1. Georgian Med News. 2022 Feb; (323):116-122. MICROSCOPIC CHANGES OF THE KIDNEY IN EXPERIMENTAL HYPERHOMOCYSTEINEMIA ON THE BACKGROUND OF HYPER- AND HYPOTHYROIDISM. Nechiporuk V(1), Nebesna Z(2), Didyk N(1), Mazur O(1), Korda M(2). Author information: (1)1National Pirogov Memorial Medical University, Vinnytsia; Ukraine. (2)2I. Gorbachevsky Ternopil National Medical University of the Ministry of Health of Ukraine. Hyper- and hypothyroidism are two typical clinical conditions that can cause a variety of metabolic changes, including impaired sulfur-containing amino acids metabolism, increased risk of cardiovascular disease, renal dysfunction, and renal failure. Hypothyroidism has been shown to be associated with increased serum creatinine, decreased glomerular filtration rate, and an increased risk of chronic kidney disease. At the same time, the pathophysiological mechanisms of renal dysfunction induced by excessive iodothyronine secretion are poorly understood. The aim of the study was to establish the reorganization of the kidney structural components under the conditions of experimental hyperhomocysteinemia (HHCy), hyper- and hypothyroidism and their combined effects. Thiolactone HHCy was simulated by administering to animals exogenous homocysteine (HC) in the form of thiolactone at a dose of 100 mg/kg body weight once a day for 28 days. Hyperthyroidism was simulated by daily administration of L-thyroxine at a dose of 200 µg/kg on 21st day, hypothyroidism - daily administration of mercazolyl at a dose of 10 mg/kg on 21st day. Separate groups of animals were administered L-thyroxine and mercazolyl in parallel with HC. A significant degree of dystrophic changes in the structural components of the kidneys under conditions of simulated hyperthyroidism and HHCy was established. Signs of vascular insufficiency in the kidneys were detected. Deformation of renal corpuscles, single focal thickenings and destruction of the outer layer of the renal corpuscle capsule were observed, there was a narrowing of the urinary space in the capsule. Microscopic study of the kidneys of animals under the combined effects of hypothyroidism and HHCy revealed the most

significant destructive-degenerative changes in the filtration and reabsorption apparatus of the organ on the background of significant vascular disorders. An increase in number of glomeruli and a decrease of the urinary space of the Shumlyansky-Bowman's capsule were observed in the renal corpuscles. Podocytes underwent significant destructive changes. Damage to the epithelium in the system of tubules was manifested by cell hypertrophy. Under the conditions of simulated HHCy, hyper- and hypothyroidism, and especially with their combined effect, there are significant disorders of the vascular bed with remodeling of the vascular wall. On the background of hemodynamic disorders, there are significant destructive and dystrophic changes in the epitheliocytes of the renal corpuscles of the Shumlyansky-Bowman's capsule, the proximal and distal tubules of the nephron, the filtration and reabsorption apparatus of the nephrons of the organ. PMID: 35271482 [Indexed for MEDLINE]