

HOSTED BY



ELSEVIER

Contents lists available at ScienceDirect

Chinese Journal of Traumatology

journal homepage: <http://www.elsevier.com/locate/CJTEE>

Case report

Subtrochanteric osteoid osteoma: A misdiagnosed case complicated by a hip fracture

N.K. Sferopoulos*

Department of Orthopaedics, G Hospital of Naoussa, Greece

ARTICLE INFO

Article history:

Received 20 October 2015

Received in revised form

7 February 2016

Accepted 28 March 2016

Available online 16 June 2016

Keywords:

Osteoma

Osteoid

Diagnostic errors

Complications

Hip fractures

ABSTRACT

A 34-year-old man with a subtrochanteric osteoid osteoma localized to the lateral cortex of the left femur is reported. The patient presented with mild spontaneous pain of the lateral thigh and knee. He refused a radiographic examination and was treated as a greater trochanteric pain syndrome for 9 months. He was then admitted with a transcervical fracture of the neck of the left femur after a fall from standing height. The fracture was fixed with 3 cannulated screws and healed uneventfully. His symptoms worsened after the first postoperative year. Eighteen months postoperatively the pain was dull, worsening at night, and relieved only with anti-inflammatory drugs, and he had a limp. New radiographs and tomograms were indicative of a lateral subtrochanteric osteoid osteoma with a subperiosteal localization. The lesion was treated successfully with surgical excision of a piece of reactive bone including the nidus.

© 2016 Daping Hospital and the Research Institute of Surgery of the Third Military Medical University.

Production and hosting by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Introduction

Osteoid osteoma is an osteoblastic benign bone lesion that may be easily diagnosed when the typical clinical and radiological features are present. However, diagnosis may occasionally be difficult if the lesion is in an area not clearly seen on plain radiographs, or if it presents with atypical clinical findings.^{1,2}

A 34-year-old man with a subtrochanteric osteoid osteoma of the lateral cortex of the left femur is presented. This case is unusual because it was treated as a greater trochanteric pain syndrome for 9 months. The patient then sustained a transcervical fracture of the neck of the left femur that was fixed, but the osteoid osteoma remained undiagnosed for further 18 months. This report focuses to illustrate the clinical and radiological diagnostic problems in the presented patient and to examine any potential pathology that would be indicative of a pathological fracture.

Case report

A 34-year-old white male presented with a history of mild spontaneous pain radiating to the lateral side of the left thigh and

the knee. He was a healthy seasonal agricultural worker. Since he refused a radiographic examination, he was informed that a greater trochanter bursitis pain syndrome was the most likely diagnosis. No medication was required for pain management. The clinical symptoms and signs were not significantly changed after 9 months. By that time he suffered a minimally displaced transcervical fracture of the neck of the left femur (Fig. 1) after a simple fall from standing height. No other bone abnormality was diagnosed. The fracture was fixed with 3 cannulated screws under radiographic imaging control. The postoperative course was uncomplicated and the patient was discharged 2 weeks later. Partial weight bearing was allowed only after the third month and full weight bearing after the sixth month postoperatively (Fig. 2). The patient's mild spontaneous pain over the lateral aspect of the thigh continued for 12 postoperative months. During his last consultation, 18 months postoperatively, he was walking with a limp. He reported that the pain had increased in intensity and awakened him nearly nightly during the last 6 months. The patient tried various nonsteroidal anti-inflammatory drugs in pain management. He reported complete pain relief after taking the medication twice a day. On physical examination there was increased lateral temperature, pressure tenderness and a palpable bone overgrowth over the lateral side of the proximal thigh. There was an atrophy of his left thigh exceeding almost 3 cm compared with the right side. A new pelvic radiograph, that for the first time included the subtrochanteric region of the left femur, indicated a bone lesion consistent with osteoid osteoma

* Tel.: +30 2310963270; fax: +30 2310968265.

E-mail address: sferopoulos@in.gr.

Peer review under responsibility of Daping Hospital and the Research Institute of Surgery of the Third Military Medical University.

