Treatment Differences in Cases With Venous Angioma

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ABSTRACT

Venous angiomas were found to be the most common cerebral vascular malformations, composing 63% of such lesions in two autopsy series. Annual bleeding risk associated with venous angiomas is about 0.22 % per year. Venous angiomas are generally silent lesions because of their dynamic features, and are low flow and low pressure vascular structures draining normal brain tissue. An angioma rarely causes symptoms such as bleeding, seizure, hemifacial spasm, trigeminal neuralgia, aqueduct compression, nonhemorrhagic infarction and thrombosis of the draining vein. Even if it should bleed, the lesion can be managed conservatively in asymptomatic or mildly symptomatic patients. In this paper we report two venous angioma cases. The first patient bled twice in a short period of time and the angioma was located at the posterior fossa next to the left lateral recess. The second patient recently suffered a cerebral stroke that was located in the vicinity of the right caudate nucleus and not associated with the venous angioma that was located next to the left caudate nucleus. This patient had been under warfarin sodium treatment for 14 years due to his previous coronary artery bypass surgery, but unknowingly there was a venous angioma located next to the caudate nucleus.

KEY WORDS: Venous angioma, Hemorrhage, Warfarin sodium, Cerebrovascular stroke.

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INTRODUCTION

Venous angiomas were found to be the most common cerebral vascular malformations, composing 63% of such lesions in two autopsy series (6, 15). The incidence is between 0.48% (17, 18) and 2.56 % (15), and annual bleeding risk associated with venous angiomas is