Coxa Magna in a Nonoperatively Treated Osteoid Osteoma of the Femoral Neck

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Osteoid osteoma in a child can be treated surgically or nonsurgically. Nonsurgical treatment with nonsteroidal anti-inflammatory drugs (NSAIDs), including salicylates, is typically indicated for long bone lesions in inaccessible or central locations where en bloc excision might result in major morbidity or fracture. Chronic, intermittent administration of NSAIDs is continued until the osteoid osteoma spontaneously involutes, usually at the completion of the child’s growth.

Long-term outcomes of NSAID treatment of osteoid osteoma have not been well described in the literature. This article presents a patient with osteoid osteoma who was treated nonoperatively.

Figure 1: AP pelvic radiograph reveals a lucent lesion with a sclerotic border and nidus in the inferior right femoral neck (A). The right femoral head is lateralized secondary to a probable hip effusion. AP (B) and lateral (C) radiographs of the right hip, showing a 1-cm lucency and thickened medial cortex.
CASE REPORT

A 10-year-old boy presented with right hip and leg pain of 2 months' duration. The pain, which worsened in the early morning and with increased activity, was severe, resulting in limited activity. Since the pain began, the patient’s limp worsened; however, no medication was taken to relieve the pain.

On initial examination, the patient weighed 46 kg (90th percentile for his age) and was 142 cm in height (50th percentile). His temperature was 98.6°F. He walked with a mild antalgic limp. No erythema or increased warmth was noted in the hip. No leg-length discrepancy was present. The right hip had decreased range of motion with an externally rotated posture. Internal rotation of the hip was 5°, external rotation was 15°, flexion was 110°, and abduction was 50°. Pain was experienced at motion extremes. Manual muscle testing revealed normal strength of all major muscle groups. Neurologic and vascular examinations of the right leg were normal.

Anteroposterior pelvic and anterior and lateral radiographs of the right hip showed a 1-cm radiolucency in the inferior femoral neck with a radiodense nidus in the center of the lesion (Figure 1). Thickening of the medial cortex of the femoral neck and diffuse osteopenia of the proximal femur were noted. The joint space was slightly increased in the right hip. The acetabular dimensions and configuration were symmetrical with the left hip.

White blood cell count was 8 x 10^3 /µL with a normal differential. Erythrocyte sedimentation rate was 60 mm/h. Hip aspiration revealed straw-colored joint fluid with a low white blood cell count; a normal differential, and negative cultures. Bone scan revealed increased uptake in the femoral neck. Tomogram showed changes consistent with osteoid osteoma (Figure 2).

The relative risks and benefits of nonsurgical versus surgical care were discussed. Medical management was started with acetylsalicylic acid (aspirin), 81 mg four times daily.

After 3 weeks of salicylates, the patient’s pain decreased. Follow-up was every 3 months, with continued improvement in pain and function. After 6 months, occasional mild discomfort and a slight limp were reported. One year after the start of treatment, he was completely asymptomatic, playing sports, and no longer taking the salicylates. Range of motion of the right hip was equal and symmetric to the left, and no limp was present.

Most recently, at age 26, he reported no pain or functional loss in the right hip. He currently plays softball and bowls. He was interviewed and examined for the purpose of this article.

On examination, he was 5'8" tall and weighed 275 lbs. Gait was normal, and right hip range of motion was equal to the left with flexion to 90°, 10° of internal rotation, 60° of external rotation, and 40° of abduction.

Anteroposterior and lateral pelvic radiographs showed coxa magna and coxa valga (Figure 3). The femoral head diameter measured on the lateral radiograph at the physis was 6.2 cm on the right and 5.2 cm on the
The neck-schaft angle on the right was 145° compared to 135° on the left. A mild right acetabular dysplasia was noted with a 30° center-edge angle on the right compared to a 44° left hip center edge angle. Slight lateralization of the femoral head and widening of the medial wall of the acetabulum and “teardrop” were noted. The osteoid osteoma had completely resolved. No radiographic evidence of degenerative arthritis was noted.

**DISCUSSION**

The spontaneous involution of osteoid osteoma with nonoperative treatment in this case report is consistent with the findings of Kneisl and Simon. They compared 15 patients treated surgically with 12 patients treated with oral NSAIDs. All operative patients had complete pain relief with return to normal activity averaging 6 months postoperatively. All nonoperative patients had complete pain relief with average 33 months of NSAID treatment. One nonoperative patient had tolerance to the NSAIDs and surgery was performed. Two other patients requested operative management after successful treatment with medical management for 14 and 17 months, respectively. The osteoid ostomas resolved in all other patients treated with oral medication alone.

The pathogenesis of osteoid osteoma remains unknown but appears to involve neoplastic and inflammatory processes. Powers and Bach observed 11 patients with coxa magna following transient synovitis. They postulated that the peripheral cartilage of the epiphyseal plate proliferates in response to the hyperemia associated with synovitis.

The osteoid osteoma in our patient was located in an intracapsular portion of the femoral neck and resulted in a large joint effusion and synovitis evident on initial diagnostic radiographs. The chronic hyperemia before and during treatment may have stimulated the growth cartilage of both the femoral neck and triradiate cartilage. This would explain the widened “teardrop” similar to that seen in Legg-Calvé-Perthes disease. The coxa valga is likely a result of the location and hyperemia of the osteoid osteoma in the medial femoral neck. We believe this resulted in overgrowth of the medial femoral neck in relation to the lateral femoral neck. Coxa valga is also seen following treatment of hip dysplasia; however, lateral femoral neck undergrowth develops in relation to the medial femoral neck.

The resultant coxa magna, valga, and acetabular dysplasia seen on radiographs years later have not caused hip symptoms, but may predispose the hip to late secondary osteoarthritis.

**REFERENCES**