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Maintenance treatment of diabetic patients, associating arterial obstructive tibio-peroneal disease

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When a melito-diabetic patient presents trophic infected injury on the limb, it is essential an evaluation of the circulatory conditions for therapeutic procedures orientation.

In some circumstances, although arterial pulsation is absent, there is no ischemia of tissues. In these cases, the maintenance treatment, with eventual resection of the necrosed and infected tissues may be adopted.

Evolution of 70 diabetic patients with trophic injuries on extremities were submitted to a maintenance treatment.

Age of patients varied from 28 to 88 years, with an average of 56.8. The most occurrence was verified in women, with 42 cases. Diabetes non-dependant on insuline (type II) was observed in 64 patients (91.5%), being the remaining 6 patients of type I. Diabetic retinopathy was observed in 14 (20%) of the patients, neuropathy in 22 (31%) and nephropathy in 8 patients (11.4%).

All the patients presented arterial pulsation until the popliteal region. They were divided in 2 groups, considering trunk arteries of legs: Group I, perval legs arteries, composed by 48 patients; Group II, occluded legs arteries, with 22 patients.

In what refers to the anatomic local of the injuries, patients were classified in three groups: Group A, formed by 32 patients (45.7%), presenting injuries in one or two toes only, without affecting the metatarsic region; Group B, formed by 16 patients (22.9%), trophic injuries affecting the metatarsic region and Group C, formed by 22 patients (31.4%), injuries affecting the calcaneous region.

Injuries in both of the groups were caused by mechanical traumatism. Duration of the injury in the inferior member varied from 7 to 48 days, resulting in a 12 days average. Analyzing pervicacity in trunk arteries and evolution of patients, it may be observed that there has been a significantly better result in those with all the pulses present (81.3% x 45.5%)($p < 0,01$).

Studying the injury locals associated to the evaluation of the cases, we may observe that for injuries in the extreme digital, result is significantly better than in locals more nearby. When distal pulses are absent, there is no significant difference in the result of the treatment, being performed in distal injuries or in the more near ones ($p > 0,05$)(Table IV).

UNITERMS: Melito-diabetic. Tibio-peroneal disease. Trophic injuries. Vascular disease. Diabetic foot.

INTRODUCTION

When a melito-diabetic person presents trophic infected injury on the limb, it is essential an evaluation of the circulatory conditions, in order to orient the therapeutic procedure (13,14). In the

absence of trunk arterial disease, maintenance treatment without amputation next to the metatase, with eventual resection of the necrosed and infected tissues, is considered as being the first procedure (3,8,16). When the leg arteries are occluded, perfusion conditions of the member must be carefully evaluated. In certain circumstances, although arterial pulsation is not present, there is no ischemia of tissues. In these cases, the same procedure may be taken (11).

Some patients presented trophic injuries, showing rapid installation and evolution and, therefore, needed urgently care.

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Evolution of the diabetic patients with trophic injuries in extremities was studied, and patients were submitted to maintenance treatment.

CASUISTIC AND METHOD

Evolution of 70 diabetic patients presenting infection and necrose in the inferior members, treated at the First Aid Unity of the Hospital das Clínicas da Faculdade de Medicina da Universidade de São Paulo from January, 1987 till January, 1990.

Age of patients varied from 28 to 88 years, with a 56.8 of average. Women were the most attacked, with 42 cases.

Diabetes non-insuline dependent (type II) was observed in 64 of the patients (91.5%), being the other 6 of type I.

All the patients presented arterial pulsation till the popliteal region. They were divided in two groups with relation to the trunk arteria of the legs:

Group I - Pervial legs arteries, formed by 48 patients, average of 55 years

Group II - Occluded legs arteries, formed by 22 patients with absence of arterial pulsation in the posterior tibial arteries, anterior and dorsal, of the leg. Although with arterial obstructive tibio-peroneal disease, patients presented an apparently good periferic perfusion. Average was of 60.1 years.

In what concerns to the anatomic localization of the injuries, patients were divided in three groups:

Group A - Formed by 32 patients (45.7%), with one or two toes affected only, without reaching the metatarsic region

Group B - Formed by 16 patients (22.9%), with trophic injuries, affecting the metatarsic region

Group C - Formed by 22 patients (31.4%), with injuries affecting calcaneous region

Injuries in both of the groups were caused by mechanical traumatism. No patient pertaining to Group I presented vascular claim before the trauma, while 7 of the patients pertaining to group II reported previous intermitent clumsiness, not limiting.

