

Perioperative evaluation of neonatal aortic arch thrombosis

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Abstract

Herein, we present a neonatal case of coarctation of the aorta, with aortic arch thrombus confirmed by echocardiography. We performed thrombus removal and aortic arch repair emergently. This critical condition necessitates quick preoperative evaluation with echocardiography. Moreover, postoperative evaluation using computed tomography is reasonable to assess an aortic arch configuration, and exclude the remnant thrombus.

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ABSTRACT

Herein, we present a neonatal case of coarctation of the aorta, with aortic arch thrombus confirmed by echocardiography. We performed thrombus removal and aortic arch repair emergently. This critical condition necessitates quick preoperative evaluation with echocardiography. Moreover, postoperative evaluation using computed tomography is reasonable to assess an aortic arch configuration, and exclude the remnant thrombus.

The patient was a 1-day-old boy (birth weight 3.0 kg) with tachypnea and cold lower extremities. Echocardiography demonstrated severe coarctation of the aorta (CoA) and thrombus at the distal arch, and severely depressed ventricular function (Figure A). We initiated anticoagulation therapy and immediately sent him to the operation room (OR).

Following median sternotomy, we placed arterial cannulas on the ascending aorta and main pulmonary artery. Cardiopulmonary bypass was initiated with bicaval cannulations. At a temperature of 18°, we crossclamped the ascending aorta, and injected a cardioplegic solution. Under circulatory arrest, the distal ascending aorta was longitudinally opened. Using Forgaty catheter, we removed clots from the brachiocephalic right carotid and left subclavian artery as well as the distal aortic arch. We began selective cerebral perfusion after thrombectomy. The ductus arteriosus and isthmus were ligated, and all ductal tissues were excised. After clamping the descending aorta, its anterior surface was longitudinally opened. We reconstructed the aortic arch using a homograft patch. The patient was extubated on postoperative day (POD) 5. Computed tomography (CT) on POD 18 displayed a smooth aortic arch curvature and no intraluminal thrombus (Figure B). She was discharged on POD 21.

Adequate and timely diagnosis of CoA is crucial for good prognosis, considering the association between early treatment and lower risks of long-term morbidity and mortality [2]. Aortic arch thrombosis in neonates is rare, however critical with a mortality rate >50% [1]. This necessitates prompt recognition of the aforementioned condition and careful echocardiographic evaluation of aortic arch stenosis. Despite other modalities to evaluate the condition, such as angiography or CT requiring sedation, we should make a quick diagnosis with echocardiography, and send the patients to the OR emergently. Postoperatively, CT evaluation is recommended to assess the aortic arch configuration and residual thrombus.

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Figure Legend

(A) Preoperative echocardiography, (B) Postoperative computed tomography

AAo = Ascending aorta, DAo = descending aorta

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