Vertebrojugular fistula

Etiologies

● Iatrogenic e.g., during spine surgery or angiography, chiropractic manipulation, nerve block injection or radiation therapy [1) 2)].

● Trauma e.g.,penetrating injury, or Gunshot wound

● Vasculitis

Vertebrojugular fistulas have been described in the literature associated with blunt or penetrating injury and iatrogenic or spontaneous development. Its presentation may be broad and may include symptoms of radiculopathy, vertebrobasilar insufficiency, tinnitus, and bruit.

The gold standard for diagnosis is digital subtraction angiography (DSA). Doppler ultrasonography, magnetic resonance-angiography and computerized tomography-angiography are also helpful

Endovascular management of VJF

Stenting. A polytetrafluoroethylene (PTFE) covered stent, e.g., Jostent, may be used to cover the ostia of the fistula [3)].

Coil occlusion. In the presence of adequate blood flow through contralateral healthy vertebral artery, the fistulous artery may be occluded with coils [4)]

Verify that the arterial wall with the fistulous connection is part of the occluded segment.

NBCA occlusion. Rarely, NBCA occlusion has been performed when stenting or coils occlusion were not possible [5)]. Onyx may also be used similarly.

Case reports

A case of an 86-year-old female who suffered a C5 vertebral fracture secondary to a ground-level fall that was initially treated conservatively due to the onset of new severe atrial fibrillation. However, the patient was later on taken to surgery due to progressive neurologic deterioration. Intraoperative complications led to the diagnosis of a vertebral-jugular fistula that was successfully embolized. The effective obliteration of the fistulae led to the recovery of both neurologic and cardiac symptoms [6)].

A case with sharp bread knife injury of the vertebral artery that was also complicated with a vertebrojugular fistula and pseudo-aneurysm [7].

A case of a fistula between the vertebral artery and the internal jugular vein that occurred after the erroneous placement of a central venous catheter. The patient was presented with tinnitus. Endovascular treatment with a balloon expandable covered stent placed into the vertebral artery was performed. One year follow-up showed satisfactory exclusion of the fistula, patency of the stented vertebral artery, and resolution of the symptoms. Only few other similar cases are reported in the literature with the use of different types of stents [8].

Vertebrojugular fistula mimicking an intradural schwannoma [9].

Two patients presenting with the carotid blowout syndrome and one patient with a vertebrojugular fistula were treated with covered stents. This allowed for preservation of the vessel and was a treatment alternative to cerebral bypass.

Covered stents provide a viable means of preserving the cervical vessels in selected patients; however, long-term follow-up is necessary to determine stent patency and permanency of hemostasis [10].

A patient with a chronic, symptomatic V2 segment vertebrojugular fistula was successfully treated with a vertebral artery stent graft, with immediate tinnitus resolution. No early or late complications were observed, and at 45 months of follow-up, the patient remains asymptomatic with a patent stent graft [11].

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