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Elbow Apophysitis in an Adolescent Tennis Player

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Case Presentation

A 15-year-old male competitive tennis player was referred to physical therapy by his family physician for activity-related medial elbow pain for 2 months. His pain occurred with tennis serving and infrequently with overhead throwing. The patient's pain persisted for several hours after activity and improved with rest, but never completely resolved. The patient's pain with overhead activities was rated as 6/10 on a visual analog scale.

Physical examination revealed pain-free weakness of the shoulder external/internal rotators (4–/5), and scapular stabilizers (4/5). The patient's active external rotation, with his arm by his side, was limited to 23°. A medial valgus stress test did not reproduce pain, and no laxity was reproduced at the elbow. There was no palpable tenderness or visualized swelling of the elbow. The patient rested from tennis while undergoing 4 weeks of physical therapy intervention, with resolution of shoulder weakness and range of motion restrictions. Upon return to tennis, the patient's medial elbow pain returned with serving. A musculoskeletal ultrasound of the medial elbow was performed by the physical therapist, which showed apophysitis (**FIGURES 1** and **2**).

Treatment/Outcomes

The patient was referred to an orthopaedic surgeon, who ordered radiographs, confirmed the diagnosis of apophysitis, and placed the patient in a static splint for 4 weeks. The patient returned to physical therapy for further strengthening and returned to pain-free activities after 2 weeks of rehabilitation.

Learning Point

Medial elbow injuries in young, overhead-throwing athletes are on the rise, with an incidence approaching 50% in high school athletes.[2] Musculoskeletal ultrasound has high predictive value for medial elbow injuries in the adolescent population and may facilitate early detection and intervention.[3] The diagnosis of apophysitis can be overlooked due to difficulty in reproduction of symptoms during the evaluation. Imaging using musculoskeletal ultrasound can be a valuable and cost-effective tool to guide clinical decision making. ■

FIGURE 1
Long-axis view diagnostic ultrasound of the medial epicondyle and common flexor tendon attachment, showing bony fragmentation/rim over the medial epicondyle (arrow), with hypoechoic signal (*) around it. The images were produced at a depth of 2.7 cm using a linear probe with a frequency of 6 to 15 MHz over the medial elbow. The blue rectangle at the bottom right corner of the image demonstrates the orientation of the probe to obtain the long-axis view.

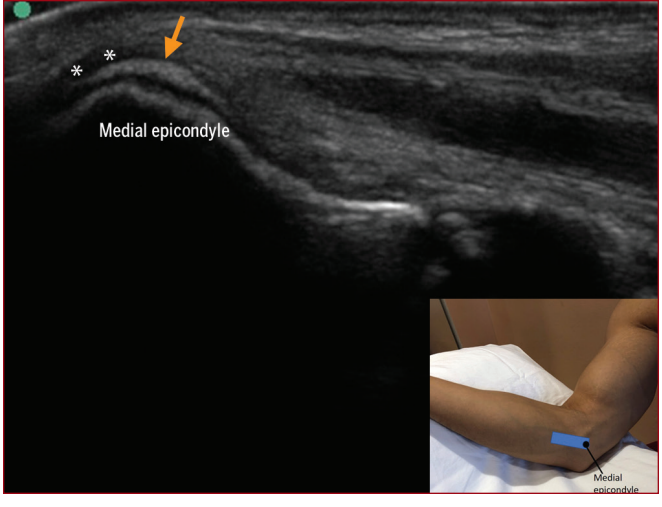
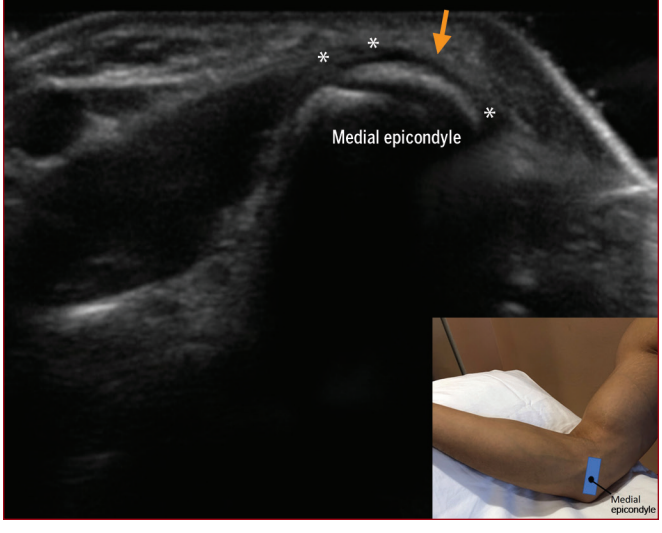


FIGURE 2
Short-axis view diagnostic ultrasound of the medial epicondyle confirming the findings in the long-axis view, showing the bony fragmentation/rim (arrow) over the medial epicondyle, with hypoechoic signal (*) around it. The blue rectangle at the bottom right corner of the image demonstrates the orientation of the probe to obtain the short-axis view.



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DECISION PATHWAY

Oklahoma state law allows physical therapists to perform musculoskeletal ultrasound imaging. However, physical therapists are not allowed to refer to radiologists for imaging.

Exam findings

Health care provider: physical therapist
Impairments: pain with tennis serving and overhead throwing
Differential diagnosis considerations: flexor pronator strain, ulnar collateral ligament tear, avulsion fracture, and medial epicondyle apophysitis

Initial imaging

Imaging modality: ultrasound of the right medial elbow
Support: musculoskeletal ultrasound has high predictive value for medial elbow injuries in the adolescent population[3]
Findings: medial elbow apophysitis

Additional imaging

Imaging modality: radiographs of the right elbow
Support: radiographs can be used to appreciate the subtle widening of the medial epicondylar physis[1]
Findings: confirmed medial elbow apophysitis

Outcome

Diagnosis: confirmed medial elbow apophysitis
Treatment: static splint for 4 weeks and physical therapy for further strengthening
Outcome: returned to pain-free activities 6 weeks following diagnosis

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3. Lee YY, Yang TH, Huang CC, et al. Ultrasonography has high positive predictive value for medial epicondyle lesions among adolescent baseball players. *Knee Surg Sports Traumatol Arthrosc*. 2019;27:3261-3268. https://doi.org/10.1007/s00167-018-5178-x