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Popliteal Artery Entrapment Syndrome in High Level Athletes. A Case Series

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Summary:
A series of 4 cases of PAES in high-level athletes is presented (3 soccer and 1 tennis player). In two of them, the popliteal artery entrapment was bilateral. All of them complained of episodic cramps and pain in the calf under exertion, that were diagnosed initially as repetitive minor muscle strains, and treated conservatively without success. Surgical decompression relieved the symptoms, allowi

Abstract:
INTRODUCTION
Recurrent calf pain is a cause of disability in athletes and may force them to stop competing or decrease their performance. The underlying pathology may be multifactorial in nature and is difficult to diagnose and treat. Muscle cramps or muscle tears may be a cause of misdiagnosis of Popliteal Artery Entrapment Syndrome (PAES). There are essentially four anatomic variants of PAES depending on the relationship between the medial head of the gastrocnemius muscle and the popliteal artery; type V is any of the four anatomic variants with the popliteal vein included; and more recently, a 'functional' PAES has been described in patients with normal anatomy (type VI). In such cases, compression of the popliteal artery may be due to an anatomically normal but hypertrophic muscle. This entity is usually seen in well-conditioned athletes, sometimes during the anabolic muscle development adolescent stage, coinciding with intensive training and muscle hypertrophy.

MATERIAL & METHODS
Cohort of 4 high-level athletes: 3 soccer players and 1 tennis player. 2 cases were bilateral. Mean age at diagnosis 25 +/-5 years old. Mean height 174+/-6 cm. Mean weight 70+/-5 kg.

Diagnosis was made by clinical symptoms recurrent calf pain on exercise, that was compatible with intermittent vascular claudication; dynamic ultrasound and dynamic angioCT and/or MRI angiography were obtained. Surgical decompression relieved the symptoms, allowing the athletes to resume high intensity training and competition.

Main variables of the study: return to sports in months, type of entrapment, time until beginning of pain with heel rises and SF 36 before surgery and at 1 year postop
Statistical analysis with SPSS

RESULTS
Return to sports: mean time was 3+/- 2 months

Type of entrapment: all cases showed an anomalous band arising from the medial gastrocnemius head (Type III), and case 3 showed also a functional component (Type VI) with a "double crush" of the artery.

Time until beginning of pain with heel rises: preop: 50+/- 25 sec postop: no pain but fatigue 150+/-30 sec $p<0.05$

Paper #79

SF 36 preop: 80.48; postop: 96.25. p<0.05

CONCLUSIONS

PAES is uncommon and difficult to diagnose. Awareness of the entity is a prerequisite for correct diagnosis, and should be suspected in young athletes who present with repetitive calf pain. Surgical treatment is successful in returning athletes to their previous or better level of competition without calf pain and improves their quality of life if the condition is diagnosed before there are intimal vessel damages.