Ostéomyélite secondaire à une vaccination par le bacille de Calmette et Guérin : A propos d'un cas

Bacillus Calmette–Guérin osteomyelitis : A case report

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Résumé :

Malgré l'innocuité de la vaccination par le BCG, elle peut avoir des complications locales et systémiques. Quelques cas d'osteite et l'osteomyélite on été rapporté dans la littérature. Nous rapportons le cas d'une fille de 12mois, d'origine Tunisienne ayant été vaccinée par le BCG à la naissance au niveau du tiers supérieur du bras gauche. Elle s'est présentée dans un tableau d'impotence fonctionnelle du membre supérieur gauche dans un contexte de fièvre. A la radiographie il y avait un aspect fragmenté de l'extrémité supérieure de l'épiphyse humérale avec une déminéralisation de la diaphyse humérale. Le diagnostic d'ostéite à BCG a été posé sur les données histologiques. Une antibiothérapie anti tuberculeuse a été démarrée. L'évolution était favorable avec une reconstitution osseuse au bout de deux ans de suivi.

Abstract :

Despite the safety of the bacille de Calmette et Guérin (BCG) vaccine, local and systemic complications can occur.Few cases of osteitis and osteomyelitis have been reported We report a case of osteitis after BCG vaccination in a 12-month-old girl, born in Tunisia. She was vaccinated with BCG on the left upper arm at birth .She presented with fever and mild functional impairment of the left upper limb. X-ray of left upper limb revealed a mittee and fragmented aspect of the left humeral epiphysis with a demineralization of the upper 1/3 of the humerus. Diagnosis was based on the histological findings and antituberculosis therapy was initiated. The most recent radiological examination showed the involution of the geographic osteolytic lesion.

INTRODUCTION

The anti-tuberculosis vaccine, which is typically applied in children, was obtained by the attenuation of Mycobacterium bovis and was later, designated the bacillus Calmette-Guérin (BCG) vaccine. BCG osteitis / osteoarthritis is a rare complication of BCG vaccination [3].

The objective of the study was to report a case of BCG osteitis developed in Tunisian infant who was given a BCG vaccination at birth.

CASE REPORT:

A 12-month-old girl, born in Tunisia, presented with fever and mild functional impairment of the left upper limb. The child had one month prior, daily episodes of fever (> 38 ° C). Secondly, the child had started presenting pain upon palpation and upon movement, as well as limited movement of the left arm.

The patient was born by normal vaginal delivery with normal Apgar score. She was vaccinated with BCG on the left upper arm at birth. She had received routine immunization up to date including hepatitis B in accordance with the national vaccination program guidelines. She had a personal history of non suppurative adenitis. There was no history of local trauma. Further anamnesis data revealed that the patient had no previous history of known familial tuberculosis history and no contact with people

with chronic cough or pulmonary tuberculosis.

On physical examination, she had functional impairment and pain upon palpation and upon movement of the proximal third of the left arm, with inflammatory signs and a swelling of the left shoulder.

Complementary examinations revealed the following: leukocytes, 12 810 per cubic millimeter (mm3) (Lymphocytes7200/ mm^3 and 4200 neutrophils / mm^3); erythrocyte sedimentation rate, 40 millimeter per hour; C-reactive protein: 3 milligrams per litre (mg/l); normal urine sediment; normal chest X-ray; and positive PPD result to 12 millimeter.

Protein electrophoresis was normal: Albumin=32.8grams per litre (g/l), Proteins= 64g/l, Alpha 1 globulin 3.6 g/l, Alpha2 globulin = 2.6 g/l, Gamma globulin=3.9g/l.

Further Blood explorations revealed normal calcium, Phosphore, uric acid, urea and, creatinin blood levels. Blood electrolytes were normal as well as urinary Cathecholamine excretion : vanillyl mandelic acid(VMA) and homovanillic acid (HVA) .

