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SILENT AORTIC DISSECTION AFTER THE HEIMLICH MANEUVER: A CASE REPORT

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☐ **Abstract—Background: The Heimlich maneuver is a simple and universal resuscitative procedure that is performed to relieve foreign-body airway obstruction. We present a case of silent Stanford type A aortic dissection, a rarely reported complication of the Heimlich maneuver. Case Report: A 67-year-old male presented to the emergency department with left-sided hemiplegia shortly after receiving a Heimlich maneuver. Acute ischemic stroke was suspected, and the thrombolytic protocol was initiated. Fortunately, Stanford type A aortic dissection was diagnosed before the thrombolytic therapy was initiated. Why Should an Emergency Physician Be Aware of This?: Aortic dissection can develop after the Heimlich maneuver. For patients who develop a neurologic deficit after the Heimlich maneuver, vascular dissection should be considered as a possible cause.**

☐ **Keywords—abdominal thrust; aortic dissection; Heimlich maneuver; stroke**

INTRODUCTION

The Heimlich maneuver is a simple life-saving maneuver to relieve foreign-body airway obstruction in a choking victim. However, several complications have been documented despite its proper application by health care providers. We present what is to our knowledge the first reported case of silent Stanford type A aortic dissection that presented as left-sided hemiplegia after the Heimlich maneuver was applied.

Case Report

A 67-year-old man without systemic disease presented to the emergency department with left-sided hemiplegia shortly after receiving a Heimlich maneuver by an emergency medical technician because of airway obstruction by a piece of meat. On arrival, his blood pressure was 153/63 mm Hg, his body temperature was 36.1 C, his heart rate was 89 beats/min, his respiratory rate was 20 breaths/min, and his oxygen saturation was 99% on room air. The patient was alert and oriented, without acute distress. The neurologic examination results revealed mild central facial palsy, left hemineglect, and left hemiparesis with left-side muscle power of 4. He had no chest or back pain. The acute stroke protocol was initiated immediately. Brain noncontrast computed tomography revealed no intracranial hemorrhage. Chest radiography revealed borderline cardiomegaly and minimal left pleural effusion without significant mediastinum widening. Electrocardiography revealed a regular sinus rhythm. Laboratory results were unremarkable except for respiratory acidosis with a pH of 7.288, PCO_2 of 52.7 mm Hg, and HCO_3 of 25.5 mmol/L. The arterial blood gas data returned to within the normal range

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30 min later. The patient's National Institutes of Health Stroke Scale score was 4. Thrombolytic therapy with intravenous recombinant tissue plasminogen activator injection appeared to be indicated and was offered to the patient. However, the patient declined treatment after considering its potential complications. Next, the treatment team arranged brain computed tomography angiography for vessel evaluation, which revealed no enhancement of the right common and right internal carotid arteries (Figure 1). The subsequent computed tomography scan of his chest revealed a Stanford type A aortic dissection with right innominate artery occlusion (Figure 2). Emergency surgical repair with aorta grafting was performed, and the patient was discharged without complications.

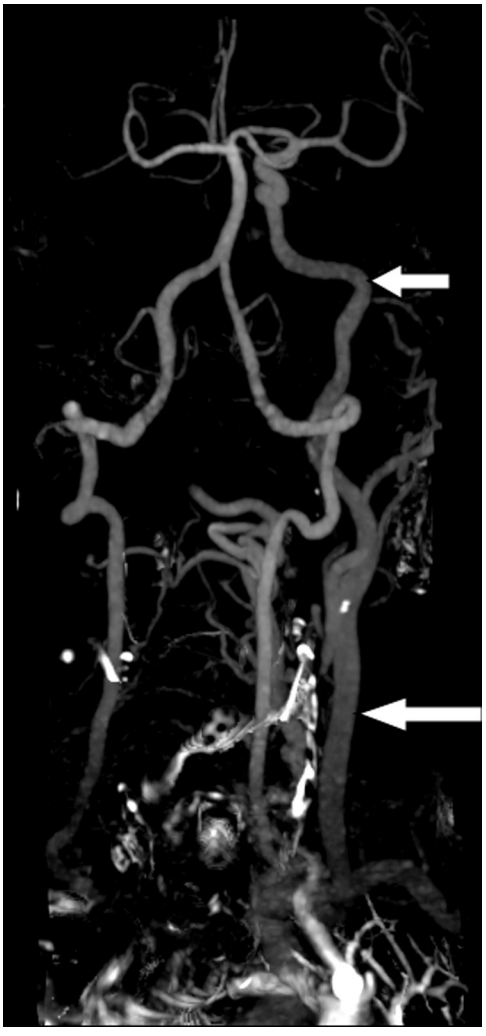

Figure 1. Brain computed tomography angiography image showing no contrast enhancement of the right common and right internal carotid arteries, as compared with the normal left common carotid artery (long arrow) and left internal carotid artery (short arrow).

Figure 2. Coronal chest contrast-enhanced computed tomography image demonstrating an intimal flap (arrow) over the ascending aorta with innominate artery occlusion (asterisk).

DISCUSSION

The Heimlich maneuver for emergency relief from foreign-body airway obstruction was first introduced by Henry Heimlich in 1974 (1). Thereafter, it has been accepted as the universal resuscitative procedure in first aid and prehospital settings, with a success rate of 86.5% (2,3). However, potential complications, including bony fractures and visceral and vascular injuries, have been reported (4). Repeated forceful abdominal thrusts could produce a marked increase in pressure within the vascular system that disrupts aortic intima and eventually causes vascular dissection. Indeed, vascular injuries, including rupture of a dissecting abdominal aorta, mesenteric laceration, and internal carotid artery dissection, have been described previously (5–7). To date, no cases of type A aortic dissection after Heimlich maneuver have been reported.

Although aortic dissection typically presents with chest pain radiating to the back, aortic dissection may be silent. The first presentation of a silent aortic dissection was described by Hoskin and Gardner in 1942 (8). Painless acute aortic dissection could have higher mortality and morbidity than the painful type (9,10).

It is important to note that ≤29% of patients with an acute aortic dissection present without pain but with neurologic symptoms because of occlusion of the lumen of a vessel supplying a part of the brain or spinal cord (10). The diagnosis can be challenging for emergency physicians in this thrombolytic era, especially in patients with pain-free dissections like our patient.

This case report highlights a rare complication of the Heimlich maneuver that presented as acute

ischemic stroke caused by aortic dissection occluding the common carotid artery. Emergency physicians should be vigilant for this vanishingly rare but important clinical event, because the acute neurologic findings caused by vascular occlusion secondary to a dissection can serve as a clue to discernable but unexpected pathology. Failure to diagnose an acute dissection, followed by subsequent therapy with antiplatelet or thrombolytic treatment, could be catastrophic for the patient.

WHY SHOULD AN EMERGENCY PHYSICIAN BE AWARE OF THIS?

Although aortic dissection and other vascular injuries after the Heimlich maneuver are rare complications, clinicians should be aware of the possibility of these injuries, especially in the setting of dense acute neurologic ischemic symptoms that are suggestive of an acute ischemic stroke caused by vascular occlusion of a carotid artery at the point at which it branches off from the aorta.

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