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## Toxic Synovitis of the Hip An Unusual Complication of Neonatal Salmonellosis

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*Salmonella* infections in young infants are more likely to disseminate and cause metastatic complications. Compared with

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other serotypes, *S. paratyphi B* (*S. schottmuelleri*) is an uncommon human pathogen(1). Toxic synovitis of the hip refers to a transient, nonspecific, unilateral inflammatory arthritis involving the hip joint(2). It is a clinical diagnosis which is confirmed by excluding other causes for joint symptoms. In this communication, we describe a case of *S. paratyphi B* septicemia in a neonate presenting as painful hip which turned out to be toxic synovitis.

### Case Report

A 2700 g male infant was born at term by Cesarean section to a first gravida eclamptic mother. He sustained birth asphyxia and his Apgar scores were 1 and 8 at 1 and 5 min, respectively. There was no evidence of birth trauma or congenital dislocation of the hip. He was given supportive management and recovered uneventfully. The baby was not subjected to femoral venipuncture or umbilical catheterization

and was sent home on the 8th day of life. At the age of 3 weeks, he presented with fever and inability to move right lower limb of 4 days' duration. There was no refusal to feed, diarrhea, or trauma. He had not received antibiotics prior to admission.

The child was febrile (rectal temperature 103°F), irritable and not able to move the right lower limb. The hip joint was held in the position of flexion, abduction and external rotation. Passive movements of the hip were painful and limited in range. The joint was tender but not swollen. There was no evidence of cellulitis involving the right lower limb. Systemic examination was normal.

Blood examination showed the following values: hemoglobin 14 g/dl; leucocyte count, 16000/cu mm with 72% neutrophils; and ESR 27 mm in first hour. Blood culture grew *S. paratyphi B* showing sensitivity to chloramphenicol and ciprofloxacin and resistance to ampicillin, gentamicin, netilmicin, trimethoprim, cefotaxime and ceftriaxone. Radiographs of pelvis including both thighs taken at admission and then subsequently on 12th and 19th days of illness did not reveal any abnormality. Stool, urine and CSF were normal on examination and culture were sterile. VDRL test of mother and child was negative. Joint aspiration yielded dry tap on two occasions. Abdominal ultrasonography was normal.

The child was given parenteral cloxacillin and gentamicin. As he failed to show any response, antibiotics were changed after 6 days. Based on blood culture report, ciprofloxacin was given intravenously in a dose of 10 mg/kg/day in two divided doses. The fever subsided after one week and joint symptoms showed improvement after 2 weeks of ciprofloxacin. The

child was discharged on request and was advised to take oral ciprofloxacin for one week more. Clinical review 2 weeks after discharge showed a full range of joint movement not accompanied by pain. The last visit at one year of age did not reveal any clinical or radiological evidence of residual hip damage. No adverse effects related to ciprofloxacin were observed during therapy or on subsequent follow-up.

### Discussion

When confronted with a febrile neonate with painful hip, the most likely diagnosis will be septic arthritis/osteomyelitis. However, there were some features of disease which were not consistent with this possibility. Failure to find purulent material on repeated joint aspiration and radiographs showing no abnormality throughout the course of illness essentially excluded septic arthritis/osteomyelitis. Although, in septic arthritis/osteomyelitis, initial radiographs may appear normal(3) or show evidence of soft tissue swelling or joint effusion(3,4), those taken later in the course of illness will show definite signs of bone destruction or periosteal new bone formation(3). In contrast to older infants and children, neonates almost always show signs of bone destruction by the seventh to tenth day of illness(5). Rarely, when treatment is started very early, radiological changes may not appear at all. However, this is unlikely in this case because effective therapy with ciprofloxacin was not started until after the 10th day of illness.

The other condition which can cause painful hip is toxic synovitis. We considered this diagnosis in our case because the repeated needle aspiration of the joint did not yield any purulent material and the radiographs remained normal throughout

the course of illness. This is also known as transient synovitis, observation hip or irritable hip. The diagnosis is one of exclusion and can be made only if other potential causes for painful hip have been eliminated. It usually occurs between 2 and 12 years of age. Spock(6) laid down the following criteria for diagnosing toxic synovitis: (i) pain occurring at rest or with active motion in the involved hip; (ii) restriction in the range of passive motion in the involved hip; (iii) roentgenograms of hip disclose no bony abnormality, and (iv) complete clinical recovery within 2 months. Our patient fulfilled all the criteria. Although, the cause of toxic synovitis is unknown, hypotheses include trauma, infection, and allergy, but none of these has been substantiated(7). In this condition, the fever is absent or low grade, and leucocyte count and sedimentation rate are normal. High fever, leucocytosis and elevated sedimentation rate observed in this patient could be ascribed to the septicemic process. We used ciprofloxacin to treat septicemia. Although, ciprofloxacin is not recommended in children due to fear of arthropathy, it has been used in neonates for treating infections with multiresistant organisms(8). The management of toxic synovitis is expectant. It is a self-limited condition but 1-3% of children with

toxic synovitis go on to develop Perthes' disease(6).

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### Late Sepsis in a G-6-PD Deficient Newborn

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Erythrocyte glucose-6-phosphate dehydrogenase (G6PD) deficiency is a well

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