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Treatment of Advanced Peripheral Arterial Insufficiency in the Elderly

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ABSTRACT

Peripheral arterial insufficiency appears at all stages regardless of the patient age; however its appearance is most common in the elderly in which cases it mostly appears as stage described by Fontaine as stage III or IV. The most common cause of peripheral arterial insufficiency is atherosclerotic degeneration, and is remarkably often accompanied by the diabetes. In the years 2012 and 2013 department of vascular surgery, University Hospital Rijeka admitted 169 patients older than 70 with peripheral arterial insufficiency of type Fontaine III and IV. That number represents 68.8% of total number of patients admitted for peripheral arterial insufficiency. The goal of this research is to identify to what extent and in what percentage can patients older than 70 with advanced peripheral arterial insufficiency be subjected to vascular treatment and if there exist and absolute indication for angiographic treatment of such patients. In majority of patients, 148 of them, three or more comorbidities were present. Diabetes was present at almost half of patients, to be exact 46.7%. Assessment of possibility for vascular treatment and the need for angiographic treatment was followed in patients in three age groups: 70–75 years of age, 76–80 years of age and over 80 years of age. Angiography was performed on 69 patients and the insight into angiographic finding resulted in only 33 patients being subjected to some type of vascular treatment. From the total number of patient's subjected to vascular treatment 20 had symptoms of Fontaine III while the remaining 13 had symptoms of Fontaine IV. Amputation procedure was performed 119 times. The research shows that angiographic treatment is not a routine treatment in mentioned patients and that the number of vascular procedures is significantly higher in the 70–75 years age group.

Key words: *peripheral arterial disease, elderly, atherosclerosis, diabetes mellitus, angiography, treatment*

Introduction

Peripheral arterial disease appears at all age groups; however its appearance and symptoms are most common with older people. Peripheral arterial disease engages 12% of overall population and about 20% of population above 70 years old[1,2] and is mostly caused by atherosclerosis which is today a leading cause of sickness and mortality in the western world. Beside atherosclerosis, the causes and comorbidity of peripheral arterial disease can be blood diseases, thromboembolism, vasculitis, Burger disease, vasospastic condition or congenital anomalies and degeneration of artery wall. The risk factors of peripheral arterial disease match with factors responsible for coronary and cerebrovascular diseases. Most important risk factors connected with development of peripheral arterial disease are diabetes, smoking, arterial hypertension and hyperlipidemia for which research proved to be responsible for 80% to 90% of cardiovascular diseases in the USA[3,4]. Main risk factor is diabetes mellitus (commonly associated with peripheral arterial disease patients) which propagates the appearance of intermittent claudication in persons with diabetes over time in relation to the control group, Framingham study[5–7]. Peripheral arterial disease can be asymptomatic or symptomatic with functional ischemia that is manifested by intermittent claudication, pains at rest and appearance of trophic ulcer or gangrene. According to the clinical picture and subjective patient aggravation periph-

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TABLE 1

CLASSIFICATION OF PERIPHERAL ARTERIAL INSUFFICIENCY ACCORDING TO CLINICAL PICTURE

Fontaine	Rutherford
Stage	
I. Asymptomatic	0. Asymptomatic
II. a Mild claudication (>200 m)	1. Mild claudication
II. b Moderate to heavy (<200 m)	2. Moderate
III. Pain at rest	3. Serious
IV. Trophic ulcer, gangrene	4. Pain at rest
	5. Mild necrosis
	6. Moderate necrosis

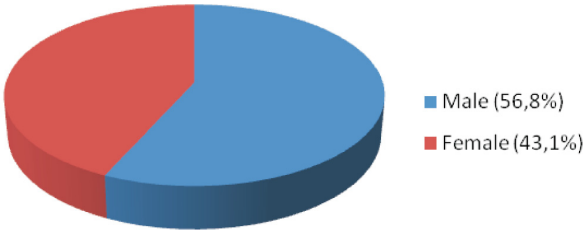

Fig. 1. Patients by gender.

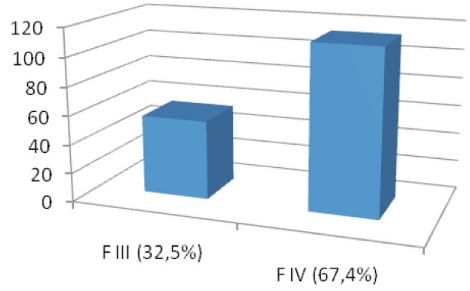

Fig. 2. Patients by Fontaine groups F III and F VI.

eral arterial disease is divided in 4 stages according to Fontaine and 6 stages according to Rutherford (Table 1).

