



SOME ANGIOGRAPHICAL ASPECTS OF MYOCARDIAL BRIDGES

Mihail TASNIC^{1,2}, Ilia CATERENIUC²

Medpark International Hospital, Chisinau, Republic of Moldova

Nicolae Testemitanu State University of Medicine and Pharmacy, Republic of Moldova

Corresponding author: Mihail Tasnic, e-mail: mihaitasnic@gmail.com

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Introduction. Heart pathology takes the leading place among the diseases, with the highest rate of morbidity and mortality worldwide. The certain anomalies and anatomical variants of the heart arteries in a certain circumstance, can cause acute and chronic coronary events, myocardial ischemia during physical effort or after it. Myocardial bridges (MB) are variants of the intramyocardial position of the coronary arteries.

The aim of the current study is to investigate angiographic aspects of myocardial bridges.

Material and methods. The retrospective study was focused on the analysis of 6168 coronary angiography reports.

Results. The complete MB was defined when a portion of the subepicardial coronary artery, on one or more portions of its path, enters the myocardium with its subsequent re-appearance, under the epicardium. The analysis of 6168 reports of diagnostic coronary angiography performed on people with suspected severe coronary atherosclerotic pathology, MB were detected in 331 of people, constituting 5.3% of the total number of cases. The angiographic identification of MB during angiographies is possible only by the direct pontine effect on the underlying vessel – systolic compression, in other words - the squeezing effect, “milking” of the blood column under the bridge. In the case of MB that cause the reduction of the vascular lumen up to 50%, the intramural portion of the vessel, at the time of maximum systole, was homogeneously stenotic, having uniform vascular contours. In the case of subtotal systolic compression, the subpontine vascular segment had the appearance of a “sawfish”, with the alternation of narrow vascular portions and wider ones. The non-uniformity of the systolic stenosis of the artery can be caused by the arrangement of the pontine MB under the different angles and/or the variation of the areas of anti-systolic resistance of the vascular wall and the tissue structures in the subpontine perivascular space. In the longitudinal section plane trough the muscle-artery complex, the angiographic view in maximal systole takes shape of a “trough”. Often, during the routine coronary examination, the middle and distal portion of the left anterior descending artery (LAD) do not show obvious systolic stenoses, but have a “trough” like deformity, which would correspond to the vascular deformation caused by the involvement of the artery under the MB, but which, in this case, is systolic inactive. Out of the 331 cases of patients detected with MB, in 97% of cases they were located along anterior interventricular branch, and in 3.6% of cases – on other vessels: right coronary artery, circumflex artery, first diagonal branch, marginal branches, posterolateral branch (fig. 4). In 65% of cases, the MB were located in the middle third of the LAD branch, and in 27% – the MB were covering the distal third of the artery. The degree of subpontine arterial systolic stenosis varies within 10-95%. From the total number of described MB, in 50% of cases they were causing insignificant systolic compression of the artery, reducing the lumen of the vessel up to 50% of the initial value (visually appreciated) and only in 16% of cases the degree of compression exceeded 75%. The comparative study did not determine any correlation between the degree of subpontine vascular compression and the degree of left ventricular myocardial hypertrophy in the main study group.

Conclusions. The coronary branch with the highest predisposition to myocardial bridges is the anterior interventricular branch. The stenosis’ degree caused by myocardial bridges varies depending on its compression force between 10-95%. The most compressive myocardial bridges were detected on the anterior interventricular branch trajectory. No associations were found with the degree of the left ventricular myocardium hypertrophy.