Bilateral brachial rhabdomyolysis caused by push-up exercise

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DESCRIPTION

A 15-year-old girl presented with an increased swelling bilaterally of her upper arms. Six days before presentation, she performed 50 push-up exercises for the first time in her life. On clinical examination, there was a slight pain and limited range of motion of the shoulder and elbow due to severe swelling of her upper extremity. MRI on T2-weighted sequences showed an increased signal intensity of the medial and lateral heads bilaterally of the triceps brachii, whereas the long heads were intact (figures 1 and 2). Laboratory testing showed elevated creatine kinase (CK) level of 6616 mU/mL and no myoglobinuria. She was diagnosed with rhabdomyolysis and soon admitted for rest and treated by hydration with saline. After 7 days, swelling of her upper arm improved with full range of motion and normal CK level.

Rhabdomyolysis is sometimes induced after excessive muscular activity.¹ Push-ups are repetitive exercises performed in a prone position by raising and lowering the body using the arms. Up-phase involves a combination of elbow extension and shoulder flexion, and down-phase involves a combination of elbow flexion and shoulder extension. The medial and lateral heads of the triceps brachii are monoarticular muscles, whereas the long head is biarticular. Biarticular muscle is simultaneously extended and contracted in the motion of the shoulder and elbow. However, length of the monoarticular muscle is affected by elbow motion only during push-up exercises. Because lengths

Figure 2 Increased signal intensity bilaterally on coronal views of the medial and lateral heads of the triceps brachii (A, right; B, left).

Learning points

- ▶ The medial and lateral heads of the triceps brachii are sometimes selectively damaged due to push-up exercises.
- ▶ Rhabdomyolysis may be induced by push-up exercises.

of monoarticular muscle change significantly compared with the biarticular muscle, the medial and lateral heads can be selectively damaged.

Contributors TS and TK were the primary clinicians responsible for the patient's care. TS and TK were responsible for the conception of the report and searched the scientific literature. TS wrote the report, and TS was responsible for critical revision. HY and KS took overall responsibility.

Competing interests None declared.

Patient consent Obtained.

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Figure 1 Increased signal intensity bilaterally on axial views of the medial and lateral heads of the triceps brachii (A, right; B, left).

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