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Antibiotics for skin and soft tissues infections in type 2 diabetes mellitus

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BACKGROUND. Type 2 diabetes mellitus is a chronic pathology characterized by high prevalence, high morbidity and mortality. According to the data of the Ministry of Health of Volgograd region the number of patients with type 2 diabetes was 68,227 people on 01.01.2014. Medical and social significance of type 2 diabetes mellitus is determined by its complications. Skin and soft tissue infections (SSTIs) in patients with type 2 diabetes are among the main factors of hospitalization and mortality [1]. Diabetic foot syndrome is found in 30–80% of patients [2].

OBJECTIVE: Pharmacoepidemiological analysis of the structure of skin and soft tissues infections in patients with type 2 diabetes, taking into account data on pathogens, parameters of their sensitivity, analysis of prescribed medicines and evaluation of their compliance with current clinical guidelines and standards.

METHODS: A retrospective descriptive cross-sectional pharmacoepidemiological study using randomization by random numbers. The sample consisted of 253 medical records of patients with SSTIs and type 2 diabetes. These were patients admitted to the surgical departments of hospitals of the city of Volgograd for the period from January 2011 to December 2014. Gender structure was the following: 51.4% - women, 48.6% - men. The average age of patients was 64.5 years. The average number of hospital days was 19,5 ± 14,9.

RESULTS: Diabetic foot syndrome was found in 81.3% of cases (*n*-204). The most common forms of diabetic foot syndrome were the following: gangrene of the lower extremities - 28% (*n*-58), ulcers of the skin - 26% (*n*-53), mixed forms of SSTIs - 18% (*n*-37). Surgical manipulations were performed in 39.1% of cases (*n*-99), including amputations in 65.7% (*n*-65) of cases. The blood glucose level on admission was studied in 97.6% (*n*-247), at discharge – in 89% (*n*-225). Urine analysis on admission was performed in 66.4% of patients (*n*-168), at discharge – in 51% of patients (*n*-129). The glycemic profile was studied in 81.4% of patients (n-206). Bacteriological sowing was carried out in 19% (*n*-48) of cases: blood - 4,2% (*n*-2), urine - 6,2% (*n*-3) (the growth of microorganisms was not detected in 100%); bacteriological sowing from the wound - in 89.6% (*n*-43), the growth of microorganisms were identified in 95.7% (*n*-44). Most common pathogens were: *St. aureus* - 28%, *E. coli* - 19%, *St. epidermidis* - 14%. Antibacterial medications were prescribed in 86% (*n*-216). These were: cephalosporin of the III generation - ceftriaxone (49.4%), other synthetic antibacterials - metronidazole (21%), fluoroquinolone - ciprofloxacin (7.5%). The highest levels of bacterial resistance of SSTIs pathogens were found to beta-lactam antibiotics (amoxicillin/clavulanic acid, ceftriaxone, and ampicillin), rifampin, and gentamicin. The highest levels of sensitivity of SSTIs pathogens were observed to levofloxacin, to vancomycin and meropenem.

CONCLUSIONS: There is a vicious circle in patients with type 2 diabetes: the infectious process leads to decompensation of carbohydrate metabolism parameters; in turn, hyperglycemia leads to increase of severity of SSTIs. Normalization of glucose levels promotes prompt relief of symptoms of infection and bacterial eradication, rational treatment of infection contributes to rapid correction of glucose level. Therefore, an essential element of comprehensive treatment of this group of patients should be rational antibiotic therapy; the choice of medication should be based on the severity of the disease and potential etiologic agents [3]. The analysis of the degree of conformity of the pharmacotherapy to existing standards is a way to optimize the treatment of the given group of patients [4].

Keywords: Pharmacoepidemiology, antibiotic, infection, skin and soft tissues, diabetes mellitus, type 2 diabetes

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