GALAXY INTERNATIONAL INTERDISCIPLINARY RESEARCH JOURNAL (GIIRJ)
ISSN (E): 2347-6915
Vol. 11, Issue 04, April (2023)

MODERN METHODS OF PREVENTION AND TREATMENT OF DIABETIC FOOT SYNDROME IN PATIENTS WITH DIABETES IN ANDIJAN REGION

R. T. Uktamov,[1]
Sh.K.Yusupova,[2]
G.M.Bektasheva[3]
[1] Master of Endocrinology
[2]Head of the Department of Hospital Therapy and Endocrinology, MD, Associate Professor
[3] 4th year student of the Faculty of Medicine

ABSTRACT

Diabetes mellitus (DM) is one of the leading causes of general morbidity, disability and mortality in the population, including those of working age. The social significance of DM is determined by its complications. Diabetic foot syndrome (DFS) occupies a special place among infectious and inflammatory diseases in patients with DM 2 (DM 2). According to the algorithms of specialized medical care for patients with diabetes, “The diabetic foot syndrome combines pathological changes in the peripheral nervous system, arterial and microcirculatory channels, and the osteoarticular apparatus of the foot, which pose an immediate threat or the development of ulcerative necrotic processes and gangrene of the foot.” SDS requires an integrated approach on the part of many specialists, since the lesion of the lower extremities is at the junction of several medical disciplines: therapeutic and surgical. With untimely diagnosis and the absence of correct pharmacotherapy at the very beginning of the development of complications, DFS progresses rapidly, gangrene of the lower limb develops, which can result in its amputation with subsequent disability of the patient - the most terrible consequence of DFS. According to statistics, up to 90% of patients are hospitalized in surgical hospitals on an emergency basis at the stage of irreversible clinical and morphological changes, about 85-90% of cases end in amputation of the lower limb.

Keywords: pulmonary embolism, Doppler ultrasound, Doppler ultrasound, ultrasound, fibrogastroduodenoscopy, atrial fibrillation, chronic kidney disease, electrocardiography.

ACTUALITY

Due to the lack of a single classification for diagnosing SDS, practitioners interpret the term "diabetic foot" in different ways. On the one hand, this circumstance complicates the timely verification of DFS, and on the other hand, it increases the percentage of undiagnosed diabetic feet or, conversely, leads to overdiagnosis. The first definition of "diabetic foot" appeared in 1987, translated from English in the report of the WHO research group on diabetes mellitus. And in Russian literature, this term was first introduced by A.P. Kalinin in 1991 in his monograph “Surgical diseases in patients with diabetes mellitus”. The definition of diabetic foot syndrome as a set of pathological processes that pose a threat to the development of ulcerative necrotic processes and foot gangrene was widely disclosed in 1998 in the Russian monograph "The Diabetic Foot Syndrome". The term "diabetic foot syndrome" or "diabetic foot" combines a number of lesions of the lower extremities in diabetes. Due to the wide variety of these lesions,

the correct definition of DFS remains problematic for many practitioners. According to the Russian Clinical Guidelines, "SDS combines pathological changes in the peripheral nervous system, arterial and microcirculatory channels, and the osteoarticular apparatus of the foot, which pose a direct threat or the development of ulcerative necrotic processes and gangrene of the foot" [1].

When analyzing the preanalytical stage of diagnostic search, we estimated the timing of biological material sampling for bacteriological examination, as this determines the quality and reliability of the results obtained at subsequent stages of microbiological examination [76]. According to our data, bacteriological culture of the wound discharge was taken on day 4.63 ± 4.75 of hospital stay, which does not correspond to the CR and the standards of care for patients with DFS. The type and nature of the transport of biological material, as well as the choice of the transport medium, were not indicated either in the patient's hospital records or in the antibiograms obtained from the bacteriological laboratory, which did not allow us to analyze this important aspect. The duration of waiting for the results of bacteriological examination was 5.41±1.85 days. Empirical AT was assigned to 83.7% of patients. We found that 8% of patients with DFS with the presence of an infectious process were prescribed empirical AT not on the 1st day of hospitalization, without justification in the medical documentation for the delayed prescription of ABLS. After receiving the results of bacteriological culture, the replacement of one antibacterial drug with another group of drugs/drugs was carried out in 37% of cases. Replacement of the antibacterial drug is acceptable during treatment, however, we consider the percentage obtained to be quite high, the data obtained indicate an incorrect starting AT. The next step in our study was to study the structural features and resistance of pathogens of wound defects in patients with DFS. The growth of microorganisms was detected in the study of wound discharge in 91.58% of patients. The obtained figures are consistent with the literature data, according to which wound defects in DFS are characterized by a high risk of bacterial infection due to the presence of favorable conditions for the progression and torpid course of the infectious process [31]. Among gram-negative bacteria, gram-negative rods and gram-negative cocci were isolated - 68.6% and 31.4%, respectively; among gram-positive bacteria, gram-positive cocci and gram-positive rods were isolated - 96.1% and 3.9%, respectively. The resulting microflora is not quite typical for patients with wound defects on the background of SDS.