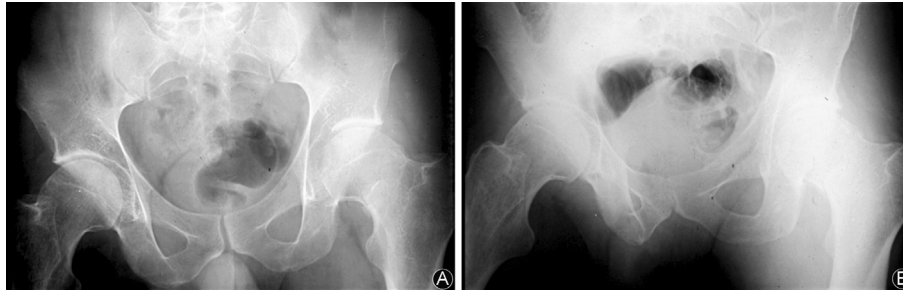


Fig. 1. Anteroposterior radiographs (A, B) of the pelvis showing a transcervical fracture of the left femoral neck.



Fig. 2. Anteroposterior radiograph of the left hip showing fracture healing 6 months after fixation with 3 cannulated screws.

(Fig. 3A). Tomograms of the left proximal femur indicated the subperiosteal location of the lesion (Fig. 3B). En-block removal of a piece of reactive bone including the nidus was surgically performed. The lesion was easily localized due to its subperiosteal location. Radiography in the operating theatre was needed to identify the nidus in the resected piece of bone (Fig. 4). The histologic examination confirmed the diagnosis of osteoid osteoma. The patient experienced immediate relief of symptoms from the first postoperative day. The patient was free of disease at the final follow-up 25 years after operation.

Discussion

Diagnosis of osteoid osteoma is readily made by the history, the clinical presentation and the radiological features in most cases. The mean duration from the onset of symptoms to diagnosis of osteoid osteoma may exceed a year. Delayed diagnosis in most cases is due to atypical clinical features and from lack of awareness that plain radiographs in the early stages can be normal. Misdiagnosis with prolonged impairment and sometimes overtreatment appears as a major problem concerning atypical cases.^{3–5} In addition, delayed diagnosis may be seen in unusual cases of osteoid osteoma presenting with slowly evolving neurological signs,^{5–7} as inflammatory joint disease and complex regional pain syndrome,^{8–13} or mimicking sacroiliitis,¹⁴ femoroacetabular impingement syndrome¹⁵ and osteoarthritis.¹⁶

The misdiagnosis and treatment of an osteoid osteoma as greater trochanteric bursitis pain syndrome has not been previously reported. Pain, tenderness, and sometimes swelling over the lateral aspect of the hip are usually attributed to a greater trochanter bursitis.^{17,18} The differential diagnosis may include

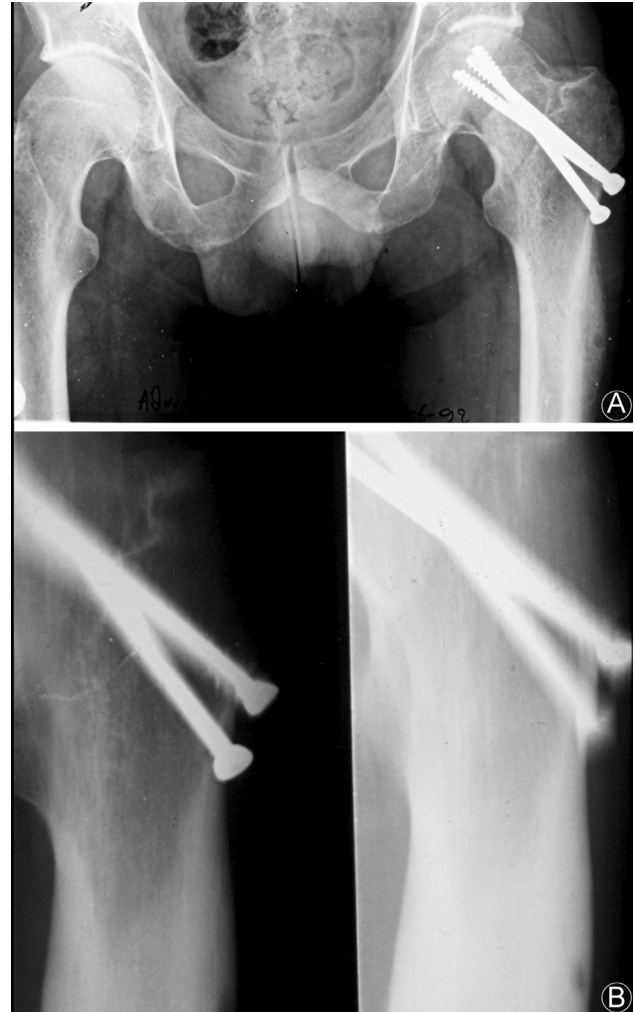


Fig. 3. Anteroposterior radiograph of the pelvis (A) and tomograms of the left hip (B) showing extensive thickening of the subtrochanteric femoral cortex with a subperiosteal radiolucent nidus.

