Abstract

The aim of this study is to analyse a genetic and proteomic aspects that could play an important role in development of chosen cardiovascular disease. Matrix metalloproteinases are enzymes that contribute strongly to the degradation of extracellular matrix components. In this study the serological levels of MMP-2 and MMP-9 were investigated using immunological testing in patients with aortic valve disease and in patients with myocardial infarction. Significantly higher levels of MMP-2 and MMP-9 were determined in both above mentioned groups of patients. Association of serum levels of MMP-2 and MMP-9 and development of concomitant aortic dilatation was not confirmed in patients with aortic valve disease. Changes in serum levels within 24 hours and after 6 months post myocardial infarction were characterized.

About 10 % of patients operated for aortic valve disease suffer simultaneously from ascending aortic dilatation. The current study did not reveal any significant genetic variation in *TGFBR2* gene and in chosen exons of *FBN1* gene in these patients. Further genetic research is needed to identify the cause of the pathology in aortic wall. Gene expression of selected genes was measured by microarray screening in patients with myocardial infarction. These genes were related to MMPs and did not show satisfactory results that could have a potential implication for diagnostics of tissue degeneration.

Keywords: ascending aorta, myocardial infarction, MMP-2, MMP-9, *TGFBR2*, *FBN1*, microarray, ELISA