**Background.** Nonalcoholic fatty liver disease (NAFLD) is an independent risk factor for advanced liver disease, type 2 diabetes, and cardiovascular diseases. The prevalence of NAFLD in the general population is around 30%, but it is up to three times higher in those with T2 DM. Among people with obesity and T2 DM, the NAFLD epidemic also is worsening. Therefore, it is important to identify early metabolic alterations and to prevent these diseases and their progression.

**Aim of the study.** Aiming to study the peculiarities of early cardiovascular complications in type 2 diabetes mellitus patients with non-alcoholic fatty liver disease, the incidence of cardiovascular diseases was studied and the comparison of clinical metabolic parameters with electrocardiography and Doppler findings in carotid arteries have been carried out.

**Materials and Methods.** The present investigation included 70 patients with type 2 diabetes mellitus and among them 37 individuals with no evidence of non-alcoholic fatty liver disease, 24 with type 2 diabetes mellitus and non-alcoholic fatty liver disease with normal diastolic function, and 19 patients with either type 2 diabetes mellitus and non-alcoholic fatty liver disease, and disordered diastolic function.

The role of visceral fatty tissue inflammation in the genesis of cardiovascular complications development in all patients with type 2 diabetes mellitus as well as the impact of mesenchymal inflammation in liver on risk of the development of these complications in type 2 diabetes mellitus patients and non-alcoholic fatty liver disease according to the values of transaminases level have been established.

**Results.** More than 3-fold increase of incidence of left ventricular myocardial hypertrophy in type 2 diabetes mellitus and non-alcoholic fatty liver disease patients has been revealed compared to the patients with no evidence of non-alcoholic fatty liver disease. Meanwhile, the rise of incidence of left ventricular myocardial hypertrophy was directly proportional to the increase of the body mass (45-88 %) in the patients with combined pathology and disordered diastolic function. The patients with type 2 diabetes mellitus and non-alcoholic fatty liver disease demonstrated remodeling of left ventricular myocardium according to the hypertrophy type and disordered diastolic function that proves the more marked atherosclerotic process in this cohort of patients compared to the patients with no evidence of non-alcoholic fatty liver disease.

An increase of tumor necrosis factor-alpha level was determined in type 2 diabetes mellitus patients with non-alcoholic fatty liver disease compared to those with no evidence of non-alcoholic fatty liver disease.
Marked atherosclerotic changes in myocardium and carotid arteries were demonstrated with the usage of highly sensitive instrumental methods, namely left ventricular myocardial hypertrophy was registered in 60 % type 2 diabetes mellitus patients; in 83 % with type 2 diabetes mellitus and non-alcoholic fatty liver disease patients; meanwhile 44 % among them showed disordered diastolic function of myocardium and thickening of complex intima-media with narrowing, and even presence of atherosclerotic plaques in region of orifice and bifurcation of carotid arteries.

**Conclusions.** The obtained results give evidence concerning the requirement to add to the list of obligatory diagnostic examinations in type 2 diabetes mellitus patients during the first two years since the date of diagnosing it echocardiography of the heart and Doppler of carotid arteries, as well as determination of the tumor necrosis factor-alpha level which is of an important role in progressing of cardiovascular complications in the patients with combined pathology.