

## 論 文 要 旨

Dynamic changes in platelets caused by shear stress  
in aortic valve stenosis

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### ABSTRACT

**BACKGROUND AND OBJECTIVE:** Turbulent blood flow in patients with aortic valve stenosis (AS) results in morphological and functional changes in platelets and coagulation factors. The aim of this study is to determine how shear stress affects platelets and coagulation factors.

**METHODS:** We retrospectively evaluated data from 78 patients who underwent AVR to treat AS between March 2008 and July 2017 at Kagoshima University Hospital.

**RESULTS:** Platelet (PLT) count obviously decreased at three days after AVR, and increased above preoperative levels at the time of discharge. In contrast, platelet distribution width (PDW), mean platelet volume (MPV), and platelet large cell ratio (P-LCR) increased three days after AVR, then decreased to below preoperative levels. No differences were evident between groups with higher (HPPG > 100 mmHg) and lower (LPPG < 100 mmHg) peak pressure gradients (PPG) before AVR, whereas PLT count, PDW, MPV and P-LCR improved more in the HPPG group. Plateletcrit (PCT), which represents the total volume of platelets, increased after AVR due to decreased shear stress. High increasing rate of PCT was associated with lower PLT count, higher PDW and lower fibrinogen.

**CONCLUSION:** Shear stress affects PLT count, PDW, and fibrinogen in patients with AS.

**Keywords:** Aortic valve stenosis, platelet, plateletcrit, shear stress, pressure gradient