

# INVESTIGATING THE CAUSES OF DIABETES MELLITUS IN ORDER TO REDUCE THE NUMBER OF AMPUTATIONS IN PATIENTS WITH DIABETES MELLITUS

CARMEN NARCISA NATEA<sup>1</sup>

"Lucian Blaga" University of Sibiu

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**Abstract:** Diabetes mellitus is a major problem for any individual, medicine and society. This is due to the fact that diabetes mellitus (DM) is a frequently, perfidy, long term devastating disorder, with epidemiological, biological, familial, social, economical and political impact. The prediction for 2025 is of 300 million cases with DM. The good control of the risk factors of the diabetic foot, the adequate clinical management contributed to the prevention of several complications of the inferior limbs in a diabetic patient, with implications in the reduction of mortality, of their incidence and in the increase of life quality, too.

**Cuvinte cheie:** diabet zaharat, factori de risc

**Rezumat:** Diabetul zaharat a devenit o problema de importanta majora pentru individ, medicina si societate. Aceasta pentru ca este o boala frecventa, perfida, de lunga durata si devastatoare daca nu este bine ingrijita. Impactul sau este deci multiplu: epidemiologic, biologic, socio-familial, economic si politic. Predictia pentru anul 2025 este de 300 milioane cazuri de DZ. Depistarea la timp a factorilor de risc ai piciorului diabetic, aplicarea managementului clinic adecvat pot contribui la prevenirea instalarii complicatiilor grave la nivelul membrelor inferioare la pacientul cu DZ, rezultatele fiind scaderea mortalitatii, reducerea incidentei lor precum si cresterea calitatii vietii.

## INTRODUCTION

The diabetic foot is a pathological state not a diagnosis, more of a concept with a complex ethiopathogeny: peripheral neuropathy, angiopathy and infection.

To determine a ulceration in the diabetic foot is enough the appearance of 2 of the causes not necessary all of them. The amputations and the ulcer represent the adverse result of the problems of the diabetic foot. The foot ulcer represents approximately 85% of all amputations in diabetic patients. In various studies, the proportion of patients that suffered an amputation after gangrene is of 50-70% and the infection was found in 20-50% of the patients. We have observed that type2 diabetes in masculine gender is associated with higher risk of ulcer and amputations, but those results are inconsistent.(1) The most important risk factor in developing the foot's ulcer is the presence of the sensory and motor neuropathy. The estimated prevalence of the neuropathy varies from 30-70% depending with the studied population, definitions and diagnostic criteria. Among 80-90% of the ulcers described in cross studies have been precipitated by external trauma (usually inadequate and improper shoes). The prevalence of the peripheral vascular disease defined in diabetic patients through symptoms and signs that include an arm-ankle index smaller than 0,8-0,9 has been estimated to 10-20% in various studies.(2)

In the pathogenie of the diabetic foot we take into discussion 3 assumptions: the neuropathy assumption (diabetic neuropathy), vascular one (vascular lesions of diabetic microangiopathy) and infectious one (the infection as risk factor added to the vascular and nervous lesions).



## PURPOSE OF THE STUDY

Studying the causes of amputations, considering the idea that a great part of the amputations could be prevented if the patient went to the doctor in due time.

<sup>1</sup>Corresponding Author: Carmen Narcisa Natea, Emergency Clinic Hospital Sibiu, Diabetes, Nutrition and Metabolic diseases Clinic ,2-4 Corneliu Coposu boulevard, Cod: 550245, Romania, e-mail: narcisa\_20@yahoo.com, tel +40-0746979083  
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## CLINICAL ASPECTS

### MATERIAL AND METHOD

A number of 400 patients with DM were studied, unselected, who came to the Clinic Hospital in Sibiu, having or not previous amputations. In these patients we followed the next parameters: type of Diabetes Mellitus, age, sex, antidiabetic treatment, Hb A1C, presence of chronic irreversible complications, n.d.p.s.m., diabetic arteriopathy, arterial hypertension, dislipidemy, smoking, amputation, causes which led to the appearance of the wounds, periods of time since the appearance of the wounds till they came to the doctor, if they attended a treatment previous to the amputation.

### RESULTS AND DISCUSSIONS

1. Among the 400 cases, 40 had type 1 DM ( 10%), 360 had type 2 DM (90%), among them 60 (18,5%) were with type 2 DM on insulin treatment and 300 (81,5%) had diet and ADO.
2. Age was between 25 and 74 years old; 160 were women (46,6%) and 240 (53,4%) were men; age of DM: between 2 and 34 years; 170 patients ( 40%) had chronic irreversible complications, out of which 80 patients (20%) diabetic arteriopathy, 93 patients (32%) diabetic neuropathy, 153 (43,9%) arterial hypertension, 200 (50%) DLP;
3. For smokers, 8 women among the 160 were smokers (3,4%) and also 87 men (51,87%) out of 240.
4. Among 400 analyzed patients,15 (4%) had amputations, among them 3 women ( 0,75%) and 12 men (3,25%) .

Literature data shows that 40-60% of the non-traumatic amputations of the inferior members are realized in diabetic patients, although diabetes is present in only 3-5% of the population.(1,2)

85% of the cases had previously ulcer, and the prevalence of the diabetic foot is of 4-10% of the diabetic population.( 5,6) Factors associated to the amputation are: ulcer, neuropathy (sensorial and motors), trauma, biomechanic factors, peripheral vascular disease, social and economic status.

The risk factors which can be detected by anamnesis and objective examination are: ulcer or previous amputation, lack of social contact, lack of education, modified examination with the help of monofilament, modified perception of the vibrations, absence of the achilean reflex, calus, deformation of the foot, inadequate shoes, absence of the pulse on the peripheral arteries. All these data have been analyzed.

### CONCLUSIONS

1. The prevention of the amputations can be made by early diagnosis of DM, removal of the cardiovascular risk factors or their treatment (giving up smoking, HTA treatment, DLP, correct treatment of DM).
2. Detection of the persons who are at risk of amputation, periodic control of the foot, informing the patient about the risk.
3. Reasons of the delayed control of the patients who present ulcer of the inferior members are: neuropathy (when pain is not felt), lack of education, financial difficulties, fear of amputation.
4. The medical teams may help lowering the number of amputations of the DM patients through a constant therapeutic education directed towards the risk groups; using special methods for the patients with a reduced visual perception and mobility, evaluating the comprehension of the message and making recommendations in concern to the socio-economical status of each patient.

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