Aortic root dilatation in adult patients with repaired tetralogy of Fallot

Dequines C., Le Gloan L., Warin-Fresse K., Caza M., Guyomarch B., Mugniot A., Baron O., Guerin P.
Institut du thorax
CHU nantes. France

INTRODUCTION: Aortic root dilatation is commonly observed among patients with repaired tetralogy of Fallot. The aortic root is mostly involved, at all levels. Nevertheless, the prevalence of aortic root dilatation and its rate of growth remain to be defined.

METHODS: We conducted a retrospective study, reviewing aortic MRI measurements at different levels (sinuses of Valsalva, sinotubular junction, ascending aorta, horizontal aorta, isthmus, and descending aorta) from 51 consecutive adult patients with repaired tetralogy of Fallot. Matched controls for age and sex were recruited in a healthy population of patients undergoing a cardiac MRI study for other reason. Moreover, the annual rate of aortic growth was determined by MRI for 28 patients with repaired tetralogy of Fallot.

RESULTS: 59 % of patients with repaired tetralogy of Fallot suffered from an aortic dilation located at the level of the sinuses of Valsalva, versus 6 % in the control group, according to the Roman criteria (p<0.001). Compared to the control population, aortic segments are significantly larger at all ascending levels, including the horizontal segment in patients with repaired tetralogy of Fallot: at the sinuses of Valsalva, mean aortic diameter is 20.4mm in the tetralogy of Fallot group, versus 15.6 mm in the control group (p<0.001). There is no difference between the two groups at the descending level of the aorta (9.9mm in patients with repaired tetralogy of Fallot, versus 9.8mm in control patients, p=0.267). Among patients with repaired tetralogy of Fallot, the rate of aortic growth is 0.697±1.6 mm/year at the sinuses of Valsalva and 0.236±1.29 mm/year in the ascending aorta.

CONCLUSIONS: Aortic root dilatation is frequent among patients with repaired tetralogy of Fallot and mostly concerns the aortic root, compared to a control group of healthy patients. Horizontal and descending aortas do not seem to be involved in the dilation. Aortic root dilatation needs to be carefully and regularly controlled, as it appears to be a dynamic and progressive phenomenon, although rather slow.