Surgical Treatment of Venous Varix Associated with a Cerebral Developmental Venous Anomaly

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Abstract

Venous varix occurring with a developmental venous anomaly is a rare disease entity that may be found incidentally by conventional cerebral angiography. Developmental venous anomaly (DVA) without venous varix has a normal physiology, and thus, in most cases treatment is not necessary. Although most varices with venous anomalies are known to be clinically silent but if hemorrhage from increased venous pressure occurs, then a critical intracranial hemorrhage (ICH) may follow. But there is no guideline about conservative and surgical treatment. The authors present their surgical experience of 35-year-old man with a large venous varix occurring with DVA and rationale for surgical treatment.

ABBREVIATIONS

DVA: Developmental Venous Anomaly; ICH: Intracranial Hemorrhage; LDL: Low Density Lipoprotein; MR: Magnetic Resonance; SAH: Subarachnoid Hemorrhage; AVM: Arteriovenous Malformation

INTRODUCTION

Developmental venous anomaly (DVA) is one of the most common vascular malformations that consist of normal brain tissue with anatomically abnormal venous structure. In conventional cerebral angiography, this defect is found during the delayed venous phase. The absence of normal venous drainage may cause venous hypertension and promote bleeding. However, some authors have reported that DVA is a physiologic normal variation, which does not cause any problem in most people [1]. Furthermore, this tendency not to be problematic probably explains the lack of information on the subject.

The outer surfaces of venous varices resemble those of arterial aneurysms, and venous varices can occur anywhere in the venous system. Furthermore, some reports have been issued on the coexistence of venous varices and DVA. Like DVA, varix with DVA is a rare disease, and its surgical management had not been previously reported [2,3]. Here, the authors describe the surgical management of a large varix occurring with DVA. The varix was treated by simple coagulation and no complication was encountered.

CASE PRESENTATION

The 35-year-old man with complaints of occasional headache and dizziness was admitted to our clinic. He did not exhibit any neurological deficit or medical problem, except a slightly elevated low density lipoprotein (LDL) level. He was a 15-pack-year smoker and had a history of benign hypertension, which had never been treated.

His older brother and sister had died due to cerebral infarction and subarachnoid hemorrhage (SAH) respectively, and another brother had undergone aneurysm clipping for an aneurysmal SAH. Based on his initial T1 enhanced magnetic resonance (MR) images an aneurysmal sac was suspected in the left sylvian fissure (Figure 1). Conventional angiography detected no aneurysm in the arterial phase, but revealed a large venous varix occurring with DVA in the venous phase. The DVA had the so called “Caput Medussae” characteristic appearance was present in superficial middle cerebral veins and drained in the two collecting veins, which drained into the sphenoparietal sinus via a large venous varix (Figure 2). Osteoplastic craniotomy was performed and after opening the dura, the venous varix with two collecting veins was found in the sylvian fissure. The varix was yellowish in color due to atherosclerotic change. The aim of surgery was to reduce the size of the varix while leaving the collecting veins intact.

Unlike higher pressures encountered during aneurysmal neck clipping, venous pressure is relatively low, and thus, coagulation was sufficient to plasticize the large varix.

DISCUSSION

DVA is an anatomic abnormality, but a physiologically normal condition of the cerebral venous system as it develops...
due to the risk of severe venous infarction, and thus, leaving the DVA intact, especially the collecting veins, was the most important surgical consideration.

The authors decided surgical elimination of venous varix to reduce the intravenous pressure, because increased flow from varix promotes consistent varix growing and higher pressure. Lovrencic-Huzjan, et al. reported a thrombosed DVA can lead to SAH in the absence of parenchymal hemorrhage. Furthermore, it was suggested an infratentorial location in combination with exertion probably increase the risk of SAH, and that thus, DVA should be included in the differential diagnosis of acute subarachnoid bleeding. In addition, the authors proposed that DVA possibly accounts for some non-aneurysmal SAH cases [6].

A superficially located venous varix occurring with DVA can be easily removed without retracting the brain, and low venous pressure frees the surgeon from the risks of premature rupture or temporary clipping associated with aneurysmal surgery. Decisions as to whether to operate on a non-symptomatic venous varix are difficult. In our opinion, many factors, such as, symptoms, patient age, family history, which was abnormal in our case, varix size and location, and general medical condition, should be considered. If it is decided that the varix is stable, follow up angiography or MR venography may be helpful.

We suggest that if a large venous varix associated with DVA is found incidentally by angiography, surgical management is necessary if the varix is located in a non-eloquent, superficial area, even simple coagulation would help prevent varix rupture.

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REFERENCES


