228. ANATOMICAL FEATURES OF COMPLETE MYOCARDIAL BRIDGES AND ITS ROLE IN SUDDEN DEATH OCCURRENCE

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Introduction. Complete myocardial bridges (CMB) are myocardial strips covering a portion of the underepicardial coronary artery on one or more of its parts. Thick myocardial bridges are considered to have a specific role in heart emergencies occurrence: the myocardial infarction and sudden death in young people with clean coronary vessels after physical exercises.
Aim of the study. To distinguish different anatomical features of CMB and their possible involvement in the ischemic heart disease.

Material and methods. 300 formalized human hearts were studied by fine anatomical dissection method at macroscopic, macro-microscopic (stained with Schiff reagent) and microscopic (stained with hematoxylin-eosin and pycrofuxin by van Gieson method) levels.

Results. CMB were found in 62.5% cases. Most frequently CMB cover the anterior interventricular branch, followed by the diagonal branches of both ventricles, first marginal branch and posterior interventricular branch. The width of about 1/3 of complete myocardial bridges (34%) was about 10-19 mm, in 25% of cases its width was 20-29 mm, in 18% of dissected hearts the width of CMB was 1-9 mm and only in 4% of cases wide bridges, up to 70 mm, were found on anterior interventricular branch. Macro-microscopic and microscopic study revealed deformation and narrowing of the vessel under the bridge what could have an important role in heart ischemic sufferings and sudden death. Microscopic investigation of the under-bridge segment indicates that the direction of the myocardial fibers varies. While in thin myocardial bridges the direction of the myocardial fibers is similar to the first myocardial layer, in thick bridges, especially those located above the anterior interventricular branch, myocardial fibers surround the vessel and have the helicoidally orientation, forming a myocardial tunnel around the vessel.

Conclusions. The degree of systolic compression of the coronary vessel by myocardial bridge depends on many factors: the topography of the bridge, its thickness, width and muscle-conjunctive composition, muscle's fibers orientation, the diameter of the involved vessel and its deepness, the association of some myocardial bridges on the same vessel, presence of atherosclerosis. Systolic compression of coronary vessels by myocardial bridges may cause sudden death in young, healthy persons.

Key words: complete myocardial bridges, myocardial infarction, sudden death