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PREDISPOZING AND PROMOTING FACTORS OF MAL PERFORANT PEDIS

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Abstract. Aim. The aim of our study was to determine the prevalence of predisposed and favorizing factors of mal perforant pedis (MPP). **Materials and methods.** The studied lot was represented by 40 inpatients diagnosed with plantar ulcers, in the Tg. Mures, Dermatologic Clinic in the period of 1996-2000. The predisposed factors considered were: sex, nutrition status, inpatient, reinpatient, life style, alcohol consumption, smoking. Working environment and repeated exposure to the same pollutant were considered as favorizing factors. **Results and discussion.** Mans were more frequent in the studied lot (82.5% *vs* 17.5%) and aged patients (73.5% retired *vs* 27.5% active). Nutrition status revealed 20% over weight and 50% under weight. Average length stay was about 23.3 days and for the inpatients with 6 years was about 3.45 days. 65% of them were smokers. Alcohol consumption > 100 ml/day was registered in 32.5% and 22.5% respectively. Regarding patients occupation, 27.5% used to have difficult physical work duty, 57.5% medium physical work and about 15% used to have intellectual duties. We mentioned local exposure to polivirilchlorid, particularly present in the composition of rubber boots, 35% of patients confirming the ware of these boots more than 5 years. The prolonged ortostatism (> 8 hours/day) along time (> 20 years) was present in 60% of patients. Repeated examinations of the plantar zone were found in approximately 45% of patients. **Conclusions.** The results of this study were in close concordance with those found in the literature in the field, related to predisposed and favorizing factors of plantar ulcers.

Key words: mal perforant pedis, predisposed factors, favorizing factors, neurologic, osteoarticular, vascular

Rezumat:. Scopul acestui studiu a fost determinarea prevalenţei factorilor predispozanţi şi favorizanţi ai malului perforant plantar (MPP). **Material şi metode.** Lotul de studiu a fost reprezentat de 40 bolnavi diagnosticaţi cu MPP internaţi la Clinica de Dermatologie Tg. Mureş în perioada 1996-2002. Au fost luaţi în consideraţie următorii factorii predispozanţi: sex, starea de nutriţie, internare, reinternare, condiţii de viaţă, consum de alcool, fumat. Ca factori favorizanţi au fost consideraţi mediul de muncă şi expunerea repetată la aceeaşi noxă. **Rezultate şi discuţii.** În lotul de studiu a predominat sexul masculin (82,5% *vs* 17,5%) şi vârstnicii (73,5% pensionari *vs* 27,5% vârste active). Starea de nutriţie a relevat faptul că 20% au fost supraponderali iar 50% subponderali. Media zilelor de spitalizare a fost de 23,3 zile iar media reinternărilor în ultimii 6 ani a fost de 3,45 zile. 65% dintre ei erau fumători. Un consum de alcool > 100 ml/zi, s-a înregistrat la 22,5%. Din punct de vedere al ocupaţiei, 27,5% din pacienţi au prestat muncă fizică grea, 57,5% muncă fizică medie, iar 15% au fost intelectuali. Menţionăm expunerea locală la polivinilclorid, care a fost mai ales prezent în compoziţia cizmelor de cauciuc, 35% dintre pacienţi confirmând purtarea cizmelor de cauciuc pe o perioadă mai mare de 5 ani. Ortostatismul prelungit (> 8 ore/zi) pe o perioadă mai mare

de 20 ani a fost menționat la 60% din pacienți. Traumatisme repetate ale zonei plantare s-au regăsit la aproximativ 45% din pacienți. **Concluzii.** Rezultatele studiului nostru au fost în concordanță cu datele regăsite în literatura de specialitate privind factorii predispozanți şi favorizanți ai ulcerelor plantare.

Cuvinte cheie: mal perforant plantar, factori predispozanți, factori favorizanți, neurologie, osteoarticular, vascular

INTRODUCTION

Within the big chapter of chronic ulcers of the inferior limbs, mal perforant pedis (MPP) has a special importance due to its etiopathogenesis differing from common leg ulcers and to the disputed therapeutic problems.

Therapy means, in most of the cases, the cooperation within the frame work of many medical specialties (1, 2). Thus, MPP is part of the so called "frontier" diseases, being the object of many medical services, as: dermatology, neurology, orthopedy, internal medicine and general surgery. The lesions being at the level of skin make patients to be guided at first to a dermatologist, who must therefore elucidate case etiology and find proper therapeutic solutions (2). The name of MPP was given by Vesigne and the disease was studied by Savory, Butlin, and Guasquel; MPP was described by Nelaton (1852) and at the end of the last century Guasquel assessed the multiple etiologic factors of this disease (3, 4). MPP justifies its particular nosologic framing due to the following characteristics:

a) in most of the cases, the coexistence of ulcers with neurological disturbances of the affected area, ways of the sensibility transmission being especially interested;
b) high frequency of serious osteoarticular and vascular lesions, even in the case of minor skin ulcers;
c) uncommon resistance to the currently used treatments in patients with chronic skin ulcers;
d) frequent resemblance to skin lesions regardless of their ethiology.

