



Case report

Emboli stroke following migration of carotid foreign body: A case report

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ABSTRACT

Foreign body embolization can cause intracranial artery occlusion with ischemic stroke. Reported etiologies include post cerebrovascular interventions, migration of esophageal foreign body and neck trauma. We reported a case with punctured wound at left neck, X-ray and computed tomography revealed a foreign body located in the carotid region. The patient eventually developed stroke symptoms in the next day after operation. Non-contrast brain Computer tomography at that time revealed that porcelain fragment located at the suprasellar area, and infarction of the left anterior basal ganglion. Our patient is the first reported case having an embolic stroke secondary to distal migration of a foreign body from the carotid artery after neck trauma. We call attention to this rare neurologic complication of neck trauma with foreign body retention. Appropriate and prompt identification of concurrent vascular injuries with retention of foreign body is strongly advised in neck trauma patients.

1. Introduction

1.1. Background

Foreign body embolization can cause intracranial artery occlusion with ischemic stroke. Reported etiologies include post vertebroplasty [1], cerebrovascular interventions [2], esophageal foreign body migration [3], and trauma of various causes [4–6]. Here, we report a case suffering from a penetrating injury to the neck resulting in a retained foreign body in the carotid artery. This patient later developed an ischemic stroke due to distal migration of the foreign body.

1.2. Case description

A 62-year-old woman had her neck punctured accidentally by a projectile porcelain fragment in a construction plant, which resulted in profuse bleeding. A 0.3 cm puncture wound on the left side of her neck was noted in our emergent department. After emergency bleeding control, a neck X-ray as well as a computed tomography (CT) angiography revealed a foreign body located in the carotid region (Fig. 1A and B). An internal carotid puncture wound was repaired immediately by the plastic surgeon. No foreign body was found during the procedure. A post-operation X-ray showed distal migration of that foreign body into

the cranium (Fig. 1C). Her condition was well after the surgery.

However, acute right leg weakness and slurred speech developed the next day after fully awake from the anesthesia. Neurological examination showed right central facial palsy, total paralysis of the right leg, abulia, and motor perseveration. Non-contrast brain CT at that time revealed that porcelain fragment located at the suprasellar area nearby left proximal middle cerebral artery (MCA) (Fig. 2A), and infarction of the left caudate nucleus, anterior limb of internal capsule and putamen which are supplied by the deep perforating lenticulostriate branches of the left MCA (Fig. 2B). Aspirin was added. Magnetic resonance imaging (MRI) was not done because of that fragment. The patient's condition improved gradually without incident. Her muscle power of lower extremities also improved, and discharged after 17 days and was independent with activities of daily living with a modified Rankin scale (mRS) score of 1.

2. Discussion

Our patient had a penetrating trauma to the neck. X-ray and CT scan revealed a retained foreign body in the carotid region. Emergent surgical intervention showed a traumatized carotid artery, but no foreign body was found. The patient presented stroke symptoms and signs one day later. Follow-up X-ray and CT confirmed a cerebral infarction caused by

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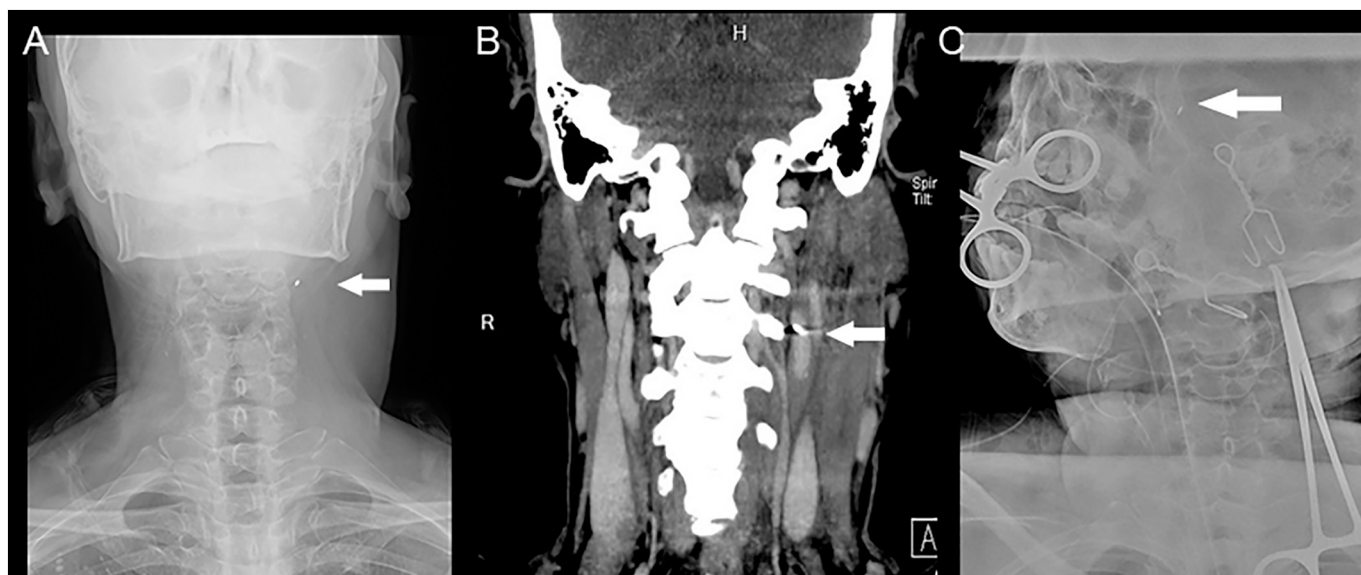


Fig. 1. (A) Anterior-posterior neck X-ray and (B) coronal view of computer tomography (CT) angiography demonstrated a radiopaque lesion located in the carotid region (arrow). (C) Post operation skull and neck X-ray showed the radiopaque lesion located in the intracranial region (arrow).