X-ray of the right upper limb revealed a mittee and fragmented aspect of the left humeral epiphysis with a demineralization of the upper 1/3 of the humerus, a small reactive bone sclerosis, periosteal reaction and soft tissue edema. (Figure 1).

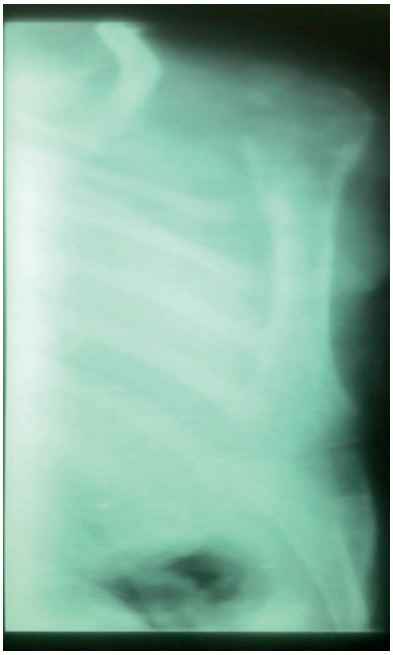

Figure 1 : fragmented aspect of the left humeral epiphysis

Ulrasound of the left shoulder revealed an articular effusion with infiltration of the soft parts. There was no collection.Bone scintigraphy revealed an isolated uptake in the upper 1/3 of the humerus. Magnetic resonance imaging revealed areas of abnormal marrow signal and soft tissue edema with highlighting of the infected marrow by the contrast medium-signs consistent with osteomyelitis of the proximal humerus (Figure 2).

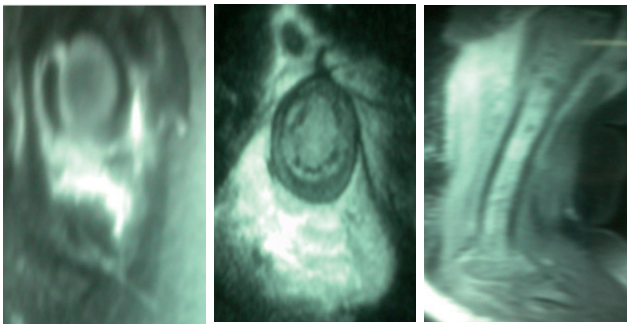

Figure 2 : abnormal marrow signal and soft tissue edema

The patient received cephalosporin for 10 days in an outpatient setting. On day 8 of the antibiotic therapy, the child was readmitted due to fever and persistent pain.

The patient was initially treated with Fosfomycin® before the proper diagnosis had been established.

Since the lesion was refractory with to antibiotic therapy, we considered mycobacterium as the responsible pathogen. A biopsy specimen of the skin lesion was sent to the pathology department. Histopathological examination of the biopsy specimen revealed a chronic caseating granulomatous inflammatory reaction. A mycobacterium culture of the biopsy sample was negative.

Tuberculosis extend explorations were negative (chest X-ray, research of bacilli in the sputum, cerebrospinal fluid and urine).

Based on the histological findings, antituberculosis therapy was initiated for suspected osteoarthritis Rifampicin (20 milligrams per kilograms per day (mg/kg/day), isoniazid (5 mg/kg/day),pyrazinamide (30 mg/kg/day) and streptomycin (25mg/Kg/day). Two months later, pyrazinamide and streptomycin were discontinued, whereas rifampin and isoniazid were maintained for another 10 months. The planned chemotherapy regimen was continued during 12 months.

Immunological evaluation of cellular and humoral immunity including complement CH50, C3, and C4, immunoglobulins, IgG subclass, and intracellular oxidation (dihydrorhodamine) was normal.

The CD4 cells, CD8 cells levels were normal .HIV serology was negative. There was no IFN-αreceptor deficiency.

The patient was followed for 2 years and has remained without signs of growth disturbances or function impairment. The radiological examination showed the involution of osteolytic lesions with reestablishment of the cortical contour (Figure 3).