Diagnosis of peripheral arterial disease is set based on anamnestic data and clinical examination. Noninvasive diagnostic examination with Collor duplex ultrasound provides insight into morphology and function of blood vessels and is important for postoperative monitoring of the course of the disease. Angiography is minimally invasive diagnostic method that is applied on patients for selection of further treatment and planning of surgical or interventional procedures. Peripheral arterial disease coincide with symptomatology of other diseases in which occur problems with pain during walking and physical activity, such as vein claudication, neuropathies, chronic compartment syndrome, osteoarthrosis of lower extremities, compression on artery (cyst), fibro muscular dysplasia, condition following irradiation, malignant diseases,

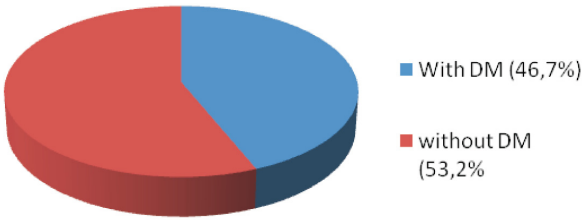

Fig. 3. Patients with and without diabetes mellitus.

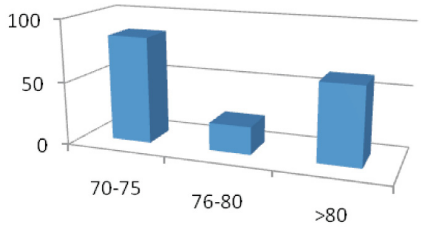

Fig. 4. Age groups of patients.

arterial tumors and vascular malformation. Treatment of peripheral arterial disease can be conservative and invasive. Conservative treatment consists of avoidance of risk factors and medicaments therapy while invasive treatment can be angio surgical, endovascular intervention treatment as well as combined hybrid treatment. In the extreme case amputation treatment is used when all other treatments are exhausted.

Materials and Methods

This study includes 169 patients, over 70 years of age, with peripheral arterial insufficiency of type Fontaine III and Fontaine IV that were hospitalized during 2012 and 2013 at Department of Thoracic and Vascular Surgery, University Hospital Rijeka. The 169 patients in question represent 68.8% of total number of patients hospitalized due to peripheral arterial insufficiency. Of the overall 169 hospitalized patients, 96 were men (56.8%) and 73 women (43.1%). The oldest patient was 98 years of age (Figure 1). There were 55 patients (32.5%) in group Fontaine III with pains at rest and walking index lower than 50 m and 114 patients (67.4%) in group Fontaine IV with ulcers and gangrene changes (Figure 2). In 148 patients (87.5%) clinical treatment confirmed three or more additional diseases, while 21 patient (12.4%) had no additional comorbidity. Almost half of patients, 70 patients (46.7%), had diabetes mellitus while on 90 patients (53.2%) there were no data about diabetes mellitus (Figure 3). The patients were divided in three age groups. In the first group, 70–75 years of age, were 85 patients (50.2%), in the second group, 76–80 years of age, were 22 patients (13%) and in the third group, over 80 years of age, were 62 patients (36.6%) (Figure 4). Given the clinical picture and comorbidity of 169 patients older than 70 admitted during 2012 and 2013 due to peripheral arterial insufficiency of the group Fontaine III and Fontaine IV, 69 patients (40.8%) were subject to

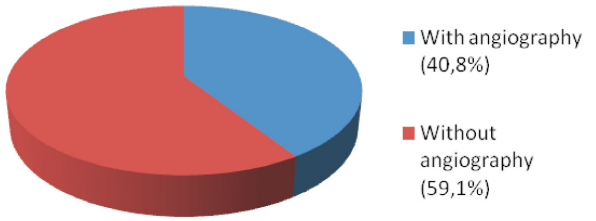

Fig. 5. Patients as candidates for angiographic treatment.

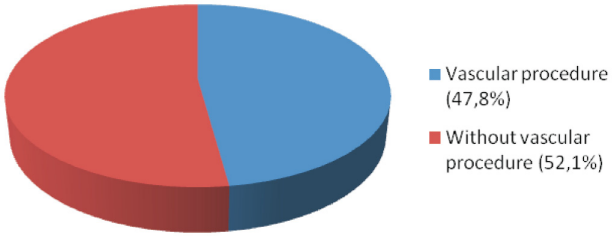

Fig. 6. Patients as candidates for vascular procedure.

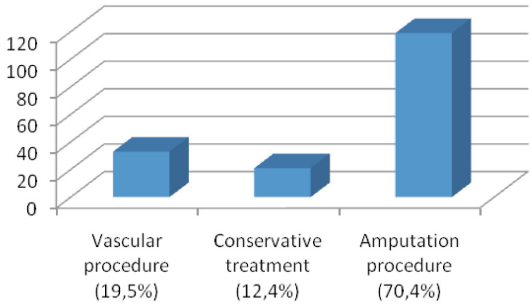

Fig. 7. Patients by treatment.

