Prosthetic graft replacement is extremely difficult in this age group; the close follow-up of the state of chronic aortic dissection is therefore necessary until the complete disappearance of the false lumen has been confirmed.

References

1. Nagy Z, Heinemann MK, Schmid E, Ziemer G. Successful repair of intraoperative type-A dissection in an infant. *Eur J Cardiothorac Surg.* 2002;22:636-7.
2. Walther T, Kiefer H, Dähnert I, Kostelka M. Successful treatment for intraoperatively evolving acute aortic dissection in a neonate. *Ann Thorac Surg.* 2003;76:1286-7.

EDITORIAL COMMENTARY

Acting on a rare event

Osami Honjo, MD, PhD

From the Division of Cardiovascular Surgery, The Hospital for Sick Children, Toronto, Ontario, Canada.

Disclosures: Author has nothing to disclose with regard to commercial support.

Received for publication Nov 9, 2015; accepted for publication Nov 10, 2015; available ahead of print Dec 10, 2015.

Address for reprints: Osami Honjo, MD, PhD, Division of Cardiovascular Surgery, The Hospital for Sick Children, 555 University Ave, Toronto, Ontario M5G 1X8, Canada (E-mail: osami.honjo@sickkids.ca).

J Thorac Cardiovasc Surg 2016;151:e57-8

0022-5223/\$36.00

Copyright © 2016 by The American Association for Thoracic Surgery

<http://dx.doi.org/10.1016/j.jtcvs.2015.11.012>

Arterial cannulation in neonates and small infants is a technical challenge because of the size mismatch between the small aorta and a large arterial cannula. We often experience fluctuation of the arterial inflow pressure due to subtle positional changes of the cannula. The cannula-related iatrogenic aortic dissection is much more common in the adult population, presumably as a result of atherosclerotic changes of the aortic wall.¹ Despite considerable risk of potential aortic intimal injury in the pediatric population, the incidence of aortic dissection in the pediatric population is extremely rare.

Okada and colleagues² reported a rare but important iatrogenic complication related to arterial cannulation in a small infant with unbalanced atrioventricular septal defect who underwent placement of a systemic-to-pulmonary shunt under cardiopulmonary bypass. Intermittent, but extremely high, arterial line pressures, followed by a drop in the lower arterial pressure, were noted. Type B aortic dissection was diagnosed initially using epi-aortic ultrasound. The situation was promptly managed by termination of cardiopulmonary bypass and decannulation, followed by definitive diagnosis with a CT scan. The intimal tear was resected at the time of stage II palliation.

Acting on an extremely rare complication in a timely manner is often difficult in the cardiac operation room. The authors managed to diagnose and manage acute iatrogenic aortic dissection promptly and successfully, to prevent further extension of dissection or organ malperfusion. This

Osami Honjo, MD, PhD

Central Message

Arterial cannulation in neonates and small infants is a technical challenge.

See Article page e55.

case was very fortunate in the sense that dissection did not extend to the proximal aortic root or abdominal aorta. Salvaging organ ischemia related to acute dissection that involved major abdominal aortic branches in neonates or small infants would be almost impossible.

Blood pressure management during the observation period in this case is unclear from the report, but it would be very difficult to set and manage a target blood pressure in an infant who has an obvious entry point but no effective re-entry point to decompress the false lumen. In this particular case, the patient had an in-parallel circulation with a systemic-to-pulmonary shunt, in which change in systemic vascular resistance, either by blood pressure management or significant extension of aortic dissection, can be critical.

This case was managed well with some luck, but for many reasons, could have been catastrophic.

The proximity of the site of intimal tear to the origin of the persistent fifth aortic arch is unclear from the report.² Whether the presence of persistent fifth aortic arch is related to this iatrogenic aortic dissection is an interesting question. Even though the cannulation site is extremely close to the origin of the fifth aortic arch, the dissection should not stem from tissue friability of the fifth aortic arch, because the histology of the fifth aortic arch should be same as that of the normal aorta.³

The persistent fifth aortic arch can be associated with coarctation of the aorta,⁴ but no evidence was found of coarctation or abnormal histology at the cannulation site

in the report from Okada and colleagues.² This case nicely outlines early detection and management of this rare iatrogenic intraoperative complication in neonates and small infants.

References

1. Singh A, Mehta Y. Intraoperative aortic dissection. *Ann Card Anesth*. 2015;18:537-42.
2. Okada N, Murayama H, Hasegawa H. Iatrogenic aortic dissection in an infant with persistent fifth aortic arch and congenital heart defects. *J Thorac Cardiovasc Surg*. 2016;151:e55-7.
3. Van Praagh R, Van Praagh S. Persistent fifth arterial arch in man. Congenital double-lumen aortic arch. *Am J Cardiol*. 1969;24:279-82.
4. Khajili Z, Basiri HA, Maleki M. Persistent fifth aortic arch associated with coarctation of aorta: a case report. *Congenit Heart Dis*. 2011;6:650-2.