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**Abnormal aortic arch morphology in Turner syndrome patients is a risk factor for hypertension**

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Hypertension in Turner syndrome (TS) is a multifactorial, highly prevalent and significant problem that warrants timely diagnosis and rigorous treatment.

We aimed to investigate the association between abnormal aortic arch morphology and hypertension in adult TS patients.

**Methods:** single centre retrospective study in 74 adult TS patients (age  $29.41 \pm 8.91$  y) who underwent a routine cardiac MRI. Patients were assigned to the hypertensive group (N=31) if blood pressure exceeded 140/90 mmHg and/or if they were treated with antihypertensive medication. Aortic arch morphology was evaluated on MRI images and initially assigned as normal (N=54) or abnormal (N=20), based on the curve of the transverse arch and the distance the left common carotid - left subclavian artery. We propose a new more objective method to describe aortic arch abnormality in TS by determination of the relative position of the highest point of the transverse arch (AoHP).

**Results:** logistic regression analysis showed that hypertension is statistically and independently associated with age, BMI and abnormal arch morphology, with the size effect of the new AoHP method being larger than the classical method. TS patients with hypertension and abnormal arch morphology more often had dilatation of the ascending aorta.

**Conclusion:** there is a strong significant association between abnormal arch morphology and hypertension in TS patients, independent of age and BMI, and not related to other structural heart disease. We suggest that aortic arch morphology should be included in the risk stratification for hypertension in TS and propose a new quantitative method to express aortic arch morphology.