspinal tuberculous osteomyelitis.[1] The majority of cases of hip tuberculosis are presenting as painful, restricted movements of the hip and there rises the dilemma of accurate diagnosis as several pathologies may mimic this presentation. For example in children, Perthes disease, juvenile idiopathic arthritis, transient synovitis, bleeding disorders and pyogenic arthritis has mainly to be differentiated.[5,7] The variable clinical and radiological presentations may mimic common osseous and articular conditions seen in children and delay the diagnosis of tuberculosis.[4,6]

Diagnosis at an early stage and effective chemotherapy are vital to heal the disease and to save the joint. Antituberculous chemotherapy with or without surgical intervention has been well-documented in the literature, but residual anatomic deformity such as flexion abduction or adduction, subluxation or dislocation, and the management for those residuals in children have rarely been documented. The primary objectives of the management were not only the healing of the disease, but also the preservation of the joint motion until the healing of the disease and thereafter.[3,7]

The aim of the current case study is to report and highlight the clinical and radiological patterns of various tuberculous lesions of the hip joint in children. Thus, show the importance of identifying the disease as soon as possible, because it is a rare and severe condition that can leave to serious sequelae.

Case presentation

The patient was an 11-year-old male who was at his second admission to the Mother and Child Institute. He related pain in his left hip joint, pathological walk and shortening of his lower left limb for the last 1 year. During this period, he had used the health service in his town on several occasions, and has been treated with anti-inflammatory drugs. His first admission to our hospital was referred to the Orthopedics Department where he was administered Diclophenac 1mg/kg/24h and had plastered his lower left limb to reduce the inflammation. The patient was discharged at the 6th day after admission with recommendations to plaster removal after two weeks. His parents did not follow the prescription and the child ended up with severe muscular atrophy and low joint mobility.

As the patient showed no clinical evolution and there was

an increase in the frequency and intensity of pain associated with difficulty in locomotion and a deformity in the lower limb with internal rotation in the coxofemoral joint, adduction and leg shortening, he was admitted to the Rheumatology Department of our hospital in order to exclude juvenile idiopathic arthritis.

As personal antecedents, at first, there was no history of contact with an adult with tuberculosis, although after the last admission there was retrospectively found that the patient and his brother had tuberculous infection contact to their grandfather 2 years ago, when the last one was receiving anti-tuberculous treatment. Both brothers have received less than 6-month Isoniazid daily chemoprophylaxis under the direct supervision of their family doctor. A double positive 14 and 22 mm Mantoux test history was also found from the patient medical records. It was noticed the presence of the scar from the BCG vaccination.

At the physical examination, he had showed poor general state of health, with no fever, grayish skin, weighed 31 kg (-1,49 SD) and his height of 143 cm (-0,79 SD), with a total BMI of 15,2 (-1,45 SD), and blood pressure of 100/70 mmHg. Heart and lung auscultation were normal with hepatosplenomegaly and no palpable lymphadenopathy. He was observed to have postural alteration, a limping gait, inability to flex the lower limb in the coxofemoral joint. The Visual Analog Scale for pain was marked at 70 mm point. No other external signs of inflammation were detected, but sensitivity and muscle strength preserved only in the opposite lower limb.

A complete blood cell test was performed for finding anemia hemoglobin level of 109 g/L and erythrocyte level 3,4 x 10^6 / uL. The erythrocyte sedimentation rate was 24 mm/h. The hip and chest X-ray, computed tomography and the retrospectively found hip MRI results are presented below.