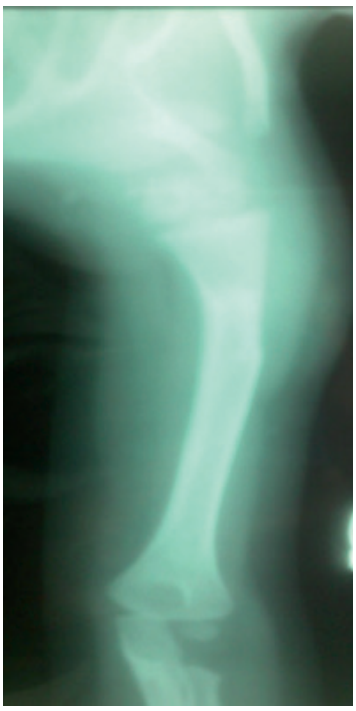

Figure 3 : Reestablishment of the cortical contour of the Humerus

DISCUSSION :

This case report describes an uncommon disease that should be considered in small children with bone lesion of unknown etiology. The diagnosis is difficult Since bone lesion after BCG vaccination is a poorly understood disease. The clinical presentation of BCG osteomyelitis is non-specific and radiographic findings are also not extraordinary. It is estimated that the only 25% of cases are diagnosed[1,2].

Although clinical manifestations usually occur 18 months after vaccination, this interval can range from a few months to 5 years [3].

In a medical records from Finnish children based on nationwide registration of 222 children with criteria of BCG osteitis / osteoarthritis, the age at onset of BCG osteitis varied from 0.25 to 5.7 years.

The initial symptoms are sensitivity, pain and limited movement of the affected region. In this cases symptoms occurred one year after BCG vaccination [3].

In the literature, clinical symptoms are usually few. In the our case described, the patient presented with fever and pain in the palpation and the mobilization of the left arm[2] .

In a Sweden experience, the epiphyses of the long bones of the extremities were the most frequent sites of the affection (109 lesions) [3].

The lower limbs are described as the most commonly affected site, indicating that the osteitis / osteoarthritis site does not always correspond to the vaccination site. However, our case, there was a clear relationship between the vaccination site and the apparent location of the soft tissue involvement, which allow us to conclude that it was a contiguous lesion.

The diagnosis of osteitis/ osteoarthritis after BCG vaccination was established according to the criteria proposed by Foucard & Hjelmsted in 1971 [4].

Although typical epithelioid cell granulomas, with or without caseous necrosis, are more frequently associated with TB, they are also found in lesions after BCG vaccination. The criteria for the diagnosis of osteitis after BCG vaccination were proposed by authors from different countries [4].

In patients with osteitis / osteoarthritis after BCG vaccination, PCR is necessary to identify the etiologic agent. The difference in a single nucleotide can distinguish M. tuberculosis from M. bovis [3]. However, the fact that we did not isolate M. bovis in culture does not rule out the diagnosis, Serious complications of BCG infection are thought to occur more frequently in patients with immunological deficiencies. There was no associated immunodeficiency identified in our patient.

The most important differential diagnosis is osteoarthritis caused by nonspecific bacteria. The lack of response to antibiotic therapy, led to the suspicion of osteitis after BCG vaccination [5].

Bone tuberculosis is another important differential diagnosis. Lack of contact with TB and BCG vaccination at birth are criteria that suggest osteitis / osteoarthritis after BCG vaccination.

Many different treatment regimens are employed in patients with osteitis after BCG vaccination. The literature recommends treatment with isoniazid and rifampicin for 12 months [6, 7].

Similarly to our case, the long-term evolution of most patients is favorable. The prognosis of this disease is good, and bone sequelae or growth deficit are described in only 3% of the cases [3].

CONCLUSION:

osteitis / osteoarthritis after BCG vaccination is a rare condition, underestimated and difficult-to-diagnose. In most cases, long-term antituberculosis therapy and surgical drainage are necessary for remission. The prognosis is good, with a low frequency of complications. Therefore, the use of BCG vaccine should be maintained in countries with a high incidence of tuberculosis.

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