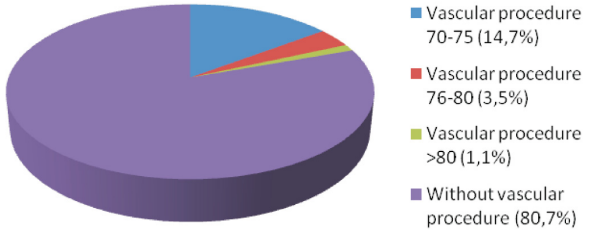

Fig. 8. Vascular procedure by age groups.

MSCT angiographic treatment while 100 patients (59.1%) were not candidates for further angiographic treatment (Figure 5).

Results

In the group of 69 patients with angiographic treatment insight into angiographic finding resulted in some type of vascular procedure in 33 patients (47.8%) while in other 36 patients (52.1%) there were no possibilities, i.e. there were not candidates for vascular procedure (Figure 6). From the total number of hospitalized patients older than 70 years of age 33 patients (19.5%) had vascular procedure, 21 patient (12.4%) had conservative treatment and 119 patients (70.4%) had amputation procedure (Figure 7). Vascular procedure was performed on 20 patients (60.6%) from Fontaine III group and 13 patients (39.3%) from Fontaine IV group. Amputation was performed on 119 patients. For 106 patients (89.1%) amputation was a definite treatment option. For 13 patients (10.9%) amputation procedure of smaller scale was done before, during or after vascular procedure. 25 vascular procedures (14.7%) were performed in the age group 70–75. 6 vascular procedures (3.5%) were performed in the age group 76–80. In the oldest age group, over 80 years of age, 2 vascular procedure (1.1%) were performed (Figure 8). During hospitalization there were 6 patients (3.5%) with terminal outcome.

Conclusion

With increase in years of age, peripheral arterial insufficiency, its symptomatology and comorbidity in patients are more common and more significant. With increase in years of age, significantly larger number of patients with advanced peripheral arterial insufficiency falls in group Fontaine IV. Diabetes mellitus is present at very large number of patients with peripheral arterial insufficiency. With patients over 70 years of age with advanced peripheral arterial insufficiency angiographic treatment is not routine method of indication assessment for treatment type. With patients over 70 years of age with advanced peripheral arterial insufficiency amputation treatment is more common, as only available treatment. There is no significant difference in frequency of performance of vascular procedures with patients in stage Fontaine III and milder shape of stage Fontaine IV. Vascular procedure is significantly more feasible as a treatment method in age group 70–75 years of age.

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LIJEČENJE UZNAPREDOVALE PERIFERIJSKE ARTERIJSKE INSUFICIJENCIJE U BOLESNIKA STARIJE ŽIVOTNE DOBI

S A Ž E T A K

Periferna arterijska insuficijencija javlja se u svim stadijima neovisno o starosti bolesnika, no ipak je njena pojavnost značajnija u bolesnika starije životne dobi, te je u većini ona tada prisutna kao stadij opisan po Fontainu III ili IV. Najčešći uzrok periferne arterijske insuficijencije je aterosklerotska degeneracija, a izvanredno često ista je praćena ili agravirana dijabetesom. U godini 2012. i 2013. na odjel vaskularne kirurgije, KBC-a Rijeka primljeno je 169 bolesnika starijih od 70 godina s perifernom arterijskom insuficijencijom tipa Fonatine III i IV. Taj broj čini 68,8% od ukupnog broja primljenih bolesnika poradi periferne arterijske insuficijencije. Ovim istraživanjem htjeli smo ustvrditi u kojem obimu i postotku se u bolesnika starijih od 70 godina s uznapredovalim stadijem bolesti može izvršiti revaskularizacijski zahvat u svrhu liječenja i postoji li apsolutna indikacija za angiografsku obradu takovih bolesnika. Kod velike većine bolesnika, njih 148 bilo je prisutno 3 ili više komorbiditeta, dok je dijebetes bio prisutan u gotovo polovice, 46,7% ovdje ispitanih bolesnika. Procjena mogućnosti izvođenja revaskularizacije te potreba za angiografskom obradom bila je praćena kod bolesnika u tri dobne skupine, od 70–75 god, 75–80 god. te 80 god. i više. Angiografija je izvršena u 69 bolesnika te je uvidom u angiografski nalaz svega 33 bolesnika bilo podvrgnuto nekom od oblika revaskularizacije. Od ukupnog broja bolesnika kod kojih je izvršena revaskularizacija njih 20 je bilo sa simptomatologijom Fontaine III dok je njih 13 bilo Fontaine IV. Izvedeno je i 119 amputac ijskih zahvata. Tijekom ovog istraživanja uvidjeli smo da angiografska obrada nije rutinska pretraga kod navedenih bolesnika te je broj revaskularizacijskih zahvata značajno veći između 70–75 god.