

A Case of Subcortical Hemorrhage in the Left Temporal Lobe Caused by Multiple Dural Arteriovenous Fistulas

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Transverse sinus-sigmoid sinus (TS-SS) dural arteriovenous fistula (dAVF) is common type of dAVF, on the other hand, anterior condylar confluence (ACC) dAVF is relatively rare. There has been no report presenting patients with TS-SS dAVF and ACC dAVF identified simultaneously yet. We present a case of TS-SS dAVF and ACC dAVF that developed subcortical hemorrhage of left temporal lobe. A 66-year-old woman with no past history was transferred to our hospital for sudden-onset consciousness disturbance, and was urgently admitted after the detection of a subcortical hemorrhage in the left temporal lobe. We suspected a dAVF based on magnetic resonance angiography and performed digital subtraction angiography (DSA). DSA revealed that the left occipital artery, left ascending pharyngeal artery, left middle meningeal artery, left tentorial artery, and posterior meningeal artery flowed into the TS-SS and ACC. DSA also showed outflow from the TS-SS to the brain surface through the vein of Labbé and the vein of Trolard. We performed transvenous embolization to prevent re-bleeding, she was then discharged from our hospital and her remaining sensory aphasia gradually improved. In the present study, the active investigation to determine the cause of subcortical hemorrhage led to a definitive diagnosis. The combination of ACC dAVF and TS-SS dAVF has not been reported thus far and this is considered a valuable case.

Keywords: Dural arteriovenous fistula—anterior condylar confluence—transverse sinus-sigmoid sinus—subcortical hemorrhage
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Case Report

A 66-year-old woman with no past history was transferred to our hospital for sudden-onset consciousness disturbance, and was urgently admitted after the detection of subcortical hemorrhage in the left temporal lobe on head computed tomography (CT) (Fig 1, A). She then suffered a generalized convulsion with left conjugate deviation of the eyes and was temporarily ventilated; however, antiepileptic drugs stopped the convulsion and ventilation was withdrawn. She had no signs of tinnitus, hypoglossal nerve paralysis, diplopia, exophthalmos, visual impairment suggesting a dural arteriovenous fistula

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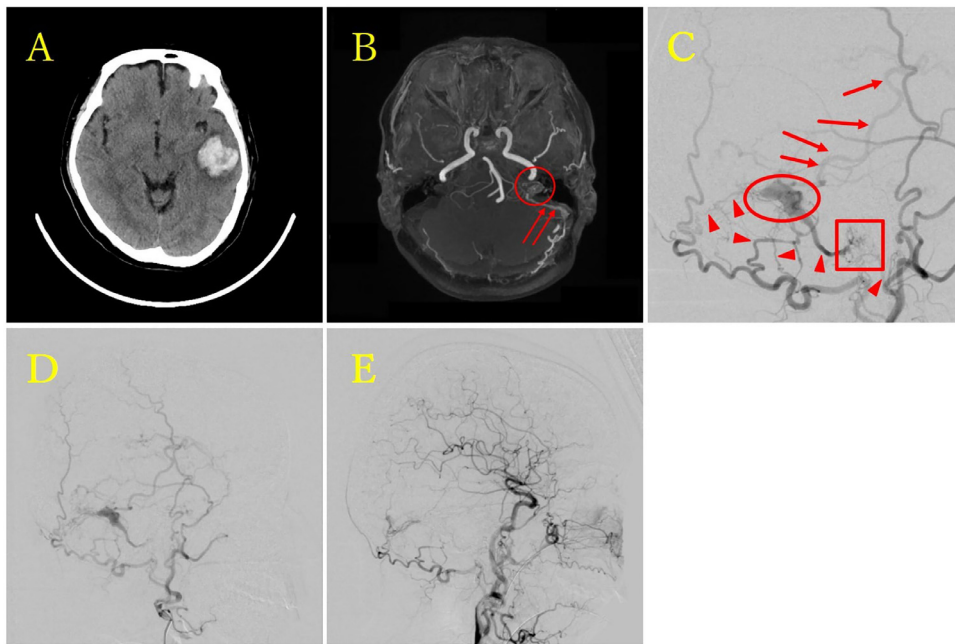


Figure 1. (A) Initial computed tomography shows subcortical hemorrhage of left temporal lobe. (B) Magnetic resonance angiography reveals the shunt (arrows) from the developed left occipital artery to the sigmoid sinus (circle). (C) Digital subtraction angiography shows transverse-sigmoid sinus and anterior condylar confluence dural arteriovenous fistula, their feeders that receive blood flow from the left occipital artery, left middle meningeal artery, and left ascending pharyngeal artery are indicated by arrowheads, and drainer heading to the brain surface is indicated by arrows. (D) Left external carotid angiography before embolization reveals transverse sinus-sigmoid sinus and anterior condylar confluence dural arteriovenous fistula. (E) Transverse sinus-sigmoid sinus and anterior condylar confluence dural arteriovenous fistula disappear on left common carotid angiography after embolization.

(dAVF). However, since head magnetic resonance angiography showed a connection between the sigmoid sinus and the developed left occipital artery (Fig 1, B). We suspected a dAVF and conducted digital subtraction angiography (DSA), which revealed that the left occipital artery, left ascending pharyngeal artery, left middle meningeal artery, left tentorial artery, and posterior meningeal artery flowed into the transverse sinus-sigmoid sinus (TS-SS) and anterior condylar confluence (ACC). DSA also showed outflow from the TS-SS to the brain surface through the vein of Labbé and vein of Trolard (Fig 1, C, D). Based on these findings, we performed transvenous embolization to prevent re-bleeding (Fig 1, E). She was then discharged from our hospital and her remaining sensory aphasia gradually improved.

Discussion

Subcortical hemorrhage develops due to various causes other than hypertension (eg, cerebral arteriovenous malformation, dAVF, cavernous angioma, cerebral venous thrombosis, and cerebral amyloid angiopathy). Our patient had no history of hypertension or dementia. Furthermore, magnetic resonance angiography showed a connection between the sigmoid sinus and the developed left occipital artery. We therefore suspected a dAVF and performed DSA, leading to a definitive diagnosis. ACC is a diverticulum-like vein structure located outside the hypoglossal canal and serves as an important cerebral

venous recirculation passage.¹ ACC dAVF is a rare disease that accounts for approximately 3%-5% of all dAVF. Patients often present with strong tinnitus and hypoglossal nerve paralysis. On the other hand, symptoms such as diplopia, exophthalmos, visual impairment (seen in cavernous sinus dAVF) may be present.² TS-SS dAVF is the second most common type of dAVF in Japan, accounting for approximately 28% of all dAVF; patients often present with tinnitus. Aphasia and convulsion due to venous congestion, and bleeding due to venous hypertension may occur.³ In this case, a drainer heading to the brain surface through the vein of Labbé and vein of Trolard from TS-SS was observed, and it was presumed that combined with reflux from ACC dAVF caused venous hypertension and developed subcortical hemorrhage. This case is considered valuable because there are no previous reports on the combination of TS-SS dAVF and ACC dAVF.

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