

# THE COMPLICATIONS OF THE DIABETIC FOOT RAPORTED TO THE DEGREE OF CHRONIC LOWER LIMB ISCHEMIA

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**Keywords:** diabetes mellitus, diabetic foot, arteriopathy

**Abstract:** Diabetic arteriopathy of the lower limbs is a disease which implies serious therapeutic difficulties in the medical practice. This study aims to illustrate the defining features of the chronic arterial obstructive disease in patients with diabetes compared with non-diabetic patients. We have studied a number of 175 patients who underwent surgical intervention in the Surgery Clinic I Sibiu, during 2005 - 2011 and we divided them in two groups: the study group, patients with arterial obstructive disease and diabetes mellitus (81 patients) and the control group, arterial obstructive disease without diabetes (94 patients). Patients with diabetes mellitus had an average hospitalization period of 31 days whereas patients with chronic ischemia had 27 days. Amputations were more frequent in the diabetic patients group. Patients with complicated diabetic foot included in the study had a more difficult evolution compared to those with chronic ischemia of lower limbs.

**Cuvinte cheie:** diabet zaharat, picior diabetic, arteriopatie

**Rezumat:** Arteriopatia diabetică a membrelor inferioare este o afecțiune ce implică serioase dificultăți terapeutice în practica medicală. Acest studiu își propune să ilustreze trăsăturile definitorii ale arteriopatiei cronice obliterante la pacienții cu diabet zaharat, în comparație cu pacienții nediabeteici. Au fost studiați un număr de 175 pacienți supuși intervenției chirurgicale în Clinica Chirurgie I Sibiu, în perioada 2005 - 2011, fiind repartizați în două grupuri: grupul de studiu, pacienți cu arteriopatie cronică și diabet zaharat (81 pacienți) și grupul martor, arteriopați fără diabet (94 pacienți). Bolnavii cu diabet zaharat au avut o durată medie de spitalizare de 31 zile față de 27 zile în cazul celor cu ischemie cronică. Amputațiile au fost mai frecvente în grupul diabeticilor. Pacienții cu picior diabetic complicat incluși în studiu au avut o evoluție mai dificilă decât cei cu ischemie cronică a membrelor inferioare.

## INTRODUCTION

Diabetic arteriopathy of lower limbs is the most frequent localization of diabetic macroangiopathy with a severe or even dramatic evolution which raises serious therapeutic difficulties in medical practice. The inability to work that it causes is very important both in terms of medical and social. The severity of peripheral ischemic processes is usually directly proportional to the degree of vascular obliteration, the rapidity of installation and the competence of collateral circulation. (1,2) The diagnosis of vascular lesions is often put in an advanced stage of evolution of arterial lesions, when setting up arterial stenosis or even obstruction causes the appearance of clinical signs, more or less severe. The clinical aspect of diabetic arteriopathy of the limb may be partially modified by the coexistence of diabetic neuropathy or infection and, in consequence, the diabetic foot is evaluated according to the dominating pathogenic element. (3, 4)

## THE AIM OF THE STUDY

This study aims to highlight the defining features of the chronic arterial obstructive disease (CAO) of lower limbs at patients with diabetes mellitus compared with non diabetic patients.

## MATERIAL AND METHODS

The present study evaluates the risk factors and prognosis of chronic arteriopathy of the lower limbs having the main element of exposure the diabetes mellitus. We studied 175

patients who underwent surgical intervention in the Surgery Clinic I Sibiu during February 2005 and January 2011 divided in a group of patients with CAO and diabetes mellitus (81 patients) – being the study group and a control group of arteriopathies without diabetes mellitus. (94 patients) Men/women report was 4,43/1.

**Table no 1. The distribution of cases in the two groups by sexes**

	Study group	Control group	Total number
women	14	18	32
men	67	76	143
Total number	81	94	175

Patients were studied by clinical observation and paraclinical examinations during hospitalization. We used personal data, secondary diagnoses, clinical parameters and important aspects of patients' evolutions, used therapy and discharge recommendations. The most frequent symptoms of the patients at admission were pain and intermittent claudicating pain.

