**Introduction.** The diagnosing of diabetic microvascular complications in the early stages helps to prevent their further development and fully preserve the quality of life. Capillaroscopy of the nail fold is used for diagnosis of these complications. It has sufficient informativity, universality and noninvasive procedure technique. However, it is important and interesting to study the relationship of microcirculatory disorders of the upper extremities with the development of chronic diabetic complications (nephropathy, retinopathy, angiopathy of the lower extremities).

**The objective** of this work was to study the relationship of capillaroscopy data of the upper extremities in patients with type 1 diabetes and the severity of nephropathy, retinopathy, clinical manifestations of the lower extremity angiopathy.

**Methods.** We examined 53 patients with type I diabetes. All patients were divided into 3 groups according to the presence and severity of chronic complications: I group - 20 patients with uncomplicated diabetes mellitus; II group - 19 patients with nonproliferative diabetic retinopathy, diabetic nephropathy at microalbuminuria stage, I-II stage of lower extremity angiopathy; III group - 14 patients who had preproliferative stage retinopathy, diabetic nephropathy at proteinuria stage, III - IV stage of lower extremity angiopathy.

We performed the computer capillaroscopy of the upper extremities in all patients. 20 healthy persons comparable by age and sex were taken as a control group.

**Results.** Capillaroscopic study of diabetic patients showed the connection between the stages of chronic complications and pathology of the nail fold capillaries. The greatest capillaroscopy changes were observed in III group patients.

Microvascular lesion of the upper extremities occurred parallel to progression of the main disease in patients with type I diabetes mellitus and manifested by shortening the capillary length, reducing the capillary net density, increasing the diameter of transitive departments of capillaries. In early stages of diabetic microangiopathy the capillary net density was significantly higher than in the control group. Further, there was a decrease of capillary net density in group II patients and progressive reduction in group III patients.

There was also a statistically significant increase of transitive department diameter in group III patients as compared with the control group. The relation of transitive department diameter to venous one grew with the increase of number and severity of chronic complications in group III as well.

The decrease of capillary net density had a direct correlation relationship with glomerular
filtration rate ($\rho = 0.601$) and inverse correlation relationship with the level of protein in the urine ($\rho = -0.607$).

The results of eye fundus study of diabetes patients showed that in group I patients pathological changes in eye fundus were absent. Patients in group II had arterial spasm and retinal papilledema. The characteristic changes (arterial department spasm, venous department dilatation with presence of perivascular edema) were observed by capillaroscopy in the same group of patients. Significant swing of vein diameters and venous crimping, the presence of hard and soft cotton-like exudates, retinal hemorrhages were added to the above changes in group III. This indicated synchronous lesions of capillaries located on the upper extremities and of retinal vessels.

Further studies showed that the reduction of capillary net density had negative correlations with clinical manifestations of lower extremity angiopathy ($\rho = -0.589$). In I group, which had no clinical manifestations of lower extremity angiopathy, the capillary net density corresponded to normal values or was slightly increased. Patients in II group, who complained on paresthesia, convulsions, leg coldness, etc., had a moderate decrease of capillary net density (8.8 cap./mm²). Severe reduction of capillary net (4.9 cap./mm²) was observed in patients with diabetes mellitus from III group. There were significant clinical manifestations of lower extremity angiopathy (weakening pulsations of foot arteries, impaired tissue nutrition, reduction of various kinds of sensitivity, etc.).

**Summary.** Microvascular lesion of the upper extremities occurred parallel to progression of the main disease in patients with type 1 diabetes mellitus and manifested by shortening the capillary length, reducing the capillary net density, increasing the diameter of transitive departments of capillaries. The density of capillary net clearly characterized the condition of blood flow and its decrease indicates severe disorders of peripheral microcirculation. The decrease of capillary net density had a direct correlation relationship with glomerular filtration rate ($\rho = 0.601$) and inverse correlation relationship with the presence of protein in urine ($\rho = -0.644$). In patients with type 1 diabetes mellitus the change of the capillary structure of the upper extremities progressed synchronously to stages of retinopathy and clinical manifestations of angiopathy of the lower extremities.