According to the literature, the main microorganisms in the wound discharge in this group of patients are gram-positive bacteria, according to our study, gram-negative bacteria were detected in 46% of cases. The results obtained indicate a complicated course of DFS and allow us not only to characterize the population in our region as more severe, but also indicate the problem of timely early diagnosis of the infectious process in patients with DFS, as well as the possible previous irrational use of ABLS in these patients. The analysis of medical records revealed that the average number of days of antibiotic therapy was 8.68 ± 4.03 days. According to the Russian National Guidelines for the Diagnosis and Treatment of Surgical Infections of the Skin and Soft Tissues [75], the average duration of AT in an infectious process against the background of DFS should be at least 7–14 days and increases depending on the severity of the infectious process. However, there are no specific recommendations on the timing of AT in patients with DFS in the CR and standards of medical care, and, therefore, the data obtained

cannot be compared with the CR. Taking into account that the infectious process in patients with DFS, as a rule, acquires a severe protracted character, such a short term for the appointment of ABLS can be assessed as irrational. It is also worth noting that the medical documentation did not indicate the reasons for stopping AT, which makes it difficult to analyze the effectiveness of the selected ABLS. Among patients with wound defects on the background of DFS, in whom growth of the pathogen was detected in the wound discharge during bacteriological culture, 90.81% of patients received antibiotics, respectively, 9.9% of patients with an identified pathogen were not prescribed antibiotic therapy. The reasons were not stated in the medical records. Among patients with wound defects on the background of DFS, who did not undergo bacteriological analysis of wound discharge, 81.63% of patients received antibiotics. And this means that bacteriological culture for the doctor was not the main guideline when choosing ABLS, and in this situation, medical prescriptions were based only on the presence of a systemic inflammatory reaction (temperature, leukocytosis) and local signs of a progressive purulent-necrotic process, or ABLS was prescribed to patients with DFS after performing surgery on the lower extremities without the results of bacteriological analysis. Thus, in the course of our work, we were faced with insufficiently clear and complete maintenance of medical records by doctors of health facilities, which, in the framework of an epidemiological study, did not allow us to identify all possible factors affecting the effectiveness of AT. One thing is not in doubt that such maintenance of medical records seriously violates the continuity of patient management.

PURPOSE OF THE STUDY

Optimization of prevention and treatment of diabetic foot syndrome in patients with diabetes mellitus in Andijan region.

MATERIAL AND RESEARCH METHODS

Clinical studies will be conducted during the examination and treatment of 60 patients with diabetic foot syndrome who applied to the endocrinology department of the ASMI clinic.

When performing scientific research, empirical, theoretical and mathematical methods were used.

Theoretical methods included the study of literature data on the epidemiology of the disease, the structure of mortality, the role of tissue ischemia in the development of the disease, diagnostic possibilities for early detection of the disease, modern methods of conservative treatment. The methodological basis for the study was the work of foreign and Russian scientists in the field of clinical pharmacology, endocrinology, evidence-based medicine, and medical statistics.

Empirical methods included scientific observation, questioning and experiment. The task of scientific observation was to study the effectiveness of conservative methods of treatment in a retrospective analysis of data. During the survey and the experimental stage, the effectiveness and safety of the inclusion of new oral anticoagulants in therapy were studied. The planning and conduct of the experimental part was based on the principles of conducting clinical trials set out in the WHO Declaration of Helsinki, the international rules of "Good Clinical Practice" using special medical methods.

