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Case Report

Scalp Vein Detected Using Internal Carotid Angiography that Did Not Result in Venous Sinus Compromise

Kazuhiro Ohtakara, Tadashi Kojima, and Waro Taki

Summary: We present an unusual case of a scalp vein detected by using angiography of the internal carotid artery. The vein arose from the superior sagittal sinus and drained into the deep posterior cervical vein via the parietal emissary vein. This scalp vein may be a collateral pathway for venous sinuses; however, the patient had no evidence of venous sinus occlusive disease or intracranial hypertension.

Under normal conditions, opacification of scalp veins on internal carotid angiograms is very unusual (1, 2). A scalp vein may be seen as an important collateral pathway in the presence of venous sinus compromise caused by various disorders such as parasagittal meningiomas (2) or venous sinus thrombosis (3, 4). We describe an unusual case of visualization of a scalp vein by angiography of the internal carotid artery that did not result in compromised flow within the intracranial venous sinuses.

Case Report

A 75-year-old woman was referred to our institution with a diagnosis of internal carotid artery aneurysm detected using MR angiography. Her history was unremarkable except for treatment by her local physician for systemic lupus erythematosus 10 years earlier. The neurologic examination showed no abnormalities. Angiography of the internal carotid angiography showed a saccular aneurysm of the left internal carotid artery bifurcation and a well-defined scalp vein (Fig 1). The scalp vein originated from the superior sagittal sinus and drained into the right, deep, posterior cervical vein via the parietal emissary vein. The flow within the venous sinuses was preserved, although the left transverse sinus was hypoplastic.

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Discussion

Scalp veins occasionally can be seen in the venous phases on angiograms of external and common carotid arteries or by direct injection of the scalp veins (1). Under normal conditions, however, opacification of scalp veins on internal carotid angiograms is extremely rare (1, 2). Heindrich et al (cited by Yasargil and Damur [3]) reported visualization of frontal emissary veins in only 1% of 4000 carotid angiograms. The parietal emissary vein is usually not shown by normal internal carotid angiograms (1). According to Waga and Handa (2), abnormal filling of scalp veins may be seen on carotid angiograms under the following conditions: superior sagittal sinus occlusion by parasagittal meningeal tumors and venous sinus thrombosis (3, 4), arteriovenous malformations of the scalp, malignant tumors involving the scalp and skull, sinus pericranii, and increased intracranial pressure (5). Scalp veins may act as important collateral venous pathways in cases of venous sinus occlusion (2).

In the present case, the scalp vein was detected by using internal carotid angiography, whereas neuroimaging examinations revealed no abnormal conditions compromising the venous sinuses. The scalp vein arose from the superior sagittal sinus via the parietal emissary vein and drained into the deep posterior cervical vein. The posterior condyloid vein connects the deep posterior cervical vein with the jugular bulb (1). Therefore, this scalp vein may be a possible collateral pathway for venous sinuses in flow-restricting circumstances.

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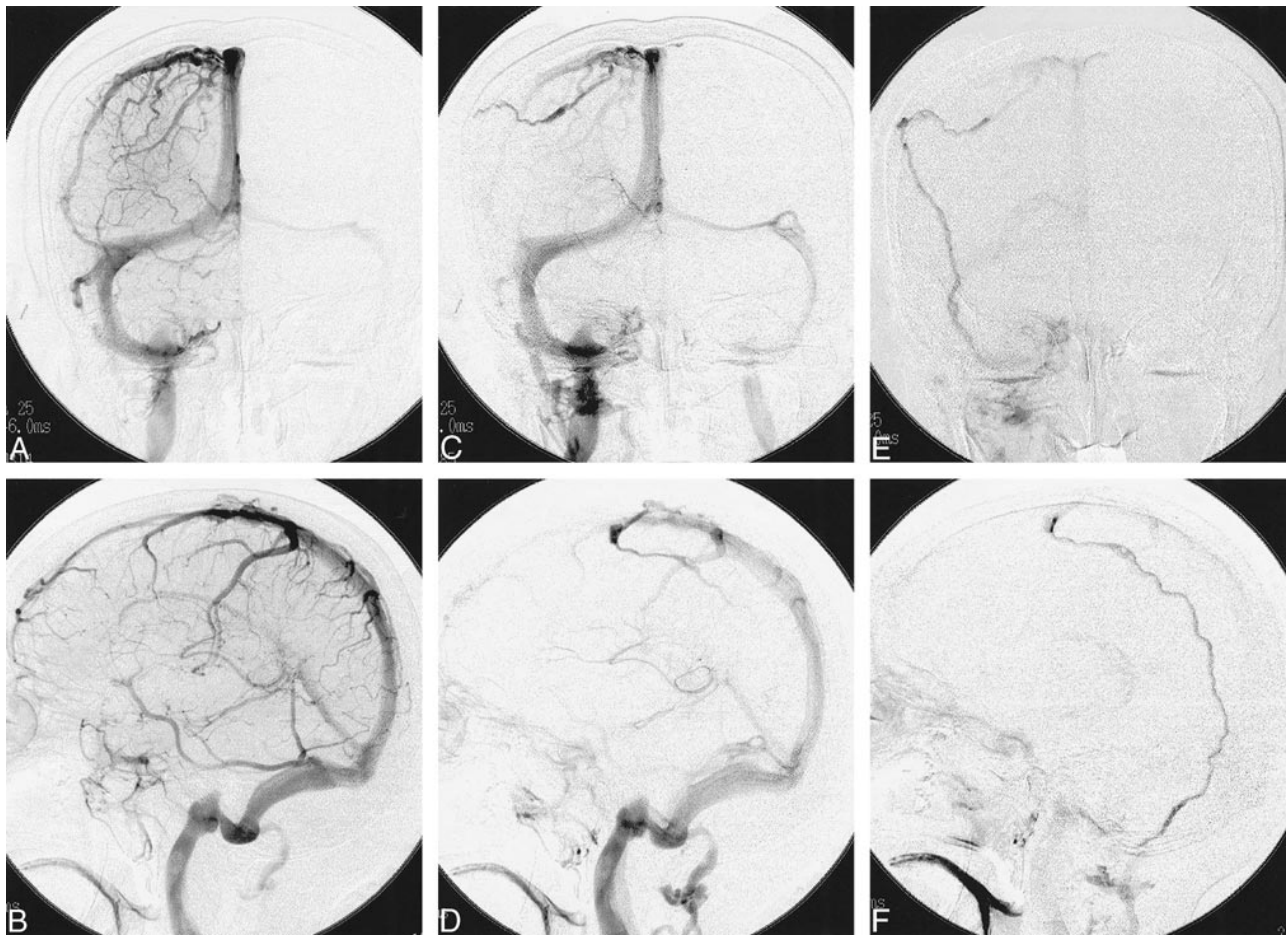


FIG 1. Serial venous-phase angiograms of the right internal carotid artery shows a scalp vein arising from the superior sagittal sinus via the parietal emissary vein and draining into the deep posterior cervical vein. The left transverse sinus is hypoplastic. A, C, and E, Towne projections; B, D, and F, lateral projections.