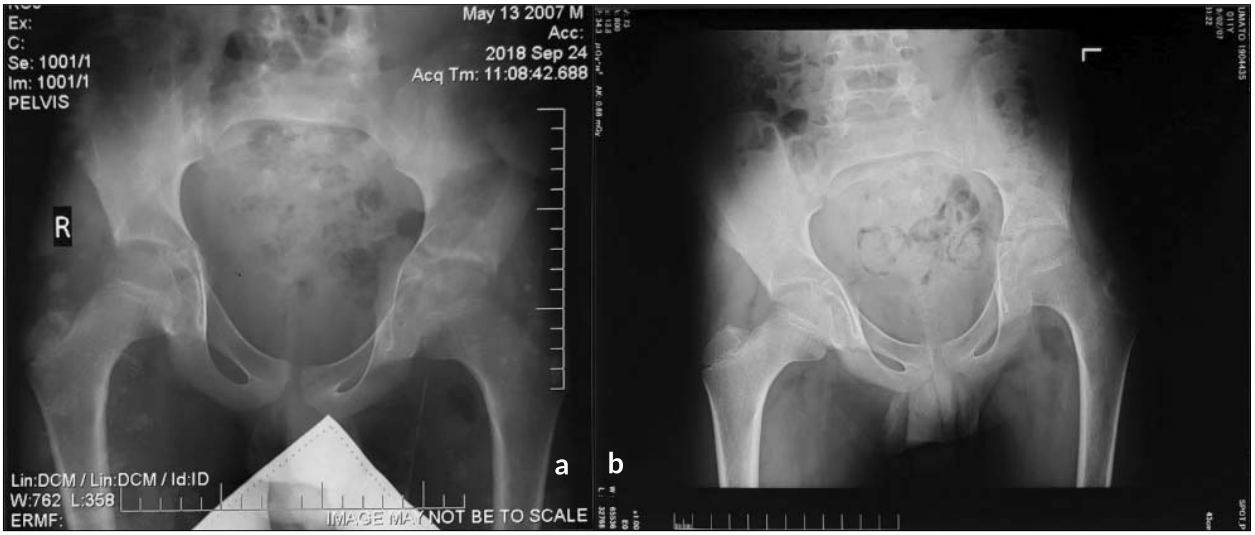

Fig.1 One year X-ray evolution of hip tuberculosis: a) early synovitis radiological stage; b) advanced arthritis radiological stage with evidence of advanced osteoporosis and femoral head necrosis and acetabular lysis

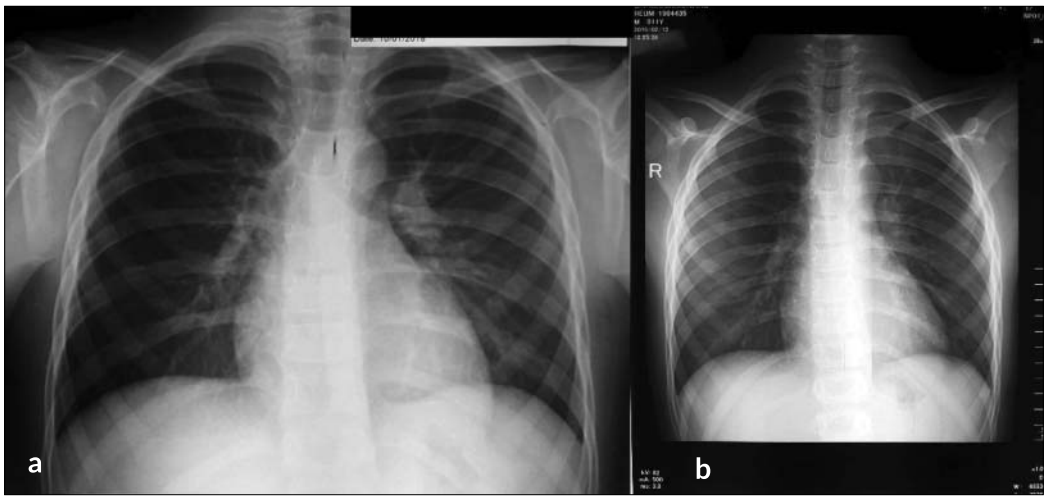

Fig.2 One year chest X-ray evolution in suspected hip tuberculosis: a) hyperinflation and bilateral enlarged lung hilum with no signs of supracostal opacities; b) bilateral enlarged lung hilum with no signs of supracostal opacities

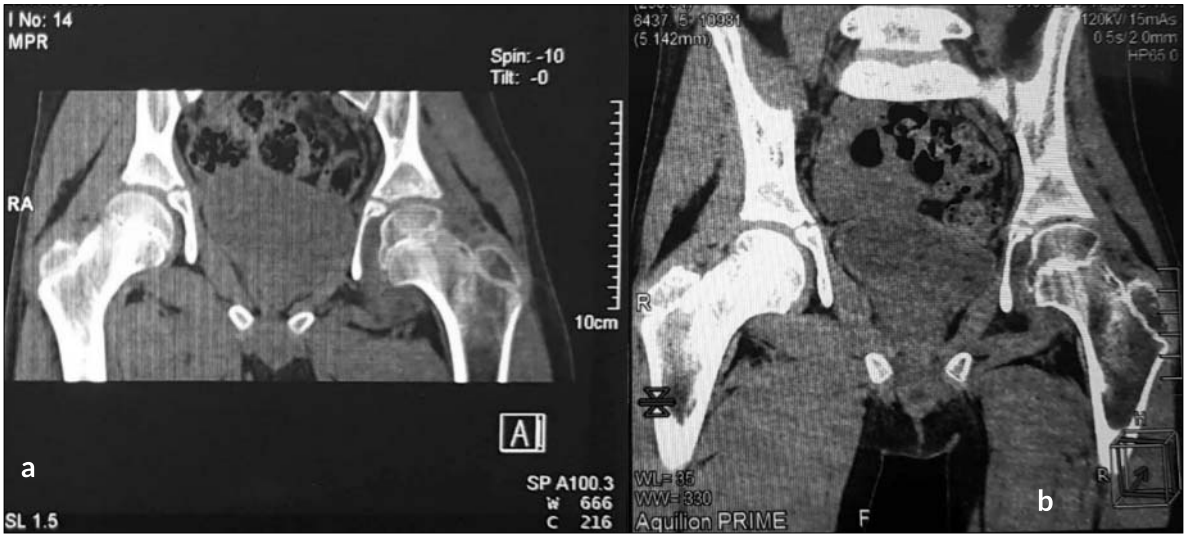

Fig.3 One year CT evolution of hip tuberculosis: a) early synovitis stage with femoral head necrosis onset and osteoporosis; b) advanced arthritis radiological stage with evidence of advanced osteoporosis and femoral head necrosis and acetabular lysis

