



Case Report / Olgu Sunumu

Traumatic posterior tibial artery occlusion in a soccer player: A case report

Profesyonel futbolcuda travmatik posterior tibial arter oklüzyonu: Olgu sunumu

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ABSTRACT

A 24-year-old male professional soccer player sustained a right ankle contusion due to blunt kick toward the medial malleolus level during a soccer game. He stopped playing due to pain, coldness, and paresthesia on his right foot. Computed tomography angiography revealed a 4.5 cm occlusion on the posterior tibial artery at the right ankle level of which the distal segment was filled with collateral arteries. After the diagnosis of the traumatic occlusion, the patient underwent angiography for recanalization with thrombolysis in an external center, which was unsuccessful. Crural artery injuries after blunt sport traumas are very rare. In knee and ankle traumas with ischemic symptoms, vascular injuries should be excluded with prompt examination.

Keywords: Ankle; posterior tibial artery; soccer; trauma; vascular injury.

Professional athletes susceptible to a variety of vascular injuries due to contact, aggressive tackle, and high speed collisions.^[1] Most of them are with neck, knee, and ankle injuries and also mostly with bone fractures.^[17,20,25] The differential diagnosis for lower extremity by sport traumas invites rarely a diagnosis of vascular injuries such as arterial occlusions, intimal flap and deep vein thrombosis. Failure of the physicians to recognize these pathologies can lead to limb or life-threatening results.

Herein, we report a professional soccer player sustained a right ankle contusion due to blunt kick toward the medial malleolus level during a soccer game.

CASE REPORT

A 24-year-old male professional soccer player sustained a right ankle contusion in medial malleolus level

ÖZ

Yirmi dört yaşında erkek profesyonel futbolcuda sağ ayak bileğinde medial malleol bölgesine futbol müsabakası esnasında gelen tekme nedeniyle oluşan künt travma öyküsü vardı. Sağ ayaktaki ağrı, soğukluk ve parestezi nedeniyle maça devam edememişti. Bilgisayarlı tomografi anjiyografide sağ ayak bileği seviyesinde posterior tibial arterde distali kollateral arterler ile dolmuş gösteren 4.5 cm uzunluğunda bir segmentte oklüzyon izlendi. Travmatik oklüzyon tanısından sonra hastaya bir dış merkezde tromboliz ile rekanalizasyon amacıyla anjiyografi uygulandı, ancak başarısız oldu. Künt spor travmaları sonrası oluşan krural arter yaralanmaları oldukça nadirdir. İskemik semptomlar gösteren diz ve ayak bileği yaralanmalarında, hızlı bir muayene ile vasküler yaralanmalar ekarte edilmelidir.

Anahtar sözcükler: Ayak bileği; posterior tibial arter; futbol; travma; vasküler yaralanma.

during a soccer game. He kept playing on the game and played another 45 min in another game which was four days after the trauma. However, he stopped playing due to pain, coldness, and paresthesia on his right foot. Due to these symptoms, the medical team of the football club initiated therapy consisting of non-steroidal anti-inflammatory drugs, vitamin B complex, and physical rehabilitation due to the suspicion and possible diagnosis of posterior tibial nerve and subcutaneously tissue injury.

One week after the trauma, he went to the hospital and underwent magnetic resonance imaging which showed subcutaneously edema around the posterior tibial nerve and artery probably due to the blunt trauma (Figure 1).

Duplex scan showed decreased peak systolic velocity compared to the left side. However, it was still

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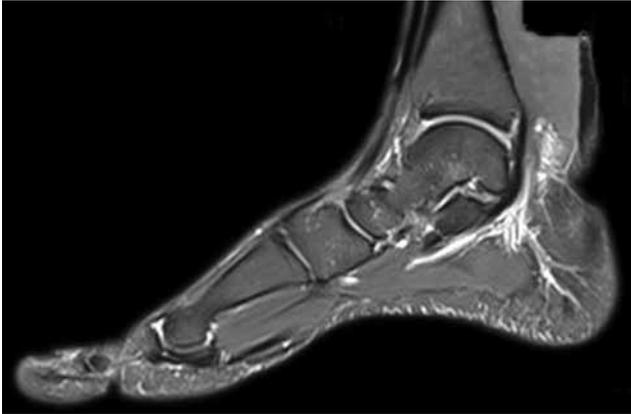


Figure 1. Magnetic resonance imaging showing an subcutaneously edema around the posterior tibial nerve and artery.

three phasic flow in the posterior tibial artery (PTA) lumen (Figure 2a, b).

