Perfusion During Aortic Arch Surgery —Keep It Physiologic!

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We read with great interest the case presentation by Kaskar et al in the current issue of the *World Journal for Pediatric and Congenital Heart Surgery*.[1] The authors describe two cases of patients with right circumflex aorta and symptoms resulting from tracheoesophageal compression. They were both treated with the aortic uncrossing procedure, as described by Planché and Lacour-Gayet.[2] The authors are to be congratulated on the successful management of these two cases. It is particularly important to highlight that the aortic uncrossing procedure provides complete relief of the vascular ring as opposed to sole division of the ligamentum arteriosum. Therefore, the aortic uncrossing procedure, despite being a complex procedure should be the therapy of choice in symptomatic patients with circumflex aorta.[3] Concerning the perfusion strategy, we think, the deep hypothermic circulatory arrest, as used by the authors, can usually be replaced by more physiologic perfusion strategies during the aortic uncrossing procedure. We have used a combined perfusion consisting of antegrade cerebral perfusion and descending aortic perfusion via a femoral artery in our recent cases of aortic uncrossing procedures. Additional femoral perfusion allows for less profound cooling and has shown to be associated with reduced secondary organ dysfunction (eg, acute kidney injury).[4] In our perfusion setup, a short catheter sheath (diameter from 3F in neonates to 6F in larger children) is introduced in the common femoral artery during induction of anesthesia, as described previously.[5] This sheath is connected to a separate roller pump on the heart-lung-machine, and the femoral perfusion is started at the appropriate time with a flow rate of 30 to 40 mL/kg body weight. We use near-infrared spectroscopy (applied unilaterally in the renal region), serum lactate, and venous saturation in the inferior vena cava as monitoring parameters. If anatomically feasible, additional coronary perfusion over a side port of the central arterial cannulation line can be established. The body temperature during the procedure is usually lowered to 30 °C or 28 °C. In our limited experience, we have not observed femoral cannulation-associated complications. We therefore feel, this uniform perfusion strategy for all types of aortic arch procedures in children, once established, adds minimal complexity to the technical setup and provides substantial benefit for the patients.

Once again, congratulations to the authors for the successful management of these patients by completion of this technically demanding procedure.

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