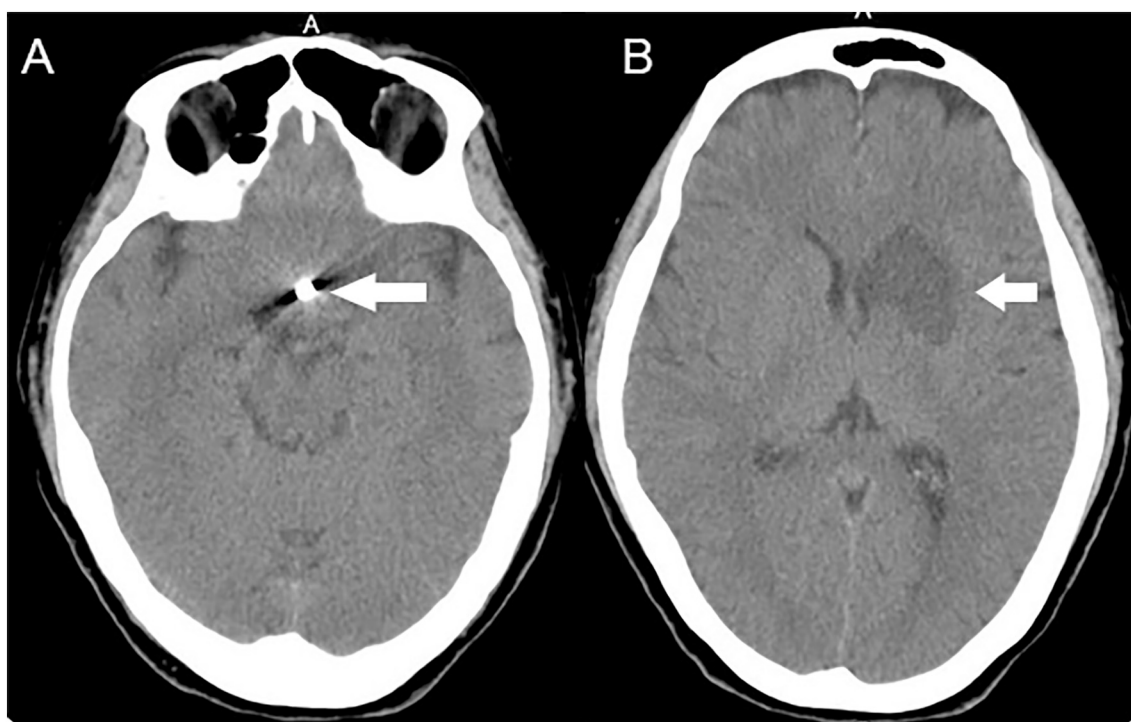


Fig. 2. One day after operation, noncontrast-enhanced brain CT axial view showed a radiopaque material located at the suprasellar region nearby left proximal middle cerebral artery (MCA) (2A, arrow) with low density change at the left caudate nucleus, anterior limb of internal capsule and putamen] (2B, arrow).

migration and embolization of the foreign body.

Penetrating neck injury is present in approximately 5% to 10% of all trauma cases. Surgical timing, pre-operative evaluations, and surgical procedures can all be difficult, especially when complicated with retained foreign bodies. They present significant challenges to surgeons [7]. Vascular trauma is present in about 25% of all neck trauma patients. Its mortality rate can be as high as 50% [8]. Strokes due to thrombosis of the internal carotid arteries secondary to penetrating or non-penetrating (blunt) neck trauma have rarely been reported [5]. However, cerebral infarction secondary to distal migration of a foreign body from the

carotid artery has never been documented.

According to the literature, the mechanism of stroke following by neck trauma was secondary to the arterial wall injury, which result in ICA thrombosis with distal embolization to intracranial region [5]. In our case, distal migration of the foreign body (porcelain fragment) was confirmed by X-ray and CT, we found the foreign body was location in the proximal MCA, and the infarction region was in the area of deep perforating lenticulostriate branches of the MCA. Direct occlusion of a distal artery by the foreign body or a secondary thrombosis due to poor collateral circulation of deep perforating artery is likely to be the

mechanism of stroke in this patient. Whether the fragment entered her carotid artery immediately after the injury or sometime after the surgery is not known.

Our case experience emphasizes the importance of foreign body detection in neck trauma patients. CT scan as well as plain films should be taken in the emergence room without delay. The possibility of migration of foreign bodies should also be closely monitored. X-rays are helpful in detection metallic as well as some nonmetallic foreign bodies. CT is a better tool, especially in the cases of smaller foreign bodies [7]. It also provide additional information regarding cerebral parenchymal damages [6]. Unfortunately, although the foreign body was already evident in the radiological findings in our patient, it could not be identified or removed during the emergent surgery.

3. Conclusion

In conclusion, embolic stroke secondary to foreign bodies is a rare occurrence. Our patient is the first reported case having an embolic stroke secondary to distal migration of a foreign body from the carotid artery. We call attention to this rare neurologic complication of neck trauma with foreign body retention. Appropriate and prompt identification of concurrent vascular injuries, as well as the presence of local foreign bodies, is strongly advised in neck trauma patients.

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Declaration of Competing Interest

The authors have no conflicts of interest relevant to this article.

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