Anticoagulation treatment was administered with low-molecular-weight heparin combined with calcium channel blockers with suspect of traumatic arterial spasm. Three days later, the peak systolic velocity increased on Duplex scan; however, it did not show the normal pattern again. The patient discontinued medications by himself due to headache on the third day. One week after the first Duplex scan, a computed tomography angiography (CTA) was ordered; however, the patient preferred waiting for his personal doctor (specialist for sport medicine) who was expected to come from another country. Finally on Day 14 of the first Duplex scan, CTA showed an occlusion of the right PTA in the length of 4.5 cm in malleolus level

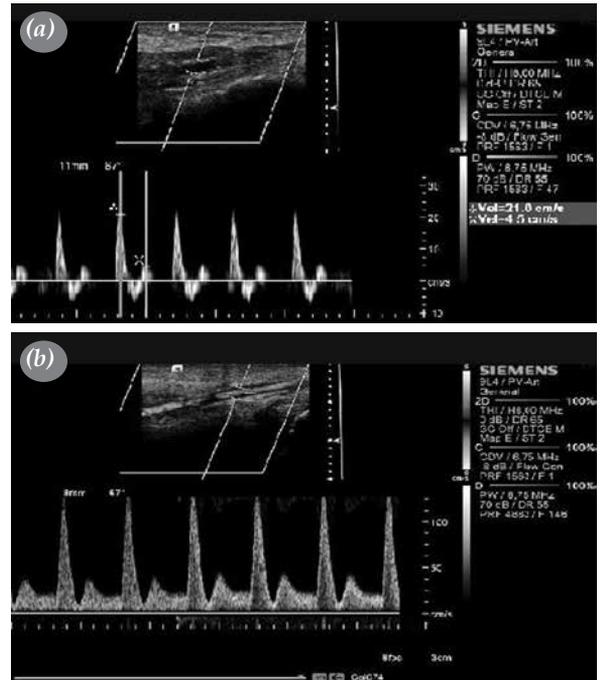


Figure 2. (a) Arterial Duplex sonography showing a three-phasic flow with decreased peak systolic velocity on right posterior tibial artery on ankle level. (b) Arterial Duplex ultrasonography showing a three-phasic flow and normal peak systolic velocity on left posterior tibial artery on ankle level.

with a refilling over the side branches from the plantar artery (Figure 3a, b).

Two days after CTA, the patient underwent a conventional angiography with the aim of a possible recanalization with pulse thrombolysis and/or an



Figure 3. (a, b) Computed tomography angiography showing an occlusion of the right posterior tibial artery in length of 4.5 cm in malleolus level with a refilling over the side branches from the plantar artery.



Figure 4. The foot is clinically slightly ischemic and numb, and the color is white.

angioplasty, but the procedure was unsuccessful, as the interventionist failed to pass the guide wire through the occluded part of the artery. The patient refused any surgical intervention and insisted on conservative therapy. As a medical therapy, cilastazol 100 mg twice a day was started, and after two weeks, he started his professional trainings with the team. The foot is still clinically slightly ischemic and numb, color is white, but he can play soccer and run (Figure 4).