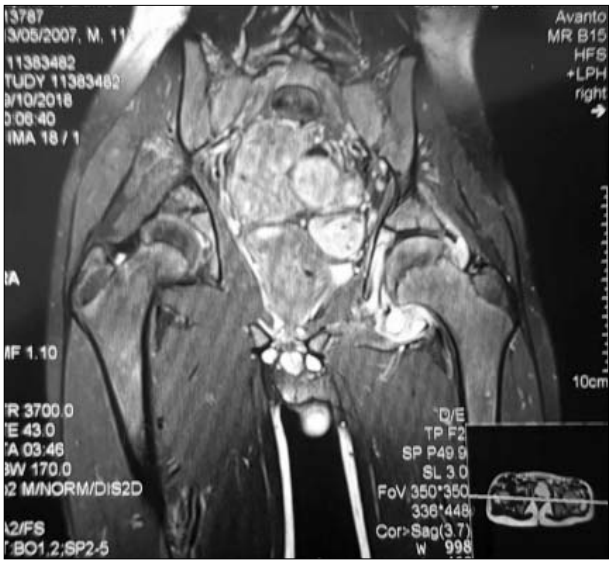

Fig.4 Early MRI onset of synovitis stage with femoral head necrosis onset and acetabular deformities

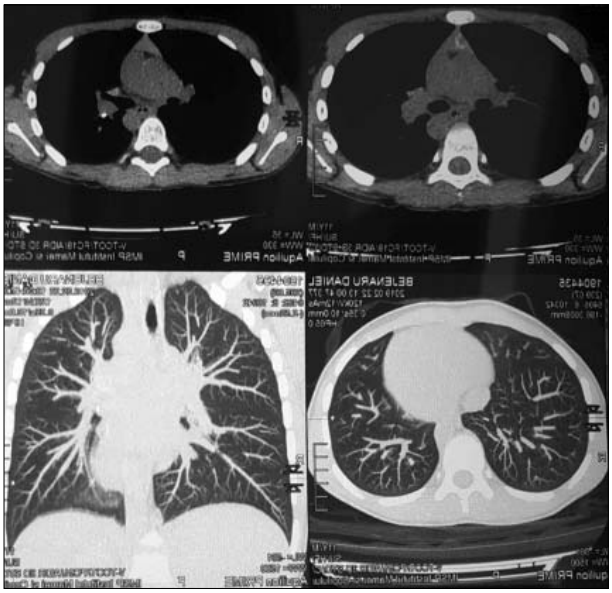

Fig.5 CT evidence of the primary tuberculous complex with calcified mediastinum lymph nodes after one year of hip pain onset

The child was Mantoux tested to find the hyperergic 30 mm skin reaction after 72 hours. He was examined by a physiatrist clinical team and concluded unanimously to start the antituberculous direct observation treatment in the specialized department.

Discussion

Though the diagnosis of hip tuberculosis is still largely based on clinicoradiological findings, however, it is desirable to make an early diagnosis for good results. How helpful are the modern diagnostic imaging modalities like ultrasonography, magnetic resonance imaging, bone scan or immunological and molecular diagnostic tests like polymerase chain reaction to diagnose hip tuberculosis at an early stage? When presenting late, there are permanent changes in the joint with varying disability and there is a dilemma of dealing with this morbid anatomical and pathological changes in the joint. The last revised classification is shown in the table below.

Stages	Clinical findings	Radiologic features
Synovitis	Flexion, abduction, external rotation, apparent lengthening	Haziness of articular margins and rarefaction
Early arthritis	Flexion, adduction, internal rotation, apparent shortening	Rarefaction, osteopenia, bony erosions in femoral head, acetabulum or both. No reduction in joint space
Advanced arthritis	Flexion, adduction, internal rotation, shortening	All of the above and destruction of articular surface, reduction in joint space
Advanced arthritis with subluxation/ dislocation	Flexion, adduction, internal rotation with gross shortening	Gross destruction and reduction of joint space, wandering acetabulum

Source: Tuli, Tuberculosis of Skeletal System, 4th ed., 2010. p. 72

As early a positive tuberculin test is performed, it is strongly indicative of the existence of tuberculosis, but negativity does not exclude the diagnosis. It is suggested that in the endemic regions for tuberculosis, a clinical diagnosis supported by radiographs is adequate for starting the treatment. The MRI enables soft tissues, neural structures and the paraarticular area to be better detailed . In the case described, here changes found in the magnetic resonance imaging (MRI) revealed a severe tuberculous arthritis stage of the disease, probably due to the delay in diagnosis and treatment. The patient started receiving a specific treatment after had arrived in the physiatrist specialist service department.

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