

🧭 VALVULAR HEART DISEASE

ACTIVE TGF-BETA-1 IS MORE COMMONLY DETECTABLE IN PLASMA OF PATIENTS WITH AORTIC STENOSIS THAN CARDIAC CATHETERIZATION CONTROLS

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Background: Transforming growth factor- β 1 (TGF- β 1) is a cytokine with roles in cellular proliferation and pathological fibrosis. A latent form of TGF- β 1 is present in high concentrations in platelets. We recently reported that latent TGF- β 1 can be activated by shear in vitro and in a mouse model of thrombosis. Thus, TGF- β 1 may contribute to the pathophysiology of conditions with elevated shear, such as aortic stenosis (AS).

Methods: Blood was drawn from 15 patients with AS and 32 controls undergoing cardiac catheterization. Samples were tested for total and active TGF-β1 levels by ELISA.

Results: There were no differences between AS patients and controls by sex, medication use, coronary artery disease, or ejection fraction (all p>0.05). AS patients were older (71 vs. 63 years, p = 0.01). Median TGF- β 1 levels were 1.2 ng/mL in patients and 0.95 ng/mL in controls (p=0.06). 7/15 AS patients had detectable levels of active TGF- β 1, as compared with 1/32 controls (median 0.002 vs 0 ng/mL, p<0.01, Figure 1). The lone control with measurable active TGF- β 1 had acute thrombotic peripheral vascular disease.

Conclusion: A higher percentage of AS patients have detectable plasma levels of TGF- β 1 than cardiac catheterization controls. These data are consistent with a model in which increased shear forces result in systemic TGF- β 1 activation, which in turn may lead to AS progression by stimulating valve fibrosis.