Time of the injury presence in the inferior member varied from 7 to 48 days, representing a 12 days average.

Diabetic retinopathy was verified in 14 (20%) of the patients, neuropathy in 22 (31%) and nephropathy in 8 of them (11.4%).

All the patients were submitted to a general support treatment, antibyothicotherapy of large spectrum and resection of the necrosed and infected tissues.

Statistical analysis was done based on the Fisher exact test, mono modal, using value 0.05 as the critical level.

Evaluation of the results was based in the study of the general clinical conditions of the patients and of the leg affected, when they retired from hospital.

Satisfactory result (S) was considered in the cases where the amputation near the metatarsic region was not necessary. Unsatisfactory result (NS) was the one where the amputation above the metatarsic region was necessary.

RESULTS

In patients pertaining to Group I, results showed as being satisfactory in 39 patients (81.3%) and in the group II, it showed satisfactory in 10 patients.

Analyzing pervicacity in trunk arteria and patient evolution, it may be observed that there has been a significantly better result in those all pulses were present ($p < 0,01$) (Table I)

Table 1
Distribution of the results obtained in accordance with the presence of arterial pulsation

	S	NS
PULSE +	39 (76.4%)	12 (23.4%)
PULSE -	10 (41.6%)	14 (58.4%)

+ = Present / - = Absent / S = Satisfactory / N = Unsatisfactory

Studying the local of the injury associated to the prognostic of the cases, we may observe that for the injuries in digital extremities, result is significantly better than in the more near ones ($p < 0,01$)(table II). It shows even much better when we associate the variable "pulse present", being or tibial anterior, or posterior or of the foot itself ($p < 0,01$)(Table III).

Table II
Distribution of the results obtained according to local of the trophic injuries

	S	NS
GROUP A	28 (87.5%)	4 (12.5%)
GROUP B	8 (50%)	8 (50%)
GROUP C	13 (59.1%)	9 (40.9%)

S = Satisfactory / NS = Unsatisfactory

Table III
Distribution of the results obtained considering the presence of arterial pulsation and localization of the trophic injury

	S	NS
Toes	24 (96%)	1 (4%)
In step	6 (54.5%)	5 (45.5%)
Heel	9 (75%)	3 (25%)

A1 - Group of patients with normal arterial pulsation and trophic injury affecting only the toes

A2 - Group of patients with normal arterial pulsation and trophic injury affecting the metatarsic region

A3 - Group of patients with normal arterial pulsation and trophic injury affecting calcaneous region

S = Satisfactory / NS = Unsatisfactory

When the distal pulses are absent, there are not significant differences in the results of treatment, being performed in digital injuries or in more nearby ones ($p>0,05$) (table IV).

DISCUSSION

Relation between diabetes mellitus and loose of trophic integrity of the inferior members due to ischemia and/or infection, are very frequent (4).

Until few years ago, it was accepted that, with the evolution of diabetes, obstruction of the leg arteries was considered the diabetic microangiopathy (9). Today, this

Table IV
Distribution of the results obtained, considering arterial pulsation absence and local of the trophic injuries

	S	NS
GROUP A2	4 (57.1%)	3 (42.9%)
GROUP B2	2 (40%)	3 (60%)
GROUP C2	4 (40%)	6 (60%)

A2 - Group of patients with arterial pulsation absent and trophic injury affecting only the toes

B2 - Group of patients with arterial pulsation absent and trophic injury affecting metatarsic region

B3 - Group of patients with arterial pulsation absent and trophic injury affecting calcaneous region

S = Satisfactory / NS = Unsatisfactory

affirmation, more than questioned, is being left aside (12). Microangiopathy is the modification at capilar level and the tibio-peroneal obstruction is not its nearer extension. Before the obstruction of the leg arteries and before reaching the capilar microcirculation, there are small trunk arterial segments, mainly in the foot, that may be pervial and, therefore, reachable by the new techniques of arterial restoration (1,7,15). So, there is an arterial obstructive tibio-peroneal disease distinguished from the diabetic microangiopathy and different from the obliterating periferic atherosclerosis observed in non-diabetics. Discussion is to know if the arterial obstructive tibio-peroneal DISEASE corresponds to an arterial injury caused by the diabetes mellitus or if it is a variance more distal of the obliterating periferic atherosclerosis that appears specifically in diabetics.

