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Rare Case of Delayed Carotid Occlusion Secondary To Gunshot Fragments

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Cervical gunshot wounds are traumatic events with vascular and neurological sequelae. These complications typically arise within days to weeks of the initial trauma. There are few known case reports of vascular complications occurring decades after initial injury. Here we present the case of a patient with ischemic stroke in the middle cerebral artery (MCA) distribution secondary to complete occlusion of the left common carotid from a penetrating gunshot wound 15 years prior to presentation.

INTRODUCTION

Cervical gunshot wounds are traumatic events that may injure the carotid arteries, resulting in serious vascular complications such as hemorrhage, pseudo-aneurysms, fistulas, arterial dissections, luminal obstruction, emboli, and infection. The neurological sequelae include ischemic injury and stroke. These complications typically arise acutely, within days to weeks of the initial traumatic event. Here we present a case of a cervical gunshot wound resulting in delayed carotid thrombosis with cerebral infarction more than 15 years after the initial traumatic injury.

CASE DESCRIPTION

A 41-year-old male with a past medical history of gunshot wound to the cervical region 15 years prior was brought in by emergency medical services for right sided hemiparesis and right facial droop. As per EMS, the patient was found by his landlord on the floor of his apartment with altered mental status. On admission, the patient was poorly responsive, aphasic and interacted only through nodding of the head. Physical examination showed a large 14 centimeter well healed surgical scar along the left sternocleidomastoid, global aphasia, right-sided facial weakness, reactive pupils, diminished right-sided sensation with 0/5 strength in right upper extremity, 1/5 strength in right lower extremity, and downward Babinski sign. The left extremity sensory and motor functions were grossly normal. Brain CTs showed large left MCA territory infarction, including the basal ganglia, with a hyper-dense left MCA consistent with thrombosis (Figure 1). Neck CT angiography showed complete occlusion of the left proximal common carotid artery. Metallic fragments were found in the soft tissue along the left mandibular angle, adjacent carotid space and left C3 neural foramina, consistent with a penetrating injury (Figure 2). The patient was not considered a candidate for tissue plasminogen activator as he was outside the window period. The patient was started on aspirin 81 mg; statins were not indicated as the vascular insult was not atherosclerotic in nature. Patient was evaluated by physiatry and transferred to acute inpatient rehabilitation.

DISCUSSION

The symptoms exhibited by this patient of acute functional decline, right-sided hemiparesis and global aphasia are consistent with an acute infarction of the left MCA territory secondary to thrombosis. This occlusion likely occurred from advanced fibrosis of metallic gun fragments from a penetrating gunshot wound 15 years prior. As the patient was aphasic, it was difficult to determine the nature of his prior gunshot wound and how it was managed at the time. A literature review suggests the rarity of such cases, where neck trauma causes thrombosis of the carotid arteries without any preexisting pathology.1 A recent case report described two such patients, where neck trauma resulted in ischemic stroke secondary to internal carotid artery thrombosis.2 In contrast to our patient, both cases were fatal and sustained the trauma acutely, within 24 hours prior to admission.

It is likely that our patient had a missed vascular injury at initial presentation years earlier. A penetrating injury in close proximity to main vessels may cause partial injuries to the vasculature without any presenting signs. Such injuries have been reported with later complications of pseudoaneurysms, arteriovenous fistulas and arterial thrombosis or stenosis.3 In a recent study of 28 foreign military patients with complications of missed vascular injuries, 14% of patients had post-traumatic thrombosis with distal limb ischemia, primarily of the lower extremities.4 The mean time between injury and presentation was 228 weeks, indicating that the majority of these cases presented years afterwards. The authors concluded that patients with penetrating injuries require close monitoring, including angiography, even in the absence of overt clinical signs.

CONCLUSION

This case presents a rare occurrence of an ischemic stroke secondary to complete carotid artery thrombosis from a non-fatal penetrating traumatic cervical injury fifteen years prior. This demonstrates how a missed vascular injury, causing advanced fibrosis secondary to inflammation from bullet wound fragments, may result in artery thrombosis with delayed complications years after the initial injury. In order to avoid such complications, clinicians should have a high index of suspicion following neck injuries and routinely use preoperative angiography when managing such cases.

FIGURE LEGEND

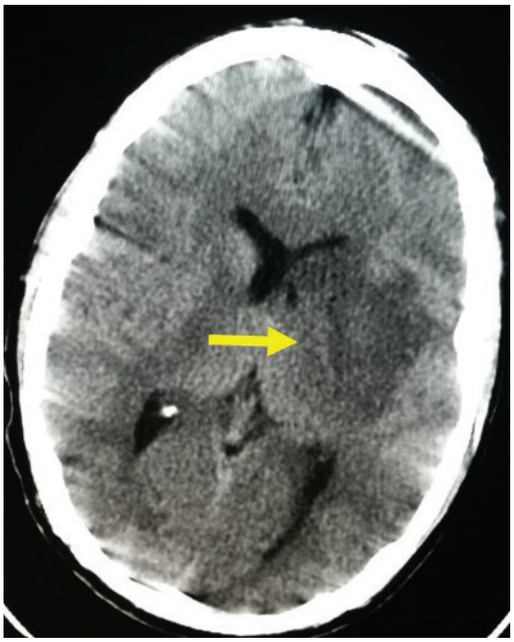

Figure 1: Brain CT of patient. Note the hypodensity in left basal ganglia consistent with ischemic infarction (white arrow).

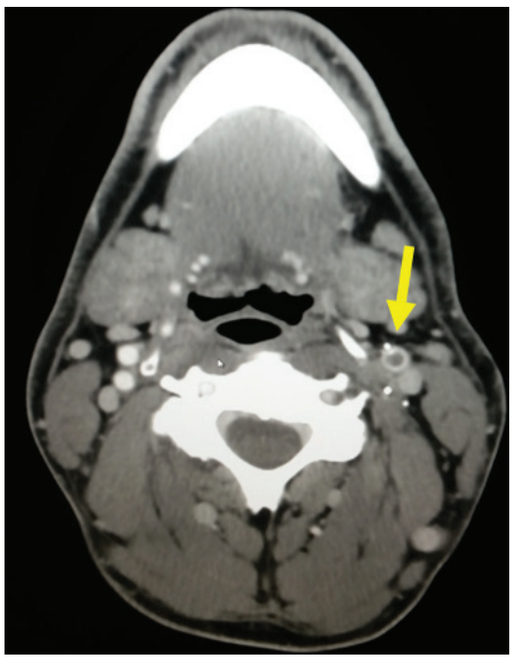

Figure 2: Cervical neck CT with angiogram. Note the complete occlusion of the left internal carotid (white arrow) with adjacent metallic fragments, consistent with a penetrating injury.

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