The Importance of Anatomical Characteristics of Aortic Arch in Aortic Coarctation for The Prognosis After Its Treatment

Mohamaad Eltahlawi*

BACKGROUND:

Coarctation of the aorta accounts for 6·8% of congenital heart disease, with an incidence of one in 12 000 live births [1]. Coarctation is a heterogeneous lesion with variability in the degree and site of obstruction. This anatomical variation has an embryological reflection. Up till now, there is no sufficient data regarding the effect of this anatomical component of coarctation of the aorta on the short and long term prognosis after its treatment (surgical or percutaneous angioplasty). This relationship has to be clarified.

OBJECTIVE:

We aim to demonstrate the relationship between the anatomical features of aortic arch in case of aortic coarctation and the prognosis on short and long term after its surgical or percutaneous repair.

PATIENTS AND METHODS:

We conducted a retrospective study that continued prospectively till the end of the work. The children with aortic coarctation who were repaired surgically or percutaneously by catheter based angioplasty or stenting in the period between 11/2014 and 06/2017 were enrolled.

All the descriptive data about this coarctation was collected (echocardiography, CT scan and/or MRI). Anatomical analysis of these data with its embryological background was done.

We have then classified these patient according to their anatomical features of aortic arch.

Follow-up data on short and long term post treatment of each anatomical class was gathered.

Statistical analysis of these data was held to find out the relationship between these anatomical variation and the follow-up results.

RESULTS:

Thirty cases were en rolled in this study. 15 cases were treated surgically. the other 15 cases were treated interventionally using ballon or stent. The mean age ± SD was17±12.2. the mean systolic blood pressure ±SD pre-treatment was180 ±25. 16 cases have hypoplastic aortic arch.13 cases have abnormal aortic arch anatomy (5 have common trunck of innominate and left common carotid,2 cases have hypoplastic left displaced left subclavian artery, 3 cases have separate right common carotid trunck from aortic arch, 3cases have gothic arch with very close aortic arch branches. We found that all cases with hypoplastic aortic arch had recurrent coarctation 6-9m after management. Cases with abnormal arch anatomy had worse prognosis regarding persistence of hypertension. There was negative correlation between the distance (left common carotid and left subclavian arteries) and the duration before recoarctation.

CONCLUSION:

Arch anatomy may affect the clinical prognosis of coarctation. Abnormal arch anatomy has worse prognosis. The less the distance between left subclavian and left common carotid, the better the prognosis and less incidence of coarctation.

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*Assistant professor of Cardiology, Zagazig University.