RESULTS OF THE STUDY

The dynamics of the functioning of the microhemocirculatory bed against the background of pharmacotherapy with DOACs in DFS was evaluated for the first time using the LDF method. Flowmetry at the screening stage in patients with DFS in both groups revealed signs of ischemia in the microvasculature of the lower extremities, as evidenced by reduced perfusion values (PM), as well as low pulse (Ac) and respiratory wave (Ap) values. It should be noted that changes in these indicators were recorded in patients with the initial stage of DFS even before clinical manifestations, which allows us to consider this instrumental method as a diagnostic prognostic criterion for the early stages of DFS.

When analyzing the perfusion value (PM) in patients with DFS in both groups, we found an increase in this indicator in dynamics against the background of DOAC therapy, which indirectly indicates an increase in blood flow in the lower extremities due to an increase in the number of erythrocytes entering the arterioles, however, rivaroxaban was more effective, than dabigatran (53.51% increase versus 48.46%). When comparing patients with different risk of bleeding within group I, a higher increase in PM was obtained in patients with a high risk of bleeding (subgroup A) - 67.15% than in patients with a low risk of bleeding (subgroup B) - 42.11%.

We explain the greater increase in perfusion in group I by differences in the mechanism of action of the drugs. PM reflects the state of vascular tone, which decreased against the background of taking anticoagulants (as evidenced by an increase in perfusion numbers), and also reflects the value of the average blood flow in the recording time intervals. An increase in this indicator indirectly indicates an increase in blood flow in the vessels. Rivaroxaban prevents "thrombin explosion", platelet aggregation, therefore, improves blood flow. We explain the effect of anticoagulants on vascular tone by the blocking effect of thrombin, which, under the conditions of the pathological process in DFS, leads to damage to the vascular wall and vasoconstriction.

The advantage within group I in patients with a high risk of bleeding (subgroup A) is due to the more pronounced pharmacodynamic effects of rivaroxaban, which directly correlate with the pharmacokinetic features in these patients. When analyzing the pulse wave (Ac) in patients with DFS in both groups, we found an increase in this indicator in dynamics against the background of DOAC therapy, which indicates an increase in the inflow of arterial blood into the microcirculatory bed, however, rivaroxaban was more effective than dabigatran (124% increase vs. 73.08%). When comparing patients with different risk of bleeding within group I, almost comparable results were obtained - 119.5% in the low risk group (subgroup B) and 119.4% in the high risk group (subgroup A) on rivaroxaban.

Due to the fact that at present there is such heterogeneity in the use of various CGs and such a variety of documents that a practicing physician can use, we have analyzed each valid document from the list presented.

1. Brief protocols for the management of patients with the most common conditions in general medical practice [33] were developed by the association of general practitioners and are intended primarily for use by general practitioners (therapists) in the management of patients with therapeutic pathology, as well as surgeons in the management of patients with surgical pathology. One section of this document is devoted to the management of patients with DFS.

This section provides a brief description of the typical patient with DFS and outlines the general principles of patient management (history to be noted; general examination; general principles of treatment). However, these protocols do not contain information about the features of the clinical picture of DFS, including the appearance of a foot ulcer, and about typical infectious agents for DFS. This document does not contain specific information on LP that can be used in the treatment of these patients. Also, in our opinion, this document lacks information about the levels and classes of recommendations, which can make it difficult to use these protocols in the practice of a doctor who daily faces the problem of finding evidence-based information.

2. Algorithms for specialized medical care for patients with diabetes mellitus [1] - the main document in the Russian Federation, which guides endocrinologists in their professional activities in the management of patients with diabetes and its complications. These "Algorithms" are based on international and domestic experience in providing care to patients with diabetes. These CGs are intended for practitioners involved in the treatment of patients with DM. One of the sections is devoted to the management of patients with DFS. These recommendations present risk groups for DFS, reflect two classifications of DFS that should be followed in clinical practice to formulate a diagnosis and determine further tactics for managing patients. This is the classification of wound defects according to Wagner and the classification according to the clinical forms of SDS. The CG discusses the diagnostic criteria and describes the treatment strategy for each clinical form of DFS. It is worth noting that the updated edition of these recommendations includes a full section on the prevention of DFS, one of the important components in the management of these patients. The role of preventive measures in the development of SDS can hardly be overestimated; they are vital for patients with DM.

