Osteochondrosis of the inferior pole of the scapula (Roca disease)

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We report a rare case of osteochondrosis of the inferior pole of the scapula in a 14-year-old boy, an amateur swimmer, that was diagnosed by a combination of clinical and imaging findings. Also known as Roca disease, this is the first article to report this entity in the English literature and demonstrates its computerized tomography and MRI features. J Pediatr Orthop B 00:000–000 © 2013 Wolters Kluwer Health | Lippincott Williams & Wilkins.

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Introduction

We report a rare case of osteochondrosis of the inferior pole of the scapula (Roca disease) in a 14-year-old boy who was a swimmer with a history of slowly progressive pain on the back of his shoulder of over 1 year. MRI showed signal intensity (SI) abnormalities surrounding the ossification center of the inferior pole of the scapula and computerized tomography (CT) demonstrated its irregularity, mild sclerosis, and a smaller size when compared with the other side. Osteochondrosis is a term used to describe a group of disorders that affect the growing skeleton, including various bones, usually self-limited but sometimes requiring surgery. This is the first report of Roca disease in the English literature and to our knowledge is the first to demonstrate its imaging features by CT and MRI. Although the prevalence and etiology of this finding are unclear, it may represent a cause of shoulder and scapular pain.

Case report

A 14-year-old boy presented with a 1-year history of a slowly progressive pain on the back of his left shoulder. He was an amateur swimmer and described an increase in pain during and after swimming classes (three times a week). He was otherwise healthy, with no history of trauma, previous surgery, or bone disease. Clinical examination revealed moderate pain and focal tenderness by direct pressure on the inferior pole of the left scapula, but there was no restriction of strength or range of motion.

The imaging workup was provided, beginning with simple radiographs of the left shoulder taken at another healthcare institution with normal findings reported. The patient was then subjected to an MRI examination at our institution, which was performed in a 1.5-T scanner with the following pulse sequences: axial T1-weighted, axial T2-weighted fat-suppressed, sagittal T2-weighted fat-suppressed, coronal T2-weighted fat-suppressed, and axial T1-weighted fat-suppressed postcontrast. MRI revealed a moderately increased SI at the medullary bone of the inferior edge of the body of the scapula, representing edema on the growth plate surrounding the ossification center (Fig. 1), with a slight enhancement after contrast injection. There were no signs of fractures or surrounding soft-tissue changes. An additional finding was a mildly increased SI on the subcortical medullary bone (edema) on the posterior segments of the third and fourth ribs, next to their transverse costal junctions. After the MRI scan, a supplementary CT was recommended to better evaluate bony structures and correlate them with MRI findings. A CT scan was performed in accordance with the pediatric shoulder protocol, which focused on the inferior third of both scapulas (for comparison purposes) in a 64-slice scanner with the following technique: axial plane volumetric acquisition with the bone and soft-tissue reconstruction algorithm, multiplanar reformatting, and the volume-rendering technique after processing. A CT scan depicted irregularity and mild sclerosis of the ossification center at the inferior pole of the scapula (Fig. 2) and also showed a 35% smaller left scapula when compared with the right one (left, 0.7 cm vs. right, 1.2 cm). In addition, volume-rendering technique also demonstrated a smaller size and irregularity of the scapula (Fig. 3).

The imaging features from the CT and MRI, in association with the clinical findings, highly suggested osteochondrosis of the inferior pole of the scapula (Roca disease). After the diagnosis, the patient underwent conservative treatment with painkillers on demand and rest for 4 weeks, avoiding the swimming classes. Thereafter, physical activities were reintroduced gradually over the next 2 months. Evaluation after 3 months revealed that the patient had no pain. Swimming classes were restored, though with a lesser frequency (once a week); there were no further complications or coincidences of symptoms even after 6 months of follow-up.

Keywords: ossification center, osteochondrosis, scapula, shoulder pain

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Discussion

Osteochondrosis of the inferior pole of the scapula was first described by Roca [1], with the features described being similar to those observed in our case. He reported the
case of a 19-year-old girl, an amateur basketball player, who had been suffering from pain for a few months at the posterior shoulder and had a palpable mass at the inferior pole of the scapula. A plain radiograph revealed heterogeneity and mild sclerosis of the corresponding ossification center, which was also clearly depicted by CT in our case. Although initially treated conservatively, the definitive treatment was surgical excision of the ossification center of the inferior pole of the scapula, and the histopathological sample showed fibrosis and necrosis of the bone tissue [1]. In contrast, our patient was not subjected to surgery, as improvement of the symptoms was accomplished with conservative treatment, even after 6 months of follow-up. However, in few circumstances, operative treatment may be required, though most osteochondroses are often self-limited and resolve with nonoperative management [2].

The scapula is ossified from at least seven centers: one from the body, two from the coracoid process, two from the acromion, one from the vertebral border, and one from the inferior pole; the latter being the target of our study. These various epiphyses are joined to the bone by the 25th year of age [3]. We hypothesize that osteochondrosis of the inferior pole may occur by the time the ossification center appears, between 14 and 25 years of age, which is matching to the age at presentation of both our case and Roca’s case (14 and 19 years old, respectively). A plausible explanation is that the inferior pole of the scapula is subjected to a lot of strength during the second decade of life, especially because of the increase in sports activities among teenagers, which leads to microtraumas by overuse and a possible vascular insufficiency [1].

As seen in our case and in the case reported by Roca, the clinical manifestation was progressive pain at the inferior pole of the scapula and focal tenderness or a palpable small mass related to local swelling. We believe that an additional imaging workup clearly adds to the diagnosis – a more detailed anatomical evaluation by CT and a higher sensitivity for bone edema detection by MRI, especially if no bone changes are seen on plain radiographs. Our case report is limited by the fact that our patient did not undergo surgery, and therefore no histopathological data are available. Besides that, the lack of published data on this condition encourages more observations.

**Conclusion**

We believe our report is novel in combining elements of imaging features and clinical findings of this entity, which should be included by radiologists, pediatricians, and orthopedic surgeons in the differential diagnosis workup for shoulder pain.

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**Conflicts of interest**

There are no conflicts of interest.

**References**