

Osteochondritis Dissecans Developed as a Complication of Medial Meniscectomy Which was Diagnosed as Chondroblastoma Initially

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Abstract: A young man who had knee pain was diagnosed as bone tumor at the distal end of the femur by non-contrast knee MR imaging. The mass lesion at distal lateral femoral condyle was interpreted as chondroblastoma in another facility. The patient underwent routine laboratory evaluations and contrast-enhanced MR imaging in our hospital. On MRI, lesion was seen that there were findings of previous posterior horn meniscectomy at medial femoral condyle and a hyper-intense, heterogeneous, solid mass with subchondral, subcortical localization at the level of lateral condyle epiphysis which had lobulated contours extending to medulla with suspected septation. The localization, appearance, and size of the lesion suggested chondroblastoma. On contrast-enhanced images, it was recognized that the lesion didn't exhibit contrast-enhancement. When MR images were assessed in details, it was seen that there was a defective appearance at the cartilage of lateral femoral condyle. In the history, it was found that the patient underwent meniscus surgery 1.5 years ago. Cartilage injury had occurred during surgery, causing osteochondritis dissecans in bone tissue. We intended to emphasize that diagnosis will be facilitated by detailed history taking and meticulous radiological evaluation.

Keywords: chondroblastoma, meniscectomy, osteochondritis dissecans, MRI

INTRODUCTION

Osteochondritis dissecans (OCD) is defined as the detachment of an osteochondral fragment from surrounding bone and cartilage tissue. It is more common in young adults and athletes. The typical patient profile includes male patients aged 15-20 years [1]. It is generally unilateral. Some authors classify OCD into juvenile and adult types [2]. This classification has important prognostic implications. In juvenile type OCD, spontaneous healing is more likely. However, lesions persisting after the closure of growth plates are considered as adult type OCD [2].

Chondroblastoma is localized at epiphysis and apophysis, and is tended to destruct growth plate. It may extend to adjacent metaphysis [3]. It is generally seen at the second decade. It is often localized at proximal humerus, distal femur, and proximal tibia. The tumor is localized around knee, shoulder, and hip in most cases. Para-articular symptoms are related to joints [3].

Bone tumors and tumor-like lesions often present the diagnostic and therapeutic challenge. In these lesions, anatomic localization, origin, clinical presentation and behaviors are valuable in diagnosis. Both malignant and benign tumors and tumor-like lesions can present similar clinical and radiological findings [4]. The assessment in tumors and tumor-like lesions of bone is similar to other diseases. It begins

with meticulous history taking and comprehensive physical examination; followed by radiological assessment. The major issues in the assessment include age, how lesion detected and localization, radiographic appearance and number of lesions [5]. In our case Osteochondritis Dissecans developed as a complication of previous meniscus surgery was diagnosed after detailed history taking and meticulous evaluations in a patient who was referred to our hospital for further evaluation with a diagnosis of the bone tumor by another facility

CASE REPORT

A 24-year old man who had knee pain over 5-6 months was diagnosed as bone tumor at the distal end of the femur by non-contrast knee MR imaging; thus, surgery was recommended. The patient was referred to our hospital for further evaluation. The mass lesion at distal lateral femoral condyle was interpreted as chondroblastoma in another facility. The patient underwent routine laboratory evaluations and contrast-enhanced MR imaging in our hospital. No abnormal finding was detected in routine laboratory evaluations.

On MR imaging, it was seen that there were findings of previous posterior horn meniscectomy at medial femoral condyle and a hyper-intense, heterogeneous, solid mass lesion (approximately 31x24x28 mm in size) with subchondral, subcortical localization at the level of lateral condyle epiphysis

which had lobulated contours extending to medulla with suspected septation. The localization, appearance, and size of the lesion suggested chondroblastoma. However, no marked edema and lytic areas were observed in adjacent bone tissues. On contrast-enhanced images, it was recognized that the lesion didn't exhibit contrast-enhancement. Thus, it was recognized that the lesion

didn't exhibit malignant characteristics. When MR images were assessed in details, it was seen that there was a defective appearance at the cartilage of lateral femoral condyle. In the history, it was found that the patient underwent meniscus surgery 1.5 years ago. Cartilage injury had occurred during surgery, causing osteochondritis dissecans in bone tissue.



Fig-1: T2 Axial section. A hyper-intense, heterogeneous, solid mass lesion



Fig-2: Sagittal section. A hyper-intense, heterogeneous, solid mass lesion (approximately 31x24x28 mm in size) with subchondral, subcortical localization at the level of lateral condyle epiphysis which had lobulated contours extending to medulla with suspected septation



Fig-3:Coronal section. Hyper-intense, heterogeneous, solid mass lesion with subchondral, subcortical localization which had lobulated contours extending to medulla



Fig-4: T1 Sagittal section. Hypo-intense, heterogeneous, solid mass lesion

DISCUSSION AND CONCLUSION

Osteochondral lesions; In chondral lesions, subchondral bone is intact but cartilage flap overlying bone is detached. In osteochondral lesions, subchondral bone and cartilage overlying the bone is damaged. Varying degrees of detachment can develop at crater beneath fragment.

In subchondral injury, cartilage is intact while there is bone damage beneath cartilage. Pathogenesis is explained by 2 distinct theories including ischemic and traumatic theories [6]. Ischemic theory advocates that the fragment is detached due to impaired blood flow. Cartilage tissue is detached secondary to bone undergoing avascular necrosis [7]. The traumatic theory emphasizes a direct, single impact or repetitive

mechanical stress. Osteochondral fracture and detachment can develop by a direct, single impact while subchondral stress fracture can develop due to repetitive micro-traumas without apparent trauma, which then causes detachment of fragment.

In the literature search, it was seen that OCD development was reported after discoid lateral meniscus surgery in particular. However, there is a limited number of cases developed OCD after medial meniscus surgery [8].

Chondroblastoma is mostly localized at epiphysis and apophysis; however, it may involve metaphysis when growth plate is destructed [3]. Extremely rare localizations such as femoral metaphysio-diaphyseal and cortical localization have been reported [9]. Distal femur, proximal humerus, and proximal tibia are among frequently involved bones. Symptoms are associated to joint in most instances as in other intra-articular disorders. Mild pain, effusion, and muscular atrophy are seen.

The biopsy isn't indicated in all bone lesions. If the clinical picture is sufficient for diagnosis, or if surgery isn't required or if surgery isn't required in all lesions considered in differential diagnosis, it is possible not to perform the biopsy. Follow-up is the choice of management in such instances. These lesions include simple osseous cyst, non-ossifying fibroma and enchondroma. These patients are managed through periodic controls[3].

In our case, the lesion initially considered as chondroblastoma with the recommendation of immediate surgery was diagnosed as OCD after meticulous history taking and MR imaging; thus, surgery was canceled. After 2-years follow-up, no MRI finding favoring tumor was detected in control visits. No change in size and nature of lesion was observed. This OCD case which developed at lateral femoral condyle as a complication of medial meniscectomy was found to be remarkable. We intended to emphasize that diagnosis will be facilitated by detailed history taking and meticulous radiological evaluation.

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