Abstract

Setting: Freestanding inpatient rehabilitation hospital

Case Diagnosis: iatrogenic vertebral artery dissection

Purpose: Investigation into a rare case of iatrogenic traumatic vertebral artery injury

Case Description

An 82-year-old male was independent of all activities of daily living prior to scheduled stent graft repair for a right common iliac aneurysm. A central line placed perioperatively allowed withdrawal of blood but resistance when pushing intravenous fluids. Assumed to be venous blood and procedure continued. Forty-five minutes later, the catheter was noted to have pulsatile blood flow and the scheduled case was stopped to repair the artery. A small hematoma was present around the lateral aspect of the neck and initially the internal carotid artery was suspected to be the site of injury. An intraoperative angiogram with right femoral artery approach and another with right brachial artery approach confirmed catheter placement at the vertebral artery with dissection.

Results

The case was subsequently treated as trauma to the vessel requiring repair and stent grafts were placed. A repeat angiogram revealed unobstructed blood flow through patent stents. Post-groove catheter, the patient developed right-sided hemiparesis, hoarseness, gait ataxia and dizziness with mildly slurred speech. Symptoms were consistent with focal neurological deficits resulting from brainstem and cerebellar ischemia due to the injured vertebral artery and a common presentation of lateral medullary syndrome. The patient was admitted to acute inpatient rehabilitation program.

Conclusion

In the neck, the two arteries that are at risk for dissection are the vertebral and internal carotid arteries. Vertebral artery dissection can be spontaneous or traumatic and typically present in patients 45-years-old or younger. Spontaneous causes of injury are attributable to weakened arterial walls from increased chronological age or connective tissue disorders. Traumatic causes usually result from blunt trauma as the majority of the vessel is extracranial and susceptible to injury. These patients initially present with severe headache, neck pain, or neck rigidity. We present a rare case of iatrogenic trauma to the vertebral artery.

Introduction

There are two vertebral arteries, one on the left and another on the right that arise from subclavian arteries. Initially intracranial, the two merge at the base of the pons intracranially and form the basilar artery, which in turn feeds into the Circle of Willis. Figure 1 illustrates the two most prominent extracranial vessels in the neck, the Vertebral Artery and the Internal Carotid Artery. The vertebral arteries and internal carotid arteries bilaterally are the two essential arterial vessels in the neck that are at risk for injury. Vertebral artery dissection is categorized as either traumatic or spontaneous. Spontaneous causes are due to weakened arterial walls and atherosclerosis. Traumatic causes are primarily due to blunt force trauma. The posterior inferior cerebellar artery is the largest branch of the vertebral artery. Injury manifests as neurological symptoms referred to as lateral medullary syndrome.

Case Report

The patient is an 82-year-old male with a past medical history of hypertension, hyperlipidemia, coronary and peripheral artery disease, and multiple transient ischemic attacks who was scheduled to undergo a stent graft repair for a right common iliac aneurysm. Prior to the procedure, he was independent of his activities of daily living. Multiple aneurysms were monitored for months and due to increasing size, after discussing further conditioning with outpatient therapy. Acute rehabilitation should compromise a comprehensive rehabilitation care team approach with all fields of therapy. Along with motor deficits, dysphagia should be appropriately addressed with video swallow testing.

Discussion/Conclusions

Injury to the vertebral artery can be either traumatic or spontaneous. The vertebral artery is extracranial for most of its course and is therefore susceptible to trauma. Traumatic sources of injury are usually due to blunt force trauma. Due to its anatomical location, however, the artery is also susceptible to iatrogenic injury.

Lateral medullary syndrome results from injury to the posterior inferior cerebellar artery, a major branch of the vertebral artery. Figure 2 illustrates a cross section of brain at the medulla. The highlighted area reveals distribution of Posterior Inferior Cerebellar Artery, the largest branch of the Vertebral Artery.

Symptoms include ipsilateral cerebellar signs, nystagmus, ipsilateral Horner’s syndrome, dysphagia, hoarseness. Acute rehabilitation should compromise a comprehensive rehabilitation care team approach with all fields of therapy. Along with motor deficits, dysphagia should be appropriately addressed with video swallow testing.

References


Figure 1. Lateral medullary syndrome 7

Figure 2. Extracranial part of vertebral artery