Case Report

Septic Arthritis of Hip Joint Causing Avascular Necrosis of Femoral Head in a 4-year-old Girl: A Case Report with Findings of Tc-99m MDP Three Phase Bone Scan

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ARTICLE INFO

Article history
Received June 14, 2011,
Accepted July 9, 2011

Key words
arthroty, vascular necrosis,
frernal head,
hip joint,
septic arthritis,

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ABSTRACT

Septic (infectious) arthritis refers to invasion of synovial space by microbes and is a clinical emergency. Due to hyperemia of synovial vessels, the characteristic finding of three phase bone scan is increased tracer activity around the involved joint in all three phases. However, when there is prominent effusion (pus) inside the synovial cavity, tamponade of subsynovial vessels occurs, followed by avascular necrosis of intra-capsular bony structures if without urgent decompression. In this situation, the scintigraphic findings of three phase bone scan may turn to be intra-capsular photopenia in all three phases. We report a 4-year-old girl with fever, left hip pain, elevated CRP and ESR. The three phase bone scan showed intra-capsular photopenia of left hip in all three phases. Septic arthritis of left hip joint with prominent joint effusion (pus) and high intracapsular pressure were confirmed by arthrotomy. Avascular necrosis of left femoral head developed despite of the operation and antibiotic treatment. For early identification and proper treatment, it is important for nuclear medicine physicians and clinical doctors to be familiar with these important scintigraphic findings in septic arthritis.

1. Introduction

Septic arthritis in infancy and childhood is a clinical emergency. Delay in recognition and treatment can lead to devastating complications, including destruction of the articular cartilage and permanent disability. The characteristic finding in three phase bone scintigraphy is increased tracer activity around the involved joint in all three phases. However, when the intracapsular pressure is high due to prominent joint effusion (pus), the scintigraphic findings could be photopenia of the intracapsular bony structure in all three phases due to blood compromise. We reported a 4-year-old girl with septic hip arthritis, which evolved into avascular necrosis of femoral head due to high intracapsular pressure. The associated findings of three phase bone scan are described.

2. Case report

A 4 year-old girl without known congenital or systemic disease, presented with high fever for 4–5 days. She limped due to left hip and knee pain. No trauma history was traced. She was brought to our institution for help. Physical examination revealed local heat, tenderness, and limited range of motion of the left hip. Laboratory studies showed elevated erythrocyte sedimentation rate (89mm/hr, normal: 0–24) and serum C-reactive protein (21.7mg/dl, normal: 0–0.5). The white blood cell count was within