

## **Abstrakt - ENG**

### **Histopathological changes of ascending aorta and serum concentration of transforming growth factor in patients with proven aortopathy**

The etiology of ascending aorta dilation in patients with nonsyndromic ascending aortic aneurysm is not clearly defined and may be multifactorial. Haemodynamic or genetic factors are involved. Determination of the etiology and eventual markers of progression of aortic wall dilatation is important because it is the etiology that determines the risk of catastrophic vascular complications, such as aortic dissection (AD). However, publications on this topic are scarce and their results are contradictory.

A total of 376 patients from the clinical database of our institution were included in the retrospective analysis. These patients underwent either elective surgery for dilatation of the ascending aorta (DAA) or emergency surgery for AD. This was an isolated procedure on the ascending aorta or in combination with an aortic valve procedure. After excision, samples of the ascending aorta were histologically examined. On histological examination, we found significantly higher degree of involvement in samples from patients with TAV compared with patients with BAV ( $P < 0.001$ ). However, the correlation was weak for all variables when aortic diameter and histological abnormalities or age and histological abnormalities were compared in patients with both BAV and TAV. Our study indicates a higher incidence of severe histological changes of the aortic wall of dilated ascending aorta in patients with TAV compared with patients with BAV.

In a prospective study, plasma TGF- $\beta$ 1 concentrations were evaluated in 50 patients who had TAV or BAV with normal or dilated ascending aorta and underwent surgery. The reference range of TGF- $\beta$ 1 was determined by examining the TGF- $\beta$ 1 concentration in a control group consisting of 40 volunteers. We found a significant difference in TGF- $\beta$ 1 levels between the patients with aortic dilatation and the control group (32.5 vs. 63.92;  $P < 0.001$ ), and between the patients with non-dilated aorta but aortic valve disease and the control group (27.68 vs. 63.92;  $P < 0.001$ ). There was no statistically significant difference between the DAA group and the non-DAA group. The correlations between TGF- $\beta$ 1 levels and the diameter of the ascending aorta as well as the degree of histopathological changes of the ascending aorta were statistically nonsignificant.

The aim of the present study is to evaluate the histological abnormalities of the ascending aortic wall in patients with bicuspid (BAV) and tricuspid (TAV) aortic valves and

to compare the levels of transforming growth factor beta-1 (TGF- $\beta$ 1) as a potential marker of ascending aortic dilatation in selected groups of patients.

Based on the result of our study, we can conclude that TGF- $\beta$ 1 concentration alone does not meet the criteria to be a specific marker of ascending aortic dilatation, but it is sensitive to aortic valvulopathy-aortopathy.