muscle strain, adipose dolorosa, local infections, stress fractures, osteonecrosis, neuropathy and soft tissue metastases.^{19,20} Although the initial evaluation of a patient may not require a radiological examination, cases with persisting or even deteriorating clinical symptoms may be sent for radiographs. The clinical suspicion of a bone tumor is the first step towards making a diagnosis; and the awareness that osteoid osteoma may occur in young patients, should alert to the possibility of this uncommon entity. It should be emphasized that failure to carry out a proper radiographic survey in cases treated as greater trochanter bursitis pain syndrome may be

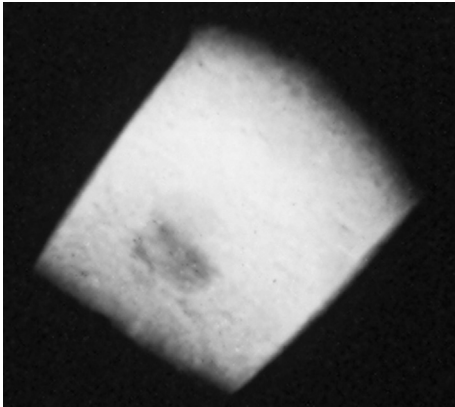


Fig. 4. Intraoperative radiograph of the resected piece of bone including the nidus.

associated with a considerable delay in the diagnosis of the underlying bone pathology.

The presented case was not examined radiographically until his admission with a hip fracture. Retrospective consideration of his pelvic radiographs following the hip fracture is indicative of a reactive bone formation at the lateral cortex of his proximal femur (Fig. 1B), but it was missed at the time of injury. The question whether it was a pathological fracture or not can not be clearly answered. It has been previously reported that osteoid osteomas of the hip may present with atrophy of the thigh.²¹ This may be most likely related to fatty infiltration of the muscles²² due to the regional inflammation than to the limb disuse.²³ In addition, regional osteoporosis due to osteoid osteoma has rarely been reported.^{24,25} In the presented case, a 3 cm difference was determined between thigh measurements, but the atrophy was calculated 18 months following fixation of the hip fracture and this could be directly related to disuse muscle atrophy. Retrospective evaluation of his pelvic radiographs at injury was suggestive of regional hip osteoporosis (Fig. 1A), but this view can not be scientifically proved.

The diagnosis was missed for a further 18-month period following the fixation of the hip fracture. The severe deterioration of his symptoms necessitated a new radiographic investigation that for the first time included a sufficient portion of the subtrochanteric region of the femur. Further diagnostic investigation of the bone lesion included only tomograms, since computed tomography and magnetic resonance imaging were not available by that time.

The patient presented in this report is the first osteoid osteoma with a clinical presentation mimicking greater trochanteric bursitis pain syndrome. Furthermore, it is the first subtrochanteric osteoid osteoma complicated by a hip fracture, although a clear involvement of the osteoid osteoma to bone pathology proximal to the border of cortical thickening could not be sufficiently proved.

