

UNIVERSITY OF MEDICINE AND PHARMACY OF TÎRGU MUREȘ

SCHOOL OF DOCTORAL STUDIES

PhD thesis abstract

The study of epicardial adipose tissue and of the main antithrombotic therapeutic options in atrial fibrillation

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Atrial fibrillation is the most common cardiac arrhythmia encountered in clinical practice, affecting mainly elderly patients. It has a complex pathophysiology, latest medical data suggesting that epicardial fat may have a great involvement. The most important complication in atrial fibrillation patients is the risk of thromboembolic events or stroke. To prevent the occurrence of these complications, oral anticoagulant therapy is used.

Aim of thesis:

To quantify epicardial adipose tissue and its association with the presence of atrial fibrillation in a group of autopsied subjects;

To evaluate the efficiency of novel oral anticoagulant therapy compared with classic vitamin K antagonists in preventing thromboembolic events in a group of patients treated for atrial fibrillation in the 3rd Medical Clinic of Tirgu Mures.

The general part contains the current state of knowledge, and it comprises two chapters: general data about atrial fibrillation – including latest medical information about epicardial adipose tissue and the second chapter about antithrombotic therapy options – including latest news about novel anticoagulants like dabigatran, rivaroxaban and apixaban.

The personal contribution part consists of two observational studies, one conducted at the Institute of Legal Medicine of Tirgu Mures and the other at the 3rd Medical Clinic of Tirgu Mures.

The first study, entitled „**Quantification of epicardial adipose tissue and its link to atrial fibrillation**” included 79 subjects that were autopsied at the Institute of Legal

Medicine of Tirgu Mures. Data collected included general demographic data, and specific measurements like the thickness of abdominal and thoracic adipose tissue, the weight of the heart, the coronary atherosclerotic lesions degree, the ventricular wall thickness, the epicardial adipose tissue thickness in five pre-established points and ostial diameters of the four pulmonary veins. Data regarding the patient's medical history, especially the presence of atrial fibrillation, was collected from the relatives or medical charts.

During the autopsy, each heart was divided into four quadrants, in order to avoid the image and measurement overlap. Each quadrant was photographed, in order to measure the total cardiac and epicardial adipose tissue surface area. Also, the ostia of the four pulmonary veins were measured. The thickness of the adipose epicardial tissue was evaluated in five pre-established points near or on the path of the main coronary vessels. Having measured the surface of the epicardial adipose tissue and its thickness, the volume of adipose tissue was calculated for each heart.

The results revealed a higher volume of epicardial adipose tissue in male subjects, a volume of over 125 cm³ of epicardial fat associated with increased body weight, with increased thickness of abdominal adipose tissue and with the presence of atrial fibrillation. The atrial fibrillation cases also associated with increased ostial diameters of all four pulmonary veins.

Regarding the thickness of the epicardial adipose tissue, the highest values were encountered at the two incisions made on the anterior and posterior side of the right ventricle. Having the thickness of the epicardial fat measured and the degree of coronary atherosclerosis evaluated, the results revealed greater thickness in early stages of coronary atherosclerosis.

The second study, was a retrospective study entitled „**Comparative study regarding the efficiency of dabigatran and acenocumarol in atrial fibrillation patients**”. It included 117 atrial fibrillation patients treated at the 3rd Medical Clinic of Tirgu Mures. The CHA₂DS₂-VASc score of all patients was calculated on inclusion. Collected data included demographic data, atrial fibrillation type, associated diseases, oral anticoagulant treatment class. The patients data were reevaluated after a mean period of treatment of 23 months, when 14 cases of stroke were encountered. Of the 14 patients, 12 were treated with vitamin K antagonists (acenocumarol) and two of them received novel anticoagulant therapy (dabigatran). Also patients treated with dabigatran were younger, more frequently they had a rural area background and had arterial hypertension and heart failure associated. Other statistically significant results were the association between male sex and low CHA₂DS₂-VASc scores of 1-2.

Key words: atrial fibrillation, epicardial adipose tissue, novel oral anticoagulant, dabigatran, vitamin K antagonists.