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Letter to the Editor

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Corresponding authors: Safak Alpat;
Email: safakalpat@hacettepe.edu.tr

Aortic dilatation in patients with tetralogy of Fallot: inevitable or preventable?

Safak Alpat

Division of Paediatric Cardiac Surgery, Department of Cardiovascular Surgery, Hacettepe University School of Medicine, Ankara, TURKIYE

I have read with great interest the manuscript by Saedi et al.[1] in which they shared their experience with prevalence and consequences of aortic root dilatation in 730 tetralogy of Fallot repairs. Median age at repair was 4–8 years. They concluded that while around 20% of patients showed aortic dilatation, just one suffered an aortic dissection. I have a few remarks and one question.

Aortic dilation following tetralogy of Fallot repair is known to be multifactorial. Contributing aspects include underlying histopathological changes, haemodynamic effects, and surgical repair time. We feel that the most critical variable is age at repair. We previously demonstrated that substantial histopathological alterations of the myocardium were observed in patients with tetralogy of Fallot, which were more prominent in cyanotic patients. Fibrosis was detected even before the age of 2.[2] Similar histological abnormalities were found in the aorta of patients with tetralogy of Fallot, aside from cystic medial necrosis.[3] Haemodynamic aspect includes the overriding aorta receiving excessive volume, which causes chronic haemodynamic stress. It also creates a vicious loop once aortic regurgitation occurs. As a result, subjecting the patient to significant volume overload in the presence of underlying histopathological changes would almost certainly result in aortic dilatation. Delaying the operation would hypothetically expose the patient to an increased risk of future histopathological and haemodynamic alterations.

It has previously been demonstrated that even at the time of repair, aortic dimensions increase, yet, when fixed at infancy, dimensions decrease significantly within 7 years.[4] There is no definite age to identify the optimal age for aortic repair to avoid problems. However, it is generally not recommended to postpone surgery after infancy. We also reported that a patient with a 52-mm aortic root underwent root replacement. It is worth noting that this patient had his tetralogy of Fallot repaired at the age of 8.[5]

I would like you to clarify if you have any remarks or comparisons on the influence of repair age on aortic dilatation, given that the median age at repair in this study is significantly older than current global standards.

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