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Complications of Diabetes Mellitus with Diabetic Foot Syndrome

Alijonov D.A.
Student, 6 course of the Faculty of General Medicine

Bektasheva G.M.
Student, 5 Course of the Faculty of General Medicine

Kholmatova G.A.
PhD, Head of the Department of Endocrinology and Hospital Therapy
Andijan State Medical Institute Andijan Uzbekistan

Abstract:
Diabetes mellitus (DM) is one of the most common chronic diseases in the world. Recently, this disease has begun to be studied as a social problem that is becoming more and more urgent. This is due to the fact that there is an increase in the number of people suffering from diabetes mellitus, the chronic nature of the course of the disease, the development of various complications that lead to a decrease in the quality of life and a reduction in its duration.

Keywords: Diabetic foot syndrome (SDS), disability, arterial hypertension, dyslipidemia, nephropathy and retinopathy.

INTRODUCTION

Diabetic foot syndrome (DFS) – combines pathological changes in the peripheral nervous system, arterial and microcirculatory bed, osteoarticular apparatus of the foot that pose an immediate threat or the development of ulcerative necrotic processes and gangrene of the foot (2 Ross klin recom 2019).

SDS leads to purulent-necrotic lesions of the feet with subsequent loss of the lower extremities – to the highest disability. The final figures for the prevalence of SDS are currently unknown. Nevertheless, it was found that 15% of DM patients develop pathological changes in the feet or ankle joint [4]

Diagnosis of neuropathy – assessment of complaints on the TSS and NSS scales (indicators of neuropathic symptomatic counting), examination of pain, tactile, vibration and temperature sensitivity (injection with a blunt needle on the back of the big toe, monofilament 10 g, graduated tuning fork, biotesiometry), their assessment on the NDS scale (indicators of neuropathic functional counting), assessment of tendons reflexes, electromyography. Study of vegetative imbalance – Holter heart rate monitoring and daily blood pressure monitoring.

Assessment of blood flow and microcirculation – finger examination of arteries, determination of the shoulder–ankle index, ultrasound Dopplerography (UZDG) and

segmental Dopplerometry, ultrasound angiography (USAS), transcutaneous oximetry (TsrO2), laser Doppler flowmetry (LPF), polarography, computer capillaroscopy, radiopaque angiography, magnetic resonance angiography, multispiral computed tomography–angiography (MSCT angiography), measurement of finger systolic pressure, stress tests (treadmill test), study of endothelium–dependent vasodilation (veno-occlusive plethysmography against the background of acetylcholine and nitroglycerin administration), rheolymphovasography, impedance measurement, thermal imaging.

Principles of therapy. According to the majority of authors, qualified endocrinologist, purulent surgeon, vascular surgeon, orthopedist, specially trained nursing staff should participate in the treatment of patients with diabetic foot syndrome, and complex treatment should include general and local methods [5,10,].

In the treatment of purulent–necrotic forms of SDS, all patients with diabetes of any type should be transferred to short-acting insulin therapy at least 4 (6) times / day. until the blood glucose level stabilizes within 6-10 mmol / l (fasting glycemia 6-7 mmol / l, 2 hours after eating 9-10 mmol / l) or on the scheme of administration of prolonged insulin in the morning and evening and short-acting during the day.

In the ischemic form, first of all, the question of the need and possibility of reconstructive vascular surgery is solved. In severe cases of diabetic gangrene, due to the risk of sepsis, extended surgical intervention up to amputation is indicated at the earliest possible time.

Conservative therapy. In the treatment of diabetic neuropathy, preparations of a–lipoic acid are used – improvement of trophic neurons, regulation of lipid and carbohydrate metabolism, antioxidant, hepatoprotective and detoxifying effects; tolperizone is a central–acting muscle relaxant that enhances peripheral blood flow; preparations of B vitamins, antidepressants, anticonvulsants, neuroleptics, aldoreductase inhibitors.

Treatment of disorders of the coagulation system and vasodilating effects (angioprotectors, disaggregants and rheological preparations) – acetylsalicylic acid, pentoxifylline, dipyridamole, clopidogrel, prostaglandins E1, heparin, low molecular weight heparins that do not require constant laboratory monitoring, heparin–sulfates – lomoporan, sulodexide, reopoliglyukin; antispasmodics – papaverine, drotaverine, nikoshpan.

The complex and stepwise use of the drug Actovegin (parenteral, oral, local forms) allows you to maintain the continuity of treatment and achieve excellent results [8], however, you should also remember about the dose dependence of the effect: according to many domestic and foreign authors, the daily dose of Actovegin should be at least 1000 mg. Actovegin effectively reduces the severity of neuropathic symptoms, improves the threshold of vibration sensitivity and the level of mental

health in patients with diabetes, and also has an insulin-like effect, which leads to increased glucose consumption with a direct effect on cellular metabolism and energy balance in various cellular systems.

Antibacterial therapy. Taking into account the polymicrobial associative nature of the microflora of infected foci on the foot of a diabetic with the participation of several aerobic and anaerobic pathogens, empirical antibacterial therapy with broad-spectrum antibiotics (cephalosporins, fluoroquinolones, lincosamides) is shown in all cases, and when receiving the results of a bacteriological study, prescriptions are corrected. Clinically and economically, it is also advisable to adhere to the stepwise principle of therapy – the transition from the parenteral route of administration of the drug to the enteral one. The duration of antibacterial therapy in patients with extensive purulent–necrotic processes against the background of surgical treatment can be up to 10 weeks, the inadequacy of the choice of drug, dose and duration of treatment can lead to the development of relapse or superinfection. The use of aminoglycosides in patients with DM should be avoided due to their nephrotoxicity and the risk of progression of nephropathy [9, 10,].

Against the background of DM, in addition to microbial associations, wounds are usually contaminated with fungi, more often with yeast (various types of Candida), therefore their verification and the appointment of an appropriate antimycotic (fluconazole, voriconazole, caspofungin, etc.) are necessary.

The purpose of the surgical manual for SDS is to preserve the patient's life, preserve the limb and its function. Surgical tactics are determined not only by the severity and volume of the purulent–necrotic focus, but also by the form of the process. Surgical intervention should be timely, meet the principle of reasonable sufficiency (careful attitude to tissues, maximum preservation of foot function), should be carried out against the background of stabilization of the patient's general condition, unloading of the affected limb, correction of carbohydrate metabolism disorders, antibacterial and pathogenetic therapy. It should be noted that the level of initial glycemia affects the result of the surgical aid. Emergency operations are performed only in case of wet gangrene of the limb. Urgent interventions should be performed in the presence of phlegmon, abscesses, inadequately drained purulent–necrotic wounds and secondary septic foci. Staged necrectomies, operations for osteomyelitis of the foot bones, as well as reconstructive and plastic interventions are performed as planned.

Conclusion

DM is a serious disease that can lead to severe socio-economic and demographic consequences. The question of the impact of SDS on the quality of life remains poorly understood. The long-term costs associated with the treatment of recurrent ulcers, repeated amputations and increased social care costs are unknown.

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