Case report

Osteonecrosis of the humerus related to pregnancy

LOUIS MCGUIGAN AND ANTHONY FLEMING

From the Department of Rheumatology, Prince Henry Hospital, Sydney 2036, Australia

SUMMARY A case of osteonecrosis of the head of the humerus is described in which the only likely precipitant was pregnancy. The association of pregnancy and osteonecrosis is reviewed. This is the first reported case of osteonecrosis of the humerus alone associated with pregnancy.

Osteonecrosis occurs as a result of a number of well recognised clinical conditions.¹ Many other associations have occasionally been described. One such rare association is pregnancy, with only 10 previous case reports.²⁻⁷ We present a case of osteonecrosis of the humerus in a 42-year-old woman occurring in the immediate postpartum period. There has been no other report of osteonecrosis of pregnancy at this site alone.

Case report

A 42-year-old previously healthy woman (gravida-4, para-4) developed severe pain in her left shoulder 4 days after delivery of her fourth child. The baby, a healthy male weighing 3.4 kg, was born at term after a 15-hour surgically induced labour. There were no complications during the pregnancy or following the delivery except for a shoulder pain which was described as being severe, dull, and constant and causing marked limitation of movement. There had been no preceding trauma and no other joint pains. She was treated by her local doctor with nonsteroidal anti-inflammatory agents and 3 periarticular injections of corticosteroid over a period of 6 weeks. Despite this the character and severity of the pain remained unchanged. X-rays (Fig. 1) taken 6 weeks after the onset of pain revealed osteoporosis of the left humeral head with loss of cortical definition. X-rays (Fig. 2) were repeated 4 months after the onset of pain, and she was referred for hospital admission because of the advancing destructive changes. Examination revealed complete lack of movement of the left shoulder with some muscle wasting. The remainder of the physical examination was normal.

The history was negative for such relevant diseases

as diabetes, tuberculosis, pancreatitis, systemic lupus erythematosus, gout, alcoholism, and Caisson disease.

An x-ray taken after admission is shown in Fig. 3. A joint scan (Fig. 4) showed marked uptake in the left shoulder and mild uptake in the right ankle. However, the ankle was and has remained asymptomatic. An open biopsy revealed marked atrophy of the head of the humerus with histological changes consistent with osteonecrosis (fig. 5).

Other investigations showed; haemoglobin 12.8 g/dl; white cell count $5.9 \times 10^9/l$ ($5900/mm^3$) with 48% neutrophils, 37% lymphocytes, 10% monocytes, and 5% eosinophils; platelet count $161 \times 10^9/l$ ($161\,000/mm^3$); erythrocyte sedimentation rate 14

Fig. 1 X-ray of the left shoulder (6 weeks after parturition).

Accepted for publication 4 October 1982.

Correspondence to Dr A. Fleming, Department of Rheumatology, Prince Henry Hospital, Little Bay, NSW 2036, Australia.

Fig. 2 X-ray of the left shoulder 4 months after the onset of pain.

Fig. 3 X-ray of the left shoulder 5 months after the onset of pain, showing complete destruction of the head of the humerus.

Fig. 4 Posterior view of joint scan showing markedly increased uptake in the left shoulder and mildly increased uptake in the right ankle.

mm/h; urea 6 mmol/l (36 mg/dl); creatinine 0.08 mmol/l (0.88 mg/dl); urate 0.35 mmol/l (6.0 mg/dl); calcium 2.25 mmol/l (9.0 mg/dl); cholesterol 5.71 mmol/l (223 mg/dl); triglycerides 0.73 mmol/l (65 mg/dl); protein electrophoretogram normal; anti-nuclear antibody negative; latex and Rose-Waaler tests negative; urine analysis normal.

After the biopsy the patient underwent a course of physiotherapy and hydrotherapy for the left shoulder. This improved the pain considerably and at follow-up 17 months after parturition the shoulder was free of pain but movement was still markedly limited.

Discussion

Only 10 cases of osteonecrosis related to pregnancy have been reported. In only 3⁵⁻⁷ is this relationship unequivocal, as the remainder either had insufficient clinical details for assessment or they had complications such as sepsis or sickle cell anaemia which might themselves initiate osteonecrosis. In one of these 3 cases⁵ the patient was said to have developed the lesion after delivery, but in the other 2^{6,7} the symptoms developed towards the end of the pregnancy. All 3 cases had hip involvement.

We consider this case to be another demonstration of the possible association between pregnancy and osteonecrosis. It is very unlikely that the cortico-

Fig. 5 Bone biopsy specimen. Thin bony trabeculae with no osteoblasts or osteoclasts on borders, absence of functioning bone marrow and replacement of the marrow space with adipose and fibrous tissue. (Haematoxylin and eosin, $\times 40$).

steroid injections were causally related, as the pain clearly preceded the injections and its intensity was unchanged by them. Moreover, the injections were into soft tissue and no attempt was made at joint penetration. We believe that isolated joint pain in pregnancy or the puerperium should be viewed with suspicion.

We thank the Department of Medical Illustration, Prince of Wales Hospital, for their assistance in the preparation of the figures, and Dr Brady and Mr Airey for their assistance in the preparation of the case report.

References

- 1 Park W M. Spontaneous and drug-induced aseptic necrosis. In: Davidson JK, ed. *Aseptic necrosis of bone*. Amsterdam: Excerpta Medica, 1976: 213–69.
- 2 Pfeifer W. Eine ungewöhnliche Form und Genese von symmetrischen Osteonekrosen beider Femur- und Humeruskopfkapfen. *ROEFO* 1957; **86**: 346–9.
- 3 Patterson R J, Bickel W H, Dahlen D C. Idiopathic avascular necrosis of the head of the femur. *J Bone Joint Surg* 1964; **46A**: 267–82.
- 4 Burrows F G O. Avascular necrosis of bone complicating steroid therapy. *Br J Radiol* 1965; **38**: 309–12.
- 5 Griffiths J C. Avascular necrosis of the femoral head in Kenyan Africans. *East Afr Med J* 1968; **45**: 613–9.
- 6 Kay N R M, Park W M, Bark M. The relationship between pregnancy and femoral head necrosis. *Br J Radiol* 1972; **45**: 828–31.
- 7 Zolla-Pazner S, Pazner S S, Lanyi V, Meltzer M. Osteonecrosis of the femoral head during pregnancy. *JAMA* 1980; **244**: 686–90.