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**ASSOCIATIONS BETWEEN THE NEUROPATHY AND DIABETIC FOOT SYNDROME
DEVELOPMENT IN PATIENTS WITH TYPE 2 DIABETES.**

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Diabetic foot syndrome (DFS) is a long lasting diabetes complication developing upon the presence of neuropathy and peripheral arterial disease as basic etiological factors. The sensorial nerve fibers damage results with the impaired sensation of pain, temperature and vibration leading to frequent, firstly unnoticed foot injuries with a callus and wound as a consequence. Motor neuropathy results in loss of foot muscles function, that leads to deformation in foot shape and increases the risk of injury. The characteristic triad: neuropathy, deformation and injury is present in 60% of patients . The recurrence ratio is very high, affecting 25-80% of patients with type 2 diabetes per year.

The aim of the present study was to examine the correlation between neuropathy and clinical features of DFS in subjects with type 2 diabetes.

In total 47 patients in age 43-82 years were investigated. The patients were subdivided in 2 groups - first group with type 2 diabetes without DFS (19 patients) and second - with DFS (28 patients). Clinical and paraclinical investigations were done. Infrared thermometry of low limbs and sublingual biomicroscopy were done with digital devices. In study we used simple clinical screening methodic for diabetic neuropathy which included four tests: tactile and pain sensation, vibration perception, presence and level of Achilles reflex. The score for each test was defined on three grades: 0 (absent), 1 (decreased) and 2 (normal). The total score of all tests was between 0 and 8. Four severity strata were defined, including no neuropathy (7-8), mild neuropathy (5-6), moderate neuropathy (3-4) and severe neuropathy (0-2) according to the total score. Patients were treated with either oral hypoglycemic agents or insulin.

Approximately 75% of all study subjects had sensory neuropathy. The majority of such patients noted mild to moderate discomfort associated with the neuropathy. Manifestations of neuropathy included the most common presentation of diabetic neuropathy such symptoms as numbness, prickling, aching, burning and decreased of thermal sensation. Subjectively patients initially experience sensory decrease in the toes and feet. There could be weakness of the toe flexor and extensor muscles but significant weakness was not a common finding in early diabetic neuropathy

It was typical a slow progressive sensory predominant neuropathy. Diabetic subjects with neuropathy were older and had longer duration of diabetes. The degree of neuropathy in our study correlated with age ($r=0.44$, $p<0.05$), duration of disease ($r=0.45$, $p<0.05$), level of diastolic blood pressure ($r=-0.28$, $p<0.05$) and local skin temperature ($r=-0.35$, $p<0.05$).

The comparison between groups show presence of neuropathies in 47.1% patients of the first group and 88.9% in patients with DFS ($p<0.05$). The total score of neuropathy severity in the first group was 5.5 ± 0.57 (mild neuropathy) in comparison with 3.8 ± 0.45 (moderate) in the second ($p<0.05$). In patients with DFS were higher level of blood glucose (11.3 ± 0.82 and 9.9 ± 0.78) ($p<0.05$) and systolic blood pressure – 138.6 ± 3.02 mm Hg in comparison with 128.2 ± 2.1 mm Hg ($p<0.05$). In patients with neuropathy in sublingual microcirculation pictures presence of capillaries with irregular morphology and avascular areas were more frequently seen.

The diabetic sensory neuropathy is one of causative factors in critical law limbs ischemia and development of DFS. The pathogenesis of DFS in general is complex and includes impaired glycemic control, microcirculation deterioration and sensory neuropathy. The simple clinical screening methodic which included four tests: tactile and pain sensation, vibration perception, presence and level of Achilles reflex is effective for diagnostic diabetic sensory neuropathy.