FEMORAL HEAD OSTEOSID OSTEOMA AND LUMBAR DISC HERNIATION: CASE REPORT

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ABSTRACT
We describe a clinical case of coexisting osteoid osteoma of the femoral head and L4-L5 disc herniation in a 17-year-old female patient. After a minor incident when she lost her footing while walking, she started to experience acute right groin pain, followed later by hip joint pain. Paraspinal muscle tenderness and pain at the L4-5 level were found on palpation. Hip motion was limited and gait was antalgic. Computed tomography (CT) of the lumbar spine revealed a disc herniation. The patient underwent two surgical interventions but no pain relief was achieved. Attention was then directed to the hip joint. CT and magnetic resonance imaging (MRI) revealed a lesion, highly suggestive of osteoid osteoma of the femoral head. Surgical removal of the tumor was performed. The patient was no longer feeling pain. Hip motion was entirely restored, and gait returned to normal. Follow-up imaging showed no recurrence one year after the intervention.

In summary, the problem was solved in 22 months, after prolonged treatment with nonsteroidal anti-inflammatory drugs and analgesics, 3 CT and 5 MRI scans, 5 hospitalizations and 3 surgical interventions. In this paper we discuss some diagnostic and treatment challenges in osteoid osteoma, emphasizing the need for its early detection and recognition.

Key Words: Osteoid Osteoma, Femoral Head, Lumbar Disc Herniation

INTRODUCTION
Osteoid osteoma (OstO) is a relatively common benign osteoblastic bone tumor. It represents 10%-12% of benign and 3%-5% of all primary bone tumors [1, 2]. OstO was first described in 1930, and recognized as a separate entity in 1935 [3].

Long bones of the lower extremities are preferential locations [4, 5]. OstO usually occurs in children or young individuals aged 5 to 30 years, predominantly in males (M:F=2:3:1). Symptoms tend to appear after physical stress or minor trauma [6, 7].

The tumor typically consists of a central osteoid-rich nidus, usually smaller than 2 cm in diameter, with a halo of diffuse peripheral sclerosis [8].

Pain is the dominant symptom of OstO. It is continuous, deep, intense, localized to the tumor area, usually with nocturnal increase. Pain can be accompanied by local tenderness, radiculalgia, muscular atrophy, motion restriction, and gait abnormalities [8, 9].

CT remains the imaging modality of choice for nidus identification and exact localization, and for precise anatomical depiction of the area [3, 4, 10].

It is often difficult to establish the exact diagnosis of OstO: delays of 11.8-42 months have been reported in the literature. Such diagnostic failures would therefore delay treatment as well. A wide range of differentials must be considered in OstO cases because of clinical, imaging or histological similarities: osteochondritis, arthritis, osteoblastoma and osteosarcoma, osteomyelitis, granulomas, aseptic necrosis [3].

Significant alleviation of pain can be achieved by administering nonsteroidal anti-inflammatory agents, but surgery remains the treatment of choice. Open resection or minimally invasive techniques can be applied according to the location of OstO [3, 4, 5, 11, 12, 13, 14]. Complete removal of the nidus is necessary in order to avoid residual symptoms or recurrence [12].

The natural course of OstO generally leads to a spontaneous resolution over an average of 6 years [5, 8].

Intraarticular localization of OstO is uncommon [15]. In such cases the diagnosis remains challenging because the symptoms may mimic other musculoskeletal disorders and imaging may be atypical [16]. These factors often lead to an additional delay of diagnosis and management [14, 15].

CASE REPORT
A 17-year-old girl started to experience acute cutting pain in the right groin after a minor incident when she lost her footing while walking. Two months later, a violent constant rotating pain appeared laterally, at the level of the right hip joint. NSAIDs and analgesics temporarily relieved the pain, but a couple of months later it reappeared, irradiating to the thigh. Hip motion became slightly restricted with end-range pain and antalgic gait.

Five months after the initial complaints the patient was admitted to a neurology unit. Neurological examination revealed mild palpatory pain at the L4-L5 paraspinal Valleix points, but no motor or sensory deficit. MRI demonstrated a median disc herniation at the L4-L5 level (Fig. 1 and 2.).
The patient was treated conservatively with no improvement. She was operated on 4 months later but the pain remained unchanged afterwards.

Another MRI was carried out 6 months after the operation. It revealed a right-sided paramedian L4- L5 disc herniation (interpreted as a recurrence or remaining fragment), and Shoermann’s disease (Fig. 3.).

Nerve conduction studies showed lesions of right L5 anterior roots and S1 posterior roots. A second surgical intervention was performed, again having no effect on pain.

Four months later MRI demonstrated an inhomogeneous hypointense structure of the head of the right femur with discontinuation of the compact bone contour, a lesion suggestive of osteoid osteoma or aseptic necrosis (Fig. 4.).

The patient was hospitalized for conservative treatment. MRI and CT were performed again. Bone marrow edema, and a subcortical round formation, 5.7 mm in diameter, with dense osteosclerotic center and periphery with low density were found in the head of the right femur. The formation was well defined and distinct, with slight perifocal osteoplastic reaction (Fig. 5.).
Three months after the last imaging the patient underwent open surgery with extirpation of the nidus, filling with tricalciumphosphate, and mosaic plastic of the right femoral head. Pain disappeared completely. Gait and hip motion returned to normal.

During the twelve-month follow-up period no pain or functional disturbances were reported and control imaging found no OstO recurrence (Fig. 6.).

**DISCUSSION**

In our case the puzzle was resolved 22 months after the initial complaints had appeared, and following 3 CT scans, 5 MRIs, 5 hospitalizations and 3 operations.

Intraarticular OstO is far less common than extraarticular [9, 16, 18]. When located in the hip joint, it may produce symptoms suggestive of lumbar disc herniation [8, 9]. Unfortunately, in our case both pathologies coexisted and clinical attention was initially focused on the latter. Such unusual tumor localization produces a peculiar, unexplained pain, leading to diagnostic confusion [8, 14, 19]. Imaging findings may also be ambiguous, as in our case, and CT is recommended for exact diagnosis [6, 18].

Diagnostic and management delay in OstO cases may reach up to 42 months [3]. The delayed diagnosis in such cases gives rise to increased morbidity, prolonged use of NSAIDs and analgesic medications with their potential side effects, unnecessary hospitalizations, investigations and surgery. Social and economic issues may be considered as well [17, 20].

Most authors agree that in case of intraarticular OstO open surgery is preferable to minimally invasive techniques as it would help avoiding side effects, complications, residual symptoms or recurrence [2, 14].

Clinical considerations must be directed to OstO in young patients with hip pain, radicular or referred type pain, involving the lower extremity. The symptoms may simulate those of lumbar disc herniation and OstO itself may produce radicular-like symptoms in the lower extremity [8].

The presented case emphasizes on the differential diagnostic challenges in neurology and neurosurgery, as well as on the possibilities of confusing coexistence of two or more pathological processes.
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