Lesson of the Week

Neonatal osteomyelitis presenting as nerve palsy

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Neonatal osteomyelitis is rare, with an incidence of one in 5000 to one in 15 000 live births.^{1,2} It may present insidiously with local swelling and immobility in an apparently healthy child or with systemic manifestations of sepsis.^{3,4} Early diagnosis is vital for successful treatment and may depend on a knowledge of the insidious manner in which the disease can present.

Case reports

Case 1—A girl was referred to hospital at 2 weeks of age when the health visitor noticed that she disliked passive movement of the left arm. She was not feverish and was feeding well. There was flaccid paralysis of the left arm, which was held in a "waiter's tip" position. X ray films of the shoulder excluded a fracture, and a consultant paediatrician diagnosed Erb's palsy. One week later at an outpatient session the physiotherapist noticed that the baby woke and cried when the left arm was abducted. There was slight swelling of the shoulder but no tenderness or erythema. Repeat x ray films showed an osteolytic lesion of the humerus with a periosteal reaction. A bone scan was normal. Exploration of the shoulder joint produced pus, which grew group B streptococcus. She was treated with antibiotics for four weeks and two months later had a full range of shoulder movements.

Case 2—A boy passed urine through the umbilicus at 15 days of age and was referred for surgery for a patent urachus. He also had left footdrop. Sciatic nerve palsy, probably secondary to an intramuscular injection of vitamin K, was diagnosed. The patent urachus was tied off. Two days later his left thigh became swollen, though not discoloured. Cultures of urine grew $>10^5$ *Staphylococcus aureus* and enterococcus/ml; blood cultures also grew *S aureus*. Next day erythematous patches developed over the right shoulder and wrist and left middle finger. Pus aspirated from the thigh, shoulder, and wrist grew *S aureus*. He was treated with intravenous flucloxacillin and gentamicin, to which the organism was fully sensitive, but developed metastatic infection in the left hip, left elbow, and right knee. After a prolonged course of antibiotics and surgical drainage of affected joints the infection was controlled. Nine months later the head and neck of his left femur had been totally destroyed and his thigh was shorter by 1 cm, but hip movements were normal. He also had limited dorsiflexion of the right wrist and a flexion contracture of the left proximal interphalangeal joint.

Case 3—This boy was seen in his local hospital at 10 days of age after his mother noticed a floppy left arm. An x ray film was normal, and Erb's palsy was diagnosed. Three days later a physiotherapist noticed swelling of the left shoulder and pain on abduction. At 15 days of age the right foot became red and swollen and his general practitioner diagnosed cellulitis, possibly secondary to a heel prick, and prescribed ampicillin for five days. The swelling and redness of the arm and foot improved. At 19 days of age the left thigh became blue and swollen. X ray films showed a bony lesion in the metaphysis of the left humerus, thought to be a fracture. He was admitted with a diagnosis of non-accidental injury. Swelling developed in the left groin, but a biopsy specimen obtained because an infected haematoma was suspected was sterile. The patient became feverish. Culture of his urine

Neonatal osteomyelitis may present with pseudoparesis of a limb, mimicking nerve palsy

grew *S aureus* and coliforms, and he was given ampicillin and cloxacillin. The fever resolved, and the swelling in the left thigh subsided. He was referred to the John Radcliffe Hospital for a second opinion on the diagnosis of non-accidental injury. X ray films showed chronic osteomyelitis of the left humeral metaphysis and a periosteal reaction in the left femur. After a long course of antistaphylococcal antibiotics he recovered completely with no residual disability.

Discussion

In these cases pseudoparesis of a limb or part of a limb was initially misdiagnosed as nerve palsy. The babies were feeding normally and were not feverish. Neonatal osteomyelitis due to streptococcus group B is particularly likely to present insidiously and has been described as simulating Erb's palsy; in almost 90% of cases a single bone is affected.⁵ Group B streptococcal osteomyelitis has been recognised increasingly in the United States,^{2,5} and in view of the recent increase in notified cases of group B streptococcal bacteraemia in the United Kingdom a similar trend may be expected here. In neonatal osteomyelitis, in contrast with osteomyelitis after the neonatal period, bones and joints are almost invariably affected simultaneously so that aspiration or exploration of the joints is an important aspect of management. Changes detectable in x ray films occur early, almost always by seven to 10 days,² but bone scanning is notoriously unreliable in indicating neonatal osteomyelitis.⁶ The erythrocyte sedimentation rate is often but not always over 30 mm in the first hour and is not a reliable indicator of osteomyelitis.²

In retrospect there was no history of excessive neck traction or shoulder dystocia at birth in the two infants diagnosed as having Erb's palsy, and routine neonatal examinations did not show any abnormality. The diagnoses of nerve palsies could have been confirmed or refuted by nerve conduction studies, which, though not generally available, might be helpful in the management of patients with traumatic nerve palsies. An important sign that was not given sufficient weight was the pain caused by abducting the arms of the patients with humeral osteomyelitis: pain is not a feature of nerve palsies. Osteomyelitis should be considered in the differential diagnosis of neonates presenting postnatally with limb palsy.

References

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