

**Stiffness of the abdominal aorta in children with  $\beta$  thalassemia major and thalassemia trait related with ferritin levels**

Gürses D. (1), Işık-Balci Y. (2)

Pamukkale University Department of Pediatric Cardiology, Denizli, Turkey (1); and Department of Pediatric Hematology (2)

**Objective:** Increased iron stores have been implicated in the association with increased risk of cardiovascular events. The aim of this study was to investigate the impact of iron overload on abdominal aortic stiffness in patients with  $\beta$  TM and compared to the children with thalassemia trait (TT) and healthy controls.

**Methods:** This prospective study included three groups; Group I: 29 patients with  $\beta$  TM, Group II: 28 patients with TT, Group III: 29 healthy controls. In all subjects, hemoglobin, cholesterol, high-density lipoprotein-cholesterol, and low-density lipoprotein-cholesterol levels were measured. Blood pressure was measured in all subjects. The average serum ferritin level was assessed in  $\beta$  TM patients. All children were noninvasively evaluated with transthoracic echocardiography. Abdominal aorta diameters were measured. Aortic strain (S), pressure strain elastic module (Ep), pressure strain normalized by diastolic pressure (Ep\*), aortic stiffness  $\beta$  index ( $\beta$ SI) and, aortic distensibility (DIS) were calculated using the measured data.

**Results:** There was no statistically significant difference between the groups in sex, mean age, body mass index, heart rate, and blood pressure ( $P>0.05$ ). In  $\beta$  TM patients S ( $0.23\pm 0.058$  /  $0.29\pm 0.06$  /  $0.33\pm 0.07$   $P<0.0001$ ) and DIS ( $1.23\pm 0.42$  /  $1.5\pm 0.51$  /  $1.81\pm 0.53$ ,  $P<0.0001$ ) were significantly lower compared with the other groups. However, Ep ( $181.1\pm 58.7$  /  $147.1\pm 52$  /  $121\pm 44$ ,  $P<0.0001$ ), Ep\* ( $2.98\pm 0.98$  /  $2.36\pm 0.92$  /  $2.06\pm 0.92$ ,  $P<0.0001$ ), and  $\beta$ SI ( $2.26\pm 0.67$  /  $1.79\pm 0.63$  /  $1.56\pm 0.59$ ,  $P<0.0001$ ) were significantly higher in  $\beta$  TM patients and TT subjects than controls. There was a statistically significant negative correlation between ferritin and S, DIS ( $p<0.05$   $r=-0.564$ ,  $-0.411$ ). However, there was a statistically significant positive correlation between ferritin and  $\beta$ SI, Ep ( $p<0.05$ ,  $r=0.027$ ,  $0.375$ ).  
**Conclusions:** Increased abdominal aortic stiffness was detected in  $\beta$  TM patients and this increase in arterial stiffness correlated with ferritin levels.