Popliteal Artery Entrapment Syndrome Associated with Compartment Syndrome in a Collegiate Basketball Player
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**Background:** An 18 year old female collegiate basketball player complained of heaviness and pain bilaterally in the lower extremities after playing basketball for approximately five minutes. The symptoms resolved within minutes of discontinuing activity, only to return once she resumed play. Her past history consisted of bilateral exercise-induced compartment syndrome (EICS) of the deep and superficial posterior compartments. The EICS was diagnosed with compartment pressure tests and ultimately treated with single incision fasciotomies approximately eighteen months prior. Upon returning to competitive training, the patient was limited over the next six months as she experienced peroneal and achilles tendonitis and suffered a grade 3 left ankle sprain and a grade 1 right ankle sprain. When the patient finally returned to full competitive training approximately one year after fasciotomy, she once again began to experience symptoms of EICS. She had been managing this with rest and conservative treatment, however at the time of the current complaint she was unable to fully participate in basketball practice. With continued exertion the pain would progress bilaterally from the lower legs to the thighs and was accompanied by paresthesia and significant lower extremity weakness, limiting her ability to jump. Upon assessment in a rested state, the patient did not report any pain or tenderness. She was found to have bilateral tightness in the gastrocnemius-soleus complex with pes cavus and slight internal tibial torsion. Nothing else was remarkable as knee and ankle ranges of motion were normal. **Differential Diagnosis:** Periostitis, medial tibial stress syndrome, EICS, tibia stress fracture, lumbar radiculopathy, lower leg myopathy, neuropathy, neurogenic claudication, vascular claudication and cystic adventitious disease. **Treatment:** Plain film radiographs and bone scans were negative for bony abnormalities, while magnetic resonance imaging (MRI) of the lower extremity and lumbar spine were negative for soft tissue injury and neural claudication. Electromyography was negative for neuropathy and myopathy and compartment pressure tests were negative. The patient was prescribed Neurontin for the pain and received acupuncture with no relief. Upon follow-up, computed tomography of the distal aorta and lower extremities was negative for stenosis. However, a second MRI with a fast imaging employing steady-state acquisition (FIESTA) technique revealed a functional popliteal entrapment syndrome (PES) with compression of the popliteal artery and vein (Type V) during plantar flexion. Assessment of the popliteal fossa showed a broad based insertion of the medial gastrocnemius causing lateral displacement of the artery and vein. Another more aggressive compartment pressure test revealed compartment syndrome bilaterally in all four compartments. The patient underwent bilateral functional popliteal entrapment releases and bilateral fasciectomies of all four compartments. Rehabilitation, including range of motion and strengthening exercises began following a period of immobilization after surgery. The patient progressed to running and functional activities and now participates fully in basketball activities with only minor discomfort. **Uniqueness:** PES is characterized by an irregular relationship between popliteal vessels and the musculotendinous structures causing a functional occlusion. Our patient suffered from Type V, which involves the artery and vein and occurs in only 7.6% of PES cases. This rare condition typically occurs in young otherwise healthy males. Young athletic women typically present with arterial entrapment alone. The EICS is not typically associated with PES and presented a significant complication to both the diagnosis and the recovery from this condition. **Conclusions:** PES is a rare but potentially limb-threatening condition affecting predominantly young male adults. This syndrome is difficult to diagnose, presenting a significant challenge to the clinician. Awareness of this condition is a prerequisite for correct and prompt diagnosis. In symptomatic cases of PES, early surgical intervention is the treatment of choice and is important for positive outcomes. **Word Count:** 598.