Maintenance treatment was studied in diabetic patients with trophic infected injuries of the inferior members that were not submitted to revascularization as presenting good perfusion conditions. Even patients presenting absence of trunk arterial pulses were treated this same way, as the clinical evaluation presented good periferic perfusion, suggesting presence of high colateral circulation. This situation, theoretically, enables performance of local debridements, without need of periferic revascularization. The most crucial problem at the moment of hospitalization seemed to be infection, with its local systemic manifestations, and not the ischemia of the inferior member as a whole.

All the patients of this serial were submitted to immediate treatment of the infected injuries, with antiobioticotherapy and surgical debridement.

Functional prevention of the member was described as the final condition of the treatment in which debridement, including amputation limited to the toes or instep, enable patient to walk without the help of a substitutive prothesis.

In patients without trunk periferic arterial obstruction, functional preservation levels were significantly higher than in the patients with arterial obstructive tibio-peroneal disease (83.1% against 45.5%). It keeps evident the importance of the pervicacity of the high volume vases in situations of ischemia and periferic tissue infection. Based on this data, we began to do arteriography in all the patients with trophic injuries of trunk arteria obstruction, with the purpose of finding some small arteria segments for possible distal revascularization in our unity as in other centers (2,5,6).

In the trophic injuries limited to the toes, functional preservation of the inferior member was higher than in other anatomic localizations. In patients with all the arterial periferic pulses detected and distal injuries, result is better than the one of the other groups.

CONCLUSIONS

1. Necrotic and infectious injuries in the inferior members of patients with arterial obstructive tibio-peroneal DISEASES have a more serious evolution than the patients with the same type of injuries, but presenting arterial distal pulses.

2. When these injuries are localized in the toes of the feets, evolution is significantly better than in the more near injuries, specially when there is no arterial obstructive tibio-peroneal disease.

RESUMO

Introdução: Quando um portador de diabete melito apresenta lesão trófica infectada do membro inferior, é indispensável a avaliação das condições circulatórias a fim de se orientar o procedimento terapêutico.

Em determinadas situações, apesar da ausência de batimentos arteriais, não há isquemia tecidual. Nestes casos, o tratamento conservador, com eventual ressecção de tecidos necróticos e infectados pode ser adotado.

Material e Métodos: Foi estudada a evolução de 70 pacientes diabéticos com lesão trófica de extremidade submetidos ao tratamento conservador.

A idade dos doentes variou de 28 a 88 anos, com média de 56,8. O sexo mais acometido foi o feminino, em 42 casos. O diabetes não insulino-dependente (tipo II) foi observado em 64 pacientes (91,5%), sendo os outros 6 do tipo I. A retinopatia diabética foi constatada em 14 (20%) pacientes, neuropatia em 22 (31%) e nefropatia em 8 doentes (11,4%).

Todos os pacientes apresentavam batimentos arteriais até a região poplíteia. Eles foram divididos em 2 grupos com relação as artérias tronculares da perna: Grupo I, Artérias de pernas pérvias, constituído por 48 pacientes; Grupo II, Artérias de pernas ocluídas, constituído por 22 pacientes.

Quanto à localização anatômica das lesões, os pacientes foram divididos em três grupos: Grupo A: formado por 32 pacientes (45,7%) com acometimento exclusivo de um ou mais dedos sem atingir a região metatarsiana; Grupo B, formado por 16 pacientes (22,9%) com acometimento trófico atingindo a região metatársica; Grupo C, formado por 22 pacientes (31,4%) com lesão acometendo a região calcânea.

As lesões em ambos os grupos foram causadas por traumatismos mecânicos. O tempo da presença de lesão em membro inferior variou de 7 a 48 dias, com média de 12 dias.

Resultados e Conclusão: Ao ser analisada a perviedade em artérias tronculares e evolução dos pacientes, verifica-se que houve resultado significativamente melhor naqueles com todos os pulsos presentes (81,3% x 45,5%) ($p < 0,01$).

Ao estudarmos o local da lesão associando-o com o prognóstico dos casos, observamos que para feridas em extremidade digital, o resultado é significativamente melhor que nos locais mais proximais (87,5% x 59,1%) ($p < 0,01$). Melhor ainda quando associamos a variável pulso presente (96,0% x 75%) ($p < 0,01$) (tabela III).

Quando os pulsos distais estão ausentes, não há diferenças significativas no resultado do tratamento, seja ele realizado em lesões digitais ou em lesões mais proximais ($p > 0,05$) (tabela IV).

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