References

1. Lee EH, Shafi M, Hui JH. Osteoid osteoma: a current review. *J Pediatr Orthop.* 2006;26:695–700.
2. Radcliffe SN, Walsh HJ, Carty H. Osteoid osteoma: the difficult diagnosis. *Eur J Radiol.* 1998;28:67–79.
3. Davison WR. Osteoid osteoma: report of atypical cases. *Clin Orthop.* 1956;7:113–123.
4. Ciftdemir M, Tuncel SA, Usta U. Atypical osteoid osteomas. *Eur J Orthop Surg Traumatol.* 2015;25:17–27. <http://dx.doi.org/10.1007/s00590-013-1291-1>.
5. Kiers L, Shield LK, Cole WG. Neurological manifestations of osteoid osteoma. *Arch Dis Child.* 1990;65:851–855.
6. Hsich GE, Davis RG, Darras BT. Osteoid osteoma presenting with focal neurologic signs. *Pediatr Neurol.* 2002;26:148–152.
7. Cabasson S, Yvert M, Pillet P, et al. Neurological manifestations of an osteoid osteoma located on the femoral neck in an 8-year-old boy. *Arch Pediatr.* 2012;19:1196–1199. <http://dx.doi.org/10.1016/j.arcped.2012.08.022>.
8. Kind M, Diard F, Germaneau J, et al. Osteoid osteoma of the femur neck with synovitis simulating chronic monoarthritis of the hip. *Arch Fr Pediatr.* 1986;43:417–419.
9. Alani WO, Bartal E. Osteoid osteoma of the femoral neck stimulating an inflammatory synovitis. *Clin Orthop Relat Res.* 1987;223:308–312.
10. Mommert I, Heuschmidt M, Suckel A. Intraarticular osteoid osteoma as a cause of chronic ankle pain. *Orthopade.* 2009;38:269–273. <http://dx.doi.org/10.1007/s00132-009-1412-z>.
11. Georgoulis AD, Soucacos PN, Beris AE, et al. Osteoid osteoma in the differential diagnosis of persistent joint pain. *Knee Surg Sports Traumatol Arthrosc.* 1995;3:125–128.
12. Georgoulis AD, Papageorgiou CD, Moebius UG, et al. The diagnostic dilemma created by osteoid osteoma that presents as knee pain. *Arthroscopy.* 2002;18:32–37.
13. Cakar E, Durmus O, Kiralp MZ, et al. An unusual case of osteoid osteoma misdiagnosed as inflammatory joint disease and complex regional pain syndrome I. *Acta Reumatol Port.* 2009;34:670–671.
14. Duman I, Aydemir K, Tan AK, et al. An unusual case of osteoid osteoma clinically mimicking sacroiliitis. *Clin Rheumatol.* 2007;26:1158–1160.
15. Banga K, Racano A, Ayeni OR, et al. Atypical hip pain: coexistence of femoroacetabular impingement (FAI) and osteoid osteoma. *Knee Surg Sports Traumatol Arthrosc.* 2015;23:1571–1574. <http://dx.doi.org/10.1007/s00167-014-2985-6>.
16. Zerjavic NL, Potocki K, Prutki M, et al. Late diagnosis of intraarticular osteoid osteoma treated as hip osteoarthritis—case report and review of the literature. *Reumatizam.* 2006;53:33–36.
17. Williams BS, Cohen SP. Greater trochanteric pain syndrome: a review of anatomy, diagnosis and treatment. *Anesth Analg.* 2009;108:1662–1670. <http://dx.doi.org/10.1213/ane.0b013e31819d6562>.
18. Sayegh F, Potoupnis M, Kapetanios G. Greater trochanter bursitis pain syndrome in females with chronic low back pain and sciatica. *Acta Orthop Belg.* 2004;70:423–428.
19. Traycoff RB. "Pseudotrochanteric bursitis": the differential diagnosis of lateral hip pain. *J Rheumatol.* 1991;18:1810–1812.
20. Bertoli AM, Saurit V, Alvarellos A, et al. Soft tissue metastases presenting as greater trochanteric pain syndrome. *J Clin Rheumatol.* 2003;9:370–372.
21. Akgül S, Uzümcügil A, Bozkurt MF, et al. Osteoid osteoma in a 16-year-old boy presenting with atrophy of the left thigh: diagnostic difficulties. *Turk J Pediatr.* 2008;50:373–376.
22. McConnell JR, Daneman A. Fatty replacement of muscles adjacent to spinal osteoid osteoma. *J Comput Assist Tomogr.* 1984;8:147–148.
23. Ladjeroud S, Touraine S, Laouénan C, et al. Impact of osteoid osteomas of the hip on the size and fatty infiltration of the thigh muscles. *Clin Imaging.* 2015;39:128–132. <http://dx.doi.org/10.1016/j.clinimag.2014.07.006>.
24. Martorell F. Sudeck's atrophy due to osteoid osteoma of the carpal navicular. *Angiologia.* 1964;16:170–172.
25. Wiener SN, Kirschenbaum D. Osteoid osteoma presenting as regional osteoporosis. *Clin Nucl Med.* 1980;5:68–69.