Full Dose Thrombolysis for a Right Middle Cerebral Artery Stroke after an Acute Aortic Dissection

Syed Omar Kazmi, MD[1,2]; Oliver Achi, MD[2]; Rahul Damani, MD, MPH[2]
[1]Department of Neurology, Salem Health, Salem, OR, [2]Division of Vascular Neurology and Neurocritical Care, Baylor College of Medicine, Houston, TX

INTRODUCTION

Aortic dissections are an infrequent cause of acute ischemic stroke, which are often missed on initial evaluation. Administration of thrombolysis in such patients can be associated with poor outcomes. We report a case of an acute ischemic stroke due to an acute aortic dissection who was treated with full dose IV r-tpa resulting in a good outcome.

METHODS

Case report and review of the literature.

CASE PRESENTATION

A 72-year-old Japanese female with hypertension who presented with symptoms of acute onset left hemiparesis and dysarthria starting at 1100 on day of presentation. The mobile stroke unit had evaluated the patient and after a non-contrast CT head in mobile stroke unit, administered IV-tpa at 1215. On arrival to the emergency department, she had a blood pressure of 109/50, pulse rate of 100 with regular rhythm, and a blood glucose of 81. Her EKG showed sinus bradycardia and chest X-ray was significant for mild prominence of the cardiomediastinal silhouette. Her NIHSS improved to 3 and she completed her intravenous tPA infusion at 1316 receiving a full dose of 0.9 mg/kg. Shortly thereafter, she had an episode of emesis with worsening of her right MCA syndrome to a NIHSS of 23. A STAT head CT was obtained which did not reveal any hemorrhage. She was intubated for airway protection and head and neck CT angiography was obtained which showed a Type A aortic arch dissection.

Cardiothoracic surgery was emergently consulted and given her low volume infarction in the right MCA distribution on STAT brain MRI, she was taken to the operating room for repair. Intraoperatively she received ten units of packed red blood cells, seven units of fresh frozen plasma, 28 units of platelets, 40 doses of cryoprecipitate, two liters of crystalloids, and suffered an estimated blood loss of four liters. Post operatively she had a prolonged hospitalization significant for perioperative bilateral small non-hemorrhagic infarctions in cerebellar hemispheres and right thalamus, Escherichia Coli bacteriuria, and MRSE bacteremia (Staphylococcus Epidermidis). She underwent successful tracheostomy and percutaneous endoscopic gastrostomy tube placement. She was discharged to inpatient rehabilitation on post-operative day 30.

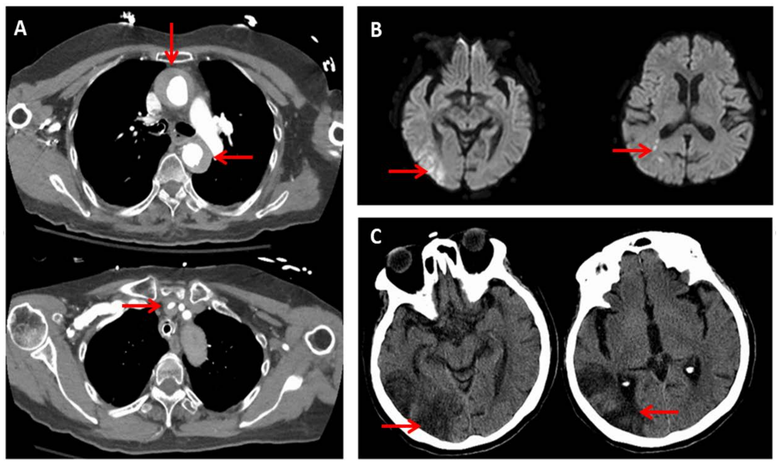

Figure 1: **A.** CT chest with contrast showing dissection (arrows) of the ascending and descending aorta (upper image) and right common carotid (lower image). **B.** MRI diffusion weighted images of the brain showing diffusion restriction in the right temporo-parietal regions. **C.** CT scan of the head after 30 days showing evolving hypodensities in the right temporo-parietal areas.

Download poster

DISCUSSION

To our knowledge, there have been a total of nine reported cases in which IV r-tpa was administered in the setting of an aortic dissection, our case being the 10th. Six patients survived after aortic surgery and three patients died. Only one case received full dose (0.9 mg/kg) IV r-tpa and survived after undergoing emergent surgery on the same day (6). Ours is the second such case. One case reported delayed surgery after administration of IV r-tpa, however the dose was not mentioned (7). Acute ischemic stroke is not an absolute contraindication to surgery (8), however the risk of coagulopathy is high in cases treated with thrombolysis.

CONCLUSION

Aortic dissection should always be in the back of one's mind when dealing with thrombolysis in the setting of acute stroke care. Emergent surgery should be offered after weighing the risks and benefits with the patient and family, as these patients can have good outcomes.

REFERENCES

1. Jauch EC, Saver JL, Adams HP Jr., Bruno A, Connors JJ, Demaerschalk BM, et al. Guidelines for the early management of patients with acute ischemic stroke: A guideline for healthcare professionals from the American Heart Association/American Stroke Association. Stroke 2013;44:870-947.
2. Kamp TJ, Goldschmidt-Clermont PJ, Brinker JA, Resar JR. Myocardial infarction, aortic dissection, and thrombolytic therapy. Am Heart J 1994;128:1234-7.
3. Flemming KD, Brown RD Jr. Acute cerebral infarction caused by aortic dissection: Caution in the thrombolytic era. Stroke 1999;30:477-8.
4. Iguchi Y, Kimura K, Sakai K, Matsumoto N, Aoki J, Yamashita S, et al. Hyper-acute stroke patients associated with aortic dissection. Intern Med 2010;49:543-7.
5. Hagan PG, Nienaber CA, Isselbacher EM, Bruckman D, Karavite DJ, Russman PL, et al. The international registry of acute aortic dissection (IRAD): New insights into an old disease. JAMA 2000;283:897-903.
6. Mendes A, Mendonça T, Sousa A, Moreira G, Carvalho M. Stroke secondary to aortic dissection treated with a thrombolytic: A successful case. Neurol Sci 2012;33:107-10.
7. Noel M, Short J, Farooq MU. Thrombolytic therapy in a patient with acute ischemic stroke caused by aortic dissection. Clin Neurol Neurosurg 2010;112:695-6.
8. Estrera AL, Garami Z, Miller CC, Porat EE, Achouh PE, Dhareshwar J, et al. Acute type A aortic dissection complicated by stroke: Can immediate repair be performed safely? J Thorac Cardiovasc Surg 2006;132:1404-8.