INSIGHT INTO PATHOGENESIS OF SEVERE MITRAL VALVE REGURGITATION IN A PATIENT WITH OBSTRUCTIVE HYPERTROPHIC CARDIOMYOPATHY

Loredana N. Ionica[1], Raluca Sosdean[2], Alexandru S. Pescariu[2], Adina Ionac[2], Cristian Mornos[2], Adrian Sturza[3], Danina M. Muntean[3], Constantin T. Luca[2], Horea B. Feier[4]

[1]Doctoral School Medicine–Pharmacy, Centre for Translational Research and Systems Medicine, "Victor Babeș" University of Medicine and Pharmacy Timișoara, Romania
[2]Department VI – Cardiology, "Victor Babeș" University of Medicine and Pharmacy Timișoara, Romania, Research Centre of the Institute of Cardiovascular Diseases Timișoara, Romania
[3]Department III – Pathophysiology, Centre for Translational Research and Systems Medicine, "Victor Babeș" University of Medicine and Pharmacy Timișoara, Romania
[4]Department VI – Cardiovascular Surgery, "Victor Babeș" University of Medicine and Pharmacy Timișoara, Romania, Research Centre of the Institute of Cardiovascular Diseases Timișoara, Romania

Hypertrophic obstructive cardiomyopathy (HOCM) is one of the most frequent hereditary heart diseases. The severely hypertrophied interventricular septum, together with the systolic anterior movement (SAM) of the mitral valve (MV), frequently cause a significant pressure gradient in the left ventricular outflow tract, as well as varying degrees of mitral regurgitation (MR). We report the case of a 64 years-old female patient, diagnosed with HOCM two years ago, admitted to our clinic with dyspnea with low intensity activity and fatigue. Transthoracic echocardiography showed a concentric, asymmetrical left ventricular hypertrophy, an elongated anterior mitral leaflet (AML), with a significant SAM inducing a severe regurgitation. Fibrosis was observed on both leaflets with calcification of the posterior mitral ring. Shear stress on the mitral valve apparatus in this process may activate molecular mechanisms that cause early valvular tissue degeneration, altering mitral valve function. Monoamine oxidase (MAO) with 2 isoforms has emerged as an important cardiovascular source of reactive oxygen species (ROS), inducing fibrosis, but data about its expression in valvular tissue is scarce. In this respect, we assessed ROS production and MAO A and B expression in a sample of diseased MV harvested during surgery. We found an increased production of ROS and MAO expression which was further augmented after *ex vivo* incubation with AII and was alleviated in the presence of MAO-A and B inhibitors. In conclusion, MAO-related oxidative stress may play a role in the pathogenesis of mitral regurgitation in patients with HOCM.

Keywords: hypertrophic obstructive cardiomyopathy, mitral regurgitation, oxidative stress, monoamine oxidase