According to the WHO and IDF, up to 80% of diabetes-related amputations are preventable. However, there is also no information in the CR data on typical pathogens of the infectious process for DFS and on the tactics of choosing a specific ABLS.

3.Since 2000 In Russia, the “International Agreement on the Diabetic Foot” developed by an international team of doctors and specialists in the field of diabetic foot treatment is regularly broadcast [16,53]. After the approval of this document, we can assume that assistance to patients with SDS in our country began to meet the requirements of world standards. The last version of the document was updated in 2015. The recommendations of this Guide are set out in accordance with the GRADE (The Grading of Recommendations Assessment, Development and Evaluation) system [102], which is used to classify evidence in compiling the CG. These recommendations include the following sections: prevention of foot ulcers in patients at risk; information about special shoes for patients with diabetes, the principles of unloading the foot for the prevention and healing of diabetic ulcers; diagnosis, management algorithm for patients with foot ulcers associated with peripheral arterial disease; diagnosis and treatment of foot infections in diabetic patients; therapy that promotes the healing of foot ulcers in diabetes. It should be noted that these recommendations define the general tactics of treating patients, but the recommendations to the practitioner on the choice of specific groups of drugs are not sufficiently disclosed.

4. Treatment of patients with DFS against the background of an infectious process implies the active use of ABLS, however, all the previously listed CRs do not contain information on a differential approach to the choice of ABLS in patients with DFS. The general principles of

antibiotic therapy tactics in patients with DFS against the background of an infectious issue are presented in the following guidelines for physicians: modern antimicrobial therapy and practical guidelines for anti-infective chemotherapy These guidelines present modern approaches to the use of various classes of antimicrobials, discuss their clinical and pharmacological characteristics and features use for various infections, incl. in diabetic foot ulcers, which, unfortunately, are summarized.

5. In 2009 Russian National Guidelines "Surgical Infections of the Skin and Soft Tissues" were published [75]. These recommendations are constantly updated and now doctors use the 2015 edition in their work. One section of this guideline is devoted to the management of patients with severe inflammatory forms of DFS. The recommendations for physicians indicate the features of the course of purulent-necrotic processes in patients with DFS, the currently relevant microflora variants that occur in DFS; an algorithm for the complex rational treatment of various forms of SDS is given. It should be noted that this document differs from the above recommendations by a detailed description of the tactics of antibiotic therapy in patients with various clinical forms of DFS: regimens of empirical antibiotic therapy are described; recommendations for local drug treatment are given.

CONCLUSIONS

1. It has been established that medical prescriptions for patients with diabetes mellitus to correct carbohydrate metabolism generally comply with the standards of medical care, however, there is a pronounced pharmacotherapeutic inertia in treatment regimens. In the insulin group, drugs that mimic stimulated insulin secretion are present only in 49.5% of cases (short-acting insulins - 95% and analogue insulins - 5%); drugs that mimic basal insulin secretion - 49.3% of cases (intermediate-acting insulins - 88% and long-acting insulins - 12%); mixed insulins - 1.2%. In the PSSP group: sulfonylurea derivatives are prescribed in 72% of cases, biguanides - 22%, DPP-4 inhibitors - 2%, combined PSSPs - 4%. In the structure of isolated pathogens, according to bacteriological seeding of the wound discharge of the feet of patients with SDS-residents of the Andijan region, St.aureus predominates - 32.5% of cases, Enterococcus - 15.5%, St. Epidrmidis - 12%.

2. Medical prescriptions regarding the prescription of antibacterial drugs (ABLS) to patients with DFS do not comply with the KR. When detected in patients with SDS St. aureus in the structure of prescriptions, the leading prescriptions are ceftriaxone (33%), metronidazole (21%), ciprofloxacin (10%). When Enterococcus is detected, the structure of prescriptions is preserved and ceftriaxone (34%), metronidazole (17%), ciprofloxacin (14.5%) predominate. When identifying St. epidermidis, ceftriaxone (34%), metronidazole (24%), ciprofloxacin (12%) predominate in the structure of prescriptions.

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