Is coma an absolute contraindication for emergency central aortic operation?

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Generally, acute aortic dissection complicated with a cerebrovascular event is a contraindication to emergency central aortic surgery because of poor postoperative prognosis.^{1,2} However, we report a fully recovered case after an emergency operation for acute Stanford type A aortic dissection after the patient fell into a coma caused by brain malperfusion.

Clinical Summary

The patient was a 79-year-old man. Left hemiplegia and loss of consciousness developed suddenly, and he was transferred to our emergency center under suspicion of brain infarction. On admission, his Glasgow coma scale was E1 V1 M1. Although brain computed tomography (CT) revealed no abnormal finding except for atrophy, body enhanced CT confirmed acute Stanford type A aortic dissection complicated with brain malperfusion caused by extension of the dissected flap to the innominate artery. Four hours after development of coma, an emergency operation was performed. Extracorporeal circulation was established by means of infusion into the left axillary artery and drainage from the right atrium. At a bladder temperature of 28°C, the aorta was clamped between the innominate and left carotid arteries. After incision of the ascending aorta, chemical arrest was induced by means of direct infusion of cardioplegic solution into the bilateral coronary artery, and selective innominate artery perfusion was performed by means of direct cannulation into the true lumen from the orifice with a balloon cannula. Graft replacement of the aorta was performed from above the sinotubular junction to the aortic arch proximal to the left carotid artery. The entire length of the dissected portion of the innominate artery was resected and reconstructed with a branched graft from the aortic graft. Fourteen hours after the operation, the patient awakened clearly with mild muscle weakness of the left upper limb, and the endotracheal tube was removed. Two days after the operation, he was able to walk. Fifteen days after the operation, he was discharged from our hospital. The brain CT scan during the follow-up period at another hospital revealed infarction at the right putamen. Brain magnetic resonance imaging (Figure 1) 25 days after the operation revealed hemorrhage at the infarction site; however, no significant paralysis developed. Three months after the operation, the patient returned to his life as a farmer.

Discussion

It is generally accepted that acute Stanford type A aortic dissection is an indication for emergency central aortic surgery. However, acute aortic dissection complicated with a cerebrovascular event caused by malperfusion is generally regarded as a contraindication for emergency central aortic surgery because of poor postoperative prognosis.^{1,2} Even patients with simple transient loss of consciousness are significantly ($P = .01$) prone to die in the hospital (34%) compared with those without syncope (23%).³ Concerning patients with coma on admission caused by malperfusion of the aortic arch branches, all of these patients in whom surgical intervention is performed die.⁴ Intentionally delayed surgical intervention after recovery of neurologic condition is recommended,^{1,2,5} although delay might result in subsequent death caused by rupture, cardiac tamponade, or retrograde dissection with

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Figure 1. Brain magnetic resonance imaging 25 days after the operation confirmed hemorrhagic infarction at the right putamen.

coronary artery involvement. However, central aortic surgery soon after the development of a coma caused by aortic dissection, as in the present case, might contribute to recovery of neurologic con-

dition without further risk of subsequent death during the waiting period. On the other hand, it has been indicated that the combination of heparinization and reperfusion in the infarcted brain tissue frequently results in intracranial hemorrhage.¹ The present case also included complicated hemorrhagic infarction 25 days after the operation. Prudent observation is required concerning intracranial hemorrhage if an emergency central aortic operation is performed for acute aortic dissection complicated with cerebrovascular events.

Conclusion

Although postoperative hemorrhagic brain infarction occurred, our patient reverted with a dramatic neurologic recovery after undergoing an operation soon after the development of coma caused by aortic dissection.

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