From physiopathological point of view, usually there are three kinds of interfering factors in the appearance of MPP: neurological (polyneuropathies, medullar and root ganglion lesions, or those of the peripheral nerve trunks), vascular (advanced obliterate arteritis, diabetic micro- and macroangiopathy) and mechanic (ulcers are on the areas with maximum pressure, their appearance being promoted of some previous leg deformations or other disturbances of static position). Each of these factors can lead to plantar ulcers, but in most of the cases there is a common action of these three factors (4, 5).

According to Huriez, it is considered a rare disease, representing $1^{o}/_{oo}$ of dermatologic ones (7).

MATERIALS AND METHODS

We have studied 40 patients suffering of MPP and hospitalized between 1996 and 2002 in the Dermatology Clinic Tg. Mureş. Based on the anamnesis and clinical examination, our study was referring to those predisposing and favorizing factors which can determine this morbid condition. There are 4 types of factors that have a role in the causality of

diseases. All of them can be necessary, but only a few of them are enough to produce the disease. They do not exclude each other (2). These factors can be grouped as follows:

- predisposing factors (sex, age, average life conditions, etiologic causes of the disease, associated diseases);
- promoting factors (nutritional state, hospitalization, re-hospitalization);
- precipitating factors (occupational noxes, alcohol, tobacco);
- complementary factors (repeated exposure to the same noxes, labour environment).

RESULTS

Concerning the analysis of predisposing factors we have found the following results: case structure by sex demonstrates that most of the patients are men (82.5% - 33 patients) and 17.5% are women (7 cases). The age groups of 51-60 and 61-70 dominate (32.5%, 30% respectively). From the provenience point of view the percent (urban and rural) was equal, 50% respectively. From the detected associated diseases the most important ones have been: chronic ethylic hepatitis in 25%, obliterant arteriopathy in 22.5%, arterial hypertension in 12.5% and post-thrombotic syndrome in 10% of the cases.

Concerning the analysis of promoting factors we have found the following results: nutritional status of the patients demonstrate that 50% of them are underweight, 30% normal weight and 20% overweight. Taking into account the number of days spent in hospital and the number of re-hospitalizations in the studied period, we find 23.3 days and 3.45 re-hospitalizations per patient.

Concerning the analysis of precipitating factors we have found the following results: consume of 100 ml of pure alcohol per day or more was confirmed by 55% of patients and the proportion of smokers in the studied group was 65%. As labour conditions are concerned, we have found that 85% of patients were doing medium or hard physical work. Out of 40 patients 27.5% (11 patients) were active, the rest of them being pensioners. 17.5% (7 patients) of the pensioners have retired due to an illness and the rest of them, 55% (22 patients) have retired due to their age. As occupational noxes we mention local exposure to PVC/ polyvinyl-chloride that was especially present in the composition of rubber boots (9 patients). Patients' anamnesis demonstrates that 35% of them confirm that they have worn rubber boots more than 5 years long.

Concerning the analysis of complementary factors, the most important ones which we have found were the repeated exposure to a plantar physical trauma and the prolonged orthostatism.

The anamnesis demonstrates that 45% (18 patients) declared having repeated plantar traumas and 60% (24 patients) declared orthostatism longer than 8 hours per day for more than 20 years.

DISCUSSION

Analyzing the predisposing factors, we noticed an important growth in

men, the disease appearing mainly in the 5th decade of their lives, irrespectively of their provenience. From the multitude of associated diseases we didn't remarked the ones which can cause MPP just themselves, this way confirming the hypothesis of intricate action of more etiological factors. Most of the patients have been underweight, smokers and consumers of alcohol, working in difficult conditions.

These aspects are in concordance with the structure in the field concerning the appearance of MPP in persons exposed to noxes (6).

The long length of study and the average number of re-hospitalizations demonstrate the slow healing and the predisposition to relapse.

CONCLUSIONS

Based on the facts described above we can draw the conclusion, that even if it is a rare disease, due to its special difficulties from the point of view of pathology and therapy, MPP is a spiny problem for medical practitioner that cannot be ignored.

Identification of risk factors that a role in the causality of MPP can be beneficial in applying efficient preventive methods.

REFERENCES

1. Barett JP, Mooney V: *Neuropathy and diabetic pressure lesions*. Orthop Clin North Am, 1973, 4: 43-47.
2. Bocşan IS: *Aplicaţii în epidemiologie şi biostatistică*, Ed. Presa Universitatea Clujeană, 1996, 110-111.
3. Bucur Gh: *Boli dermato-venerice*. Editura Ştiinţifică şi Enciclopedică Bucureşti, 1987, 254-258
4. Bucur Gh, DA Opriş: *Boli dermato-venerice*, Editura Medicală Naţională, 2002, 477-479.
5. Ctercteko GC, Dhanendran M, Hutton WC, LeQuesne LP: *Vertical forces acting on the feet of diabetic patients with neuropathic ulceration*. Br J Surg 1981, 68: 608-614.
6. Dumitriu R: *Consideraţii pe marginea a 14 cazuri de mal perforant plantar*. Revista D-V, 1972 sept., 415-423.
7. Huriez Cl: *Lille Méd*, 1971, 16 (3): 369.
8. N. Maier: *Patologie cutanată*, vol III, Editura Casa Cărţii de Ştiinţă Cluj, 1999, 114-117.
9. E Thoma, T Ruzicka et al: *Klinik und Therapie der Bureau-Barriere Syndroms*. Hautartzt, 1993, 44: 5-1.