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Diabetic peripheral vascular disease

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Peripheral artery disease (PAD) is a common manifestation of atherosclerotic cardiovascular disease, estimated to affect approximately more than 200 million people worldwide[1]. Regardless of the improvements of diagnostic tools and techniques, PAD is still a difficult disease for diagnosis, due to the fact that only 10% of patients present with classic symptomatology and up to two-thirds of them are asymptomatic. In case of late diagnosis, high degree of ischemia leads to critical ischemia and ulcer which in turn leads to gangrene. Diabetes, which is one of the major/ most common risk factors for PAD, leads to increased glucose levels that cause microvascular and macrovascular complications such as peripheral neuropathy and angiopathy[2]. This situation causes tissue damage and diabetic foot. Characteristics of diabetic foot are infection, ulceration and destruction of deep tissue associated with neurological abnormalities and various degrees of peripheral vascular disease on the lower limb. When the damage is irreversible, the only solution is amputation. It has been confirmed that 25% of patients with diabetes will face ulcers during their lifetime and one quarter of people with ulcers on lower limb needs continuous hospitalization. These patients present arterial lesions below the knee and below the ankle and their most common problem is multilevel stenosis/occlusion of femoral, popliteal, peroneal and tibial vessels[3]. Ulcers on lower limb require an expert medical team of different specialties including endocrinologist, dermatologist, orthopedic, plastic and vascular surgeon[4]. This team evaluates the ulcer, looking for necrosis or gangrene, signs of infection such as fever, redness, swelling or even metabolic instability. They also examine if the ulcer has foul-smelling discharge, possible secretion or pain. A large percentage of diabetic ulcers become infected and 20% of patients with infected lower limb injury will undergo amputation.

In order to examine blood circulation, it is essential to identify peripheral pulses in the arteries of the lower limb. If the hospital or the medical center provides Doppler device, the medical staff measures the ankle – brachial Index (ABI) which is an indicator of blood circulation of the lower limb[5].

Open surgical arterial bypass and endovascular procedure are the most common techniques of treatment in patients with foot ulcers.

Open surgical arterial bypass is characterized by several disadvantages. These include general anesthesia, surgical trauma, arterial clamping and declamping, blood loss, infections, prolonged hospitalization and systematic complications. On the contrary, endovascular procedure reduces the complications of surgery, improves wound healing and minimizes amputation rates as well as the risks of anesthesia since it is local. However, there are not sufficient data to demonstrate whether endovascular or open revascularization provides an advantageous approach in treatment of symptomatic peripheral arterial disease. Current literature argues that endovascular procedure has recently –in terms of quantity– become the preferred method[6].

Finally, it is essential to decide the immediate revascularization of lower limb when it is appropriate. The decision on whether, and when, to revascularize in a patient with diabetic foot ulceration and peripheral arterial diseases is complicated[7]. It is recommended an initial trial of non-operative management for patient swith mild PAD (ABPI≥0.6, TcPO2>50 mmHg, toe pressure>55 mmHg), comprising optimization of risk factors (control of blood pressure, hyperlipidemia, plaque stabilization with statins, smoking cessation, glycemic control) offloading, debridement and treatment of infection.Response should be monitored closely and revascularization considered after 4-6 weeks, if there is no evidence of woundhealing[8]. Further guidelines recommend that revascularization (either endovascular or surgical bypass) should be considered in a person with diabetic foot ulceration with evidence of peripheral arterial disease of sufficient severity to hamper wound healing, unless that patientis deemed unsuitable for intervention because of functional or medical comorbidities, or when the foot is considered functionally unsalvageable[9]. It is also acceptable that revascularization is appropriate if healing does not occur despite optimum conservative management[10]. Therefore, the combination of clinical examination and careful interpretation of perfusion along with consideration of the wound and infection extent is required to select patients appropriately for revascularization[11].

In conclusion, early endovascular revascularization and local surgical treatment contributes in limiting amputation levels[12].

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