**Table no. 2. Symptoms of the hospitalized patients**

The symptoms of the patients	Study group	Control group
Pain	36	64
Intermittent claudicating pain	23	81
“Cold leg” sensation	9	26
Numbness	13	14
Functional impotence	7	9

Arterial Doppler ultrasound proved to be the screening

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## CLINICAL ASPECTS

method of venous and arterial affections of the limbs was done at 58 patients from the study group and 64 patients of the control group and foot radiography at 62 patients from the first group versus 56 of the second group.

### RESULTS

CAO was diagnosed in advanced clinical cases with trophic disorders and important ischemic manifestations. A number of 83 non-diabetic patients were diagnosed at hospitalization with gangrene (wet and dry). The results show an increased presence of patients, with a cast of 22 cases in the range 55 – 65 years in the study group versus 34 cases in the control group of the same age.

**Table no. 3. The distribution of the patients in the two groups by age**

Age	Study group	Control group
less than 55 years	4	7
55-65 years	22	34
66-75 years	36	41
over 75 years	19	12

The analysis of risk factors that were exposed the patients in the two groups reveals a high number of smokers and patients with cardiovascular history existing in the non diabetic group with CAO.

**Table no.4 Associated risk factors for the two groups**

	Study group	Control group
dyslipidemia	22	19
smoking	15	62
arterial hypertension	28	32
coronary heart disease	19	46
obesity	18	4

Patients with diabetes mellitus had a longer hospitalization period of 31 days versus 27 days in the case of arteriopathic patients. Chronic lower limb ischemia has a severe evolution in patients with diabetes mellitus compared to non diabetic patients proved by framing diabetics in advanced stages of CAO with ulcers and gangrene as well as a higher rate of amputation shown in these cases.

We analyzed the type of surgical treatment applied on patients in the two groups. We found that finger disarticulations were done in 36 cases of the first group versus 38 patients of the second group. Amputations were more frequent in the diabetic patients group: a number of 23 amputations in the non diabetic group versus 25 amputations in the diabetics group and 4 cases of sympathectomy versus 3 cases in the control group. Most common causes of reintervention were: infection or suppurative wound (7 cases in diabetic group versus 5 cases in nondiabetic group) and amputation stump necrosis (6 cases in diabetic group versus 7 cases for nondiabetics).

### DISCUSSIONS

Invalidation degree and longer hospitalization among diabetic patients with higher costs shows the necessity of a unitary management as well as a multidisciplinary approach of diabetic foot complications.(3,5) Diabetes mellitus represents itself a risk factor for peripheral atherosclerosis, but it associates more risk factors involved in the progression of vascular disease like hypercholesterolemia, hypertriglyceridemia, psychological stressors. Diabetic foot infections have a great importance requiring a prompt diagnosis and a correct choice of therapeutic strategy. The existence of ischemia worsens the clinical evolution and the association of infection leads to a poor prognosis of these cases (6). The difference between the

processes induced by the chronic ischemia and the diabetic angiopathy consists in the appearance, incidence and extent of lesions (7). Atherosclerotic lesions in diabetic patients installs early and fast from non diabetic patients. In diabetic patients atherosclerotic lesions appear about 10 years earlier than non diabetic patients by the combined actions of general pathogenic factors with specific diabetes factors. Most frequent localizations of the diabetic angiopathy are on the coronary, cerebral and pelvic arteries expressing themselves clinically by myocardial infarction, stroke and diabetic gangrene (7, 8). Diabetic patients have atherosclerosis installation bias with narrowing of arterial lumen, peripheral vascular resistance growth and hypertension aggravation (1, 8, 9).

### CONCLUSIONS

CAO of lower limbs has a severe evolution in patients with diabetes mellitus compared to the non diabetic patients expressed by a higher frequency of distal ulcers and gangrenes as well as a higher rate of amputations in this category of patients.

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