Osteoblastoma of the trapezium: A rare case report
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Section: Musculoskeletal system
Area of Interest: Musculoskeletal bone Musculoskeletal joint
Procedure: Diagnostic procedure
Technique: MR
Technique: Conventional radiography
Technique: CT
Technique: Percutaneous
Special Focus: Neoplasia Case Type: Clinical Cases
Authors: Marina Andrés 1, Pilar Fernández 2, Julian Del Rio 3, Rosario Serrano 4
Patient: 16 years, male

Clinical History:
A 16-year-old male patient presented with a 1-year history of progressive right wrist pain. He visited other medical centres where he was treated for de Quervain's tenosynovitis. The pain was located in the distal scaphoid pole, more intense at night and not related to trauma or manual activities.

Imaging Findings:
Posteroanterior X-ray of right wrist shows an osteolytic lesion of trapezium (Fig. 1). Magnetic resonance imaging (MRI) confirmed the presence of signal changes at scapho-trapezium (ST) articulation, soft tissue mass and inflammatory changes extending into the extensor tendons compartment. The differential diagnosis was made between benign and malignant tumour and inflammatory lesion. (Fig. 2 and Fig. 3). A CT was also performed and confirmed the osteolytic lesion at scapho-trapezium articulation. (Fig 4, Fig. 5 and Fig. 6).
The Dual-Phased bone Gammagraphy study detected a moderate hypervascularization with osteoblastic increased activity on the right hand (Fig. 7).
Histological analysis of the trapezium showed connective tissue containing osteoid and primitive bone rimmed by osteoblasts next to numerous giant cells. There was no area suspicious for malignancy (Fig. 8).
The treatment was tumour curettage with allogenic bone grafting. (Fig. 9).
At 12-month follow–up evaluation, no recurrence was observed (Fig. 10).
The patient remains asymptomatic without limitations in his activities.

Discussion:
Osteoblastoma represents 1% of all primary bone tumours [3] and is a rare pathology in the carpus, and has never been described in the trapezium to the best of our knowledge.
It affects men more than women with an incidence of 2-3:1, and more frequently patients younger than 30 years [2].
It is often seen in long bones, but it has a predilection for vertebral bodies.
Osteoblastoma is locally aggressive and resembles osteoid osteoma but it is larger in size (> 2 cm) and in contrast,
pain is inconsistently relieved with salicylates [7, 4]. The pain is not intense and poorly localized, which can lead to a
delayed diagnosis [1, 6]. Osteoid osteoma shows indeed the characteristic radiolucent nidus.

There are also differences in the natural history of both tumours: Osteoid osteoma tends to regress, while
osteoblastoma is progressive and may undergo malignant transformation, although this still remains a controversy
[8].

X-ray and CT are the "gold standard" for the diagnosis; CT examinations are best used to further characterize the
lesion with regard to the presence of a nidus and matrix mineralization. However, when it presents with an
aggressive pattern and soft tissue mass, MR is mandatory. Typical osteoblastoma has decreased signal intensity on
T1 and variable on T2-weighted images. Due to calcified matrix, osteoblastoma can manifest as heterogeneously
hypointense relative to marrow on non-fat-suppressed T2-weighted images [2].

Despite the fact that osteoblastomas accumulate radionuclide on bone scintigraphy studies, it is not specific [2].

For the differential diagnosis a percutaneous excisional CT-guided biopsy is appropriate. The histological
characteristics between osteoid osteoma and osteoblastoma may be challenging. Both are osteoid formers but in
the latter bone trabeculae are wider, longer and less cohesive [8].

Osteoblastoma easily recurs after incomplete surgical removal (around 20% of recurrence rate). Curettage and
grafting are the treatments of choice and for recurrence en bloc resection with arthrodesis [3, 5]. A close monitoring
of these patients is mandatory [2].

Osteoblastoma is an uncommon benign tumour, rarely found in the hand. So it should be recognized as a still
possible cause of long term wrist pain.

For the diagnosis, plain films and CT examinations are the "gold standard", but for the more aggressive type, MR
can be a useful tool.

**Differential Diagnosis List:** Osteoblastoma, Osteoid osteoma, Ganglion, Enchondroma, Eosinophilic granuloma,
Osteosarcoma

**Final Diagnosis:** Osteoblastoma

**References:**

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Hanane Bahouq1, & Fedoua Allali1, Najia Hajaj-Hassouni (2011) Osteoblastoma of scaphoid of the carpus: a
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Extremity:2054-2056
Figure 1

Description: PA view plain films with osteolytic signs at scapho-trapezium (ST) articulation. Origin: Marina A, Department of Radiology, Ruber Clinic, Madrid, Spain
Description: Lytic lesion in ST articulation with soft tissue mass that affects extensor tendons. Origin: Andres M, Department of Radiology, Clinic Ruber, Madrid, Spain
Description: Axial and sagittal CT images (yellow arrows) clearly depict the lytic lesion. Origin: Andres M, Department of Radiology, Clinic Ruber, Madrid, Spain
Figure 4

Description: Gammagraphy shows uptake at wrist with no other captations (not shown). Origin:
Andres M, Department of Radiology, Clinic Ruber, Madrid, Spain
Figure 5

Description: Osteoid tissue with well-differentiated osteoblasts and numerous giant cells. Immature bone trabeculae next to osteoid tissue, osteoblasts and giant cells. Origin: Department of Histopathology, Clinic Ruber, Madrid, Spain
Figure 6

Description: 12 months later the image shows successful bone graft integration. Origin: Andres M, Department of Radiology, Clinic Ruber, Madrid, Spain
Description: 18 months later, Coronal DP FS shows bone graft integration and hypointense soft tissue mass due to fibrosis. No recurrence is seen. Origin: Andres M, Department of Radiology, Clinic Ruber, Madrid, Spain
Description: MRI showed a T1 hypointense lesion in the ST articulation. Origin: Abdres M, Department of Radiology, Ruber Clinic, Madrid, Spain.
Description: Axial and sagittal CT images (yellow arrows) clearly depict the lytic lesion. Origin: Andres M, Department of Radiology, Ruber Clinic, Madrid, Spain
Description: Three-dimensional reconstruction, frontal view, shows irregularity of trapezium secondary to lytic changes (yellow and red arrows). Origin: Andres M, Department of Radiology, ruber Clinic, Madrid, Spain.