Coronary and periferic thrombosis in relation with structure and function of cardiac cavities

Summary

My scientific activity began in the early years following the completion of the General Medicine Faculty courses. The focus and involvement in scientific activity from the outset were centered on Clinical Cardiology topics. This was made possible through the presence, initially as a medical intern and later as a secondary-resident physician, in the Internal Medicine Department – Coronary Intensive Care Unit, led at that time by a prominent personality in Romanian cardiology and medicine, Professor Dr. Pompiliu Popescu. The clinical pathology encountered in the Coronary Intensive Care Unit set the premise for the scientific themes applied in the subsequent years to the present.

The main research topics derived from clinical activity can be summarized as follows:

1. Coronary thrombosis and acute coronary syndromes (STEMI - Acute Myocardial Infarction with ST-segment elevation; NSTEMI - Acute Myocardial Infarction without ST-segment elevation - Unstable Angina and chronic coronary ischemic syndromes).
2. Structure and function of the valvular apparatus.
3. Venous thrombosis and anticoagulant treatment.
4. Arterial hypertension and hypertensive heart disease.
5. Functions of cardiac chambers and heart failure.

The abundant pathology encountered in the Coronary Intensive Care Unit allowed the selection of the most frequently encountered topics, particularly thrombotic cardiovascular events underlying emergency cardiac pathology in the context of normal or pre-existing valvular and myocardial structures.

Modern classifications of acute myocardial infarction types are based on obtaining an early diagnosis that allows therapeutic guidance to the catheterization laboratory within the optimal therapeutic window. The hospital's configuration does not allow for revascularization procedures, so patients must be directed to a facility with this capability. Therefore, pharmacological therapy efforts must be sustained and comprehensive.

Regarding the prevention of post-myocardial infarction ventricular remodeling, a study was initiated, involving approximately 160 patients divided into two groups with and without pre-existing hypertrophy. The study concluded that left ventricular hypertrophy preceding acute anterior myocardial infarction has a protective effect against early necrotic area remodeling and myocardial expansion.

In the context of ST-segment elevation myocardial infarctions (STEMI), monitoring and follow-up of mechanically revascularized patients were considered. A real-world study in collaboration with the Emergency Clinical Hospital "Carol Davila" aimed to identify factors associated with intrastent restenosis, revealing multiple risk factors, including extreme stent dimensions and the presence of diabetes.

For STEMI patients presenting at the hospital, a clinical and/or paraclinical factor analysis was initiated to indicate a different evolution for the optimal reperfusion interval. The study focused on the trend of ST-segment elevation magnitude and R-wave regression/amputation. The analysis suggested that R-wave changes should be included in the electrical description of acute myocardial infarction evolution in relation to both ST-segment elevation increase and decrease/stabilization.

Similarly, for non-ST-segment elevation myocardial infarctions (NSTEMI), an analysis was conducted on the correlation between electrocardiographic changes, symptomatology type, and onset duration. The study found that over half of the patients present to the hospital within two hours of the onset of pain. Regarding age, pain duration, and the number of involved leads, slightly higher values were observed in males without statistical differences.

An analysis of NSTEMI patients aimed to detect pre-existing ventricular cavity remodeling in correlation with the GRACE score for mortality risk prediction. The study concluded that the myocardial mass index is predominantly increased in the studied group, regardless of gender. Additionally, the GRACE score showed the highest values in patients with concentric hypertrophy.

Continuing in the evaluation of peripheral thrombotic manifestations and ventricular cavity function, the study analyzed the function and structure of valvular apparatuses, particularly degenerative aortic stenosis. The findings emphasized the increased importance of right ventricular function in evaluating aortic stenosis and the higher frequency of the low-flow, low-gradient form of severe degenerative aortic stenosis with preserved ejection fraction.

Vascular thrombotic manifestations were evaluated in patients with permanent atrial fibrillation, and the study monitored the prevalence of incidentally detected acute pulmonary embolism on CT scans with another indication. The presence of hypertension as a risk factor for thrombosis in possible relation to the left ventricular structure remained a research topic. Heart failure with irreversibly impaired function of one or both ventricles continued to be among the areas of interest.

Professional, scientific, and educational achievements were presented from the perspective of future projects. As a general conclusion of the current career moment, it is stated that the interest in scientific study from a clinical perspective is defining, and the results obtained allow for the simultaneous development and excellence in professional and educational performance.

Associate Professor Dr. Camelia Nicolae, Bucharest, January 2024