DISCUSSION

Most of the soccer injuries are traumatic. Injuries sustained during a direct tackle predominate, mostly with shaft and epiphyseal injuries. The incidence of injury is not associated with the skill level. Several studies have shown different results; some have reported higher incidences of injury in high-skill level players; however, controversially, there are also studies reporting higher incidences of injuries in low-level players. In addition, some authors have suggested no relationship between the severity of injury and the skill level of players.^[2,11,21]

Knee and ankle injuries are most common soccer injuries. Popliteal artery injury is a well-documented complication of trauma to the knee. A popliteal artery injury occurs with knee hyperextension, ligamentous ruptures, and mostly with knee dislocations.^[8,24] The types of the arterial injuries include intimal injury, dissection, avulsion, thrombosis, aneurysmatic formations, and occlusions. Patients may complain of pain, paresthesia, or loss of sensation or motor function below the knee. Sometimes, injury can create an intimal flap, leading to the preservation of flow and lack of symptoms. In most cases, CTA or magnetic resonance angiography (MRA), is needed to rule out the vascular injury safely and effectively. The use of these diagnostic techniques prevents the delays of diagnose that vascular injury which probably can lead to limb loss. Serial measurements of the Ankle Brachial Index (ABI) and use of Duplex ultrasonography are effective and alternative management strategies. If there is an obvious sign of limb ischemia, urgent surgical intervention is needed to prevent irreversible neurological, muscular damage, and limb loss.^[10,18]

Crural arteries are tender to injury with trauma to the knee cruris and ankle. There are limited cases in the literature about the crural artery injuries, and all of them are about anterior tibial artery. The types of the injuries are pseudoaneurysm by a Taekwondo player and distal micro-embolism by a basketball player.^[6,23] There is no case report or study

which showed a crural artery injury by amateur or professional soccer players.

Patients with a crural artery injury may have decreased distal pulses, hematoma, or evidence of ischemia (thrombus occlusion or micro-embolizations). However, they can be also totally asymptomatic.

Evaluation of these patients should include Duplex ultrasonography, ABI, CTA, and MRA to confirm the pathology. Treatment options are, surgical, endovascular interventions, and conservative follow-up.

In our patient, after unsuccessfully selective catheterization and thrombolysis. The patient refused to receive a surgical intervention and chose a conservative treatment with vasodilators (cilastazol 100 mg/ twice a day) and started to run after two weeks and started to train with the team after three weeks.

Traumatic compartment syndrome due the blunt trauma in different art of sport is another well-documented complication.^[14] Most frequent etiology is contusion and the other causes are blunt trauma, fractures, acute muscle overuse, and coagulopathies.^[4,16]

Typical symptoms after a lower leg trauma are excessive thigh or calf pain out of proportion to the pain expected from the inciting event. There is an increase in pain with the stretch in the affected compartment, paresthesia, distal hypothermia, and diminished or absented distal pulses. Traumatic compartment syndrome are mostly a clinical diagnosis, but can also be helpful to show the edema, bleeding, hematoma, vessel injury and inflammation.^[19] The standard treatment for acute compartment syndrome is emergent fasciotomy, and hematoma evacuation, if there is a hematoma.

Traumatic deep vein thromboses (DVT) in athletes have been reported from the direct, compressive or shearing forces due to knee hyperextension, knee dislocation or lower extremity torsion while kicking or tackling motions. There are very few cases of sports-related lower extremity DVT directly from externally trauma.^[3,7,15]

The risk factors for the athletic population include immobilization (long travels or due to healing from another injury), coagulopathy, intense exercise, fractures, surgery, polycythemia and hemoconcentration due to dehydration or blood doping and an anabolic steroid abuse.^[9,13,22] With or without trauma history, they have almost the same clinical symptoms; leg swelling, pain echymosis, positive Homans' sign, and palpable mass or chord. Duplex ultrasonography is the modality of choice for patient suspected to have DVT.

The mainstay of treatment for a DVT is anticoagulation and compression therapy to prevent pulmonary embolism and post-thrombotic syndrome. There is a growing evidence that the early lysis provided by thrombolytic therapy is more likely to preserve valve function, decreasing the recurrence of DVT, and the occurrence of post-thrombotic syndrome.^[5,12,15]

In conclusion, to the best of our knowledge, this is first case of posterior tibial artery injury due the blunt trauma in a professional soccer player. Crural artery injuries after blunt sport traumas are very rare. In knee and ankle traumas with ischemic symptoms, vascular injuries should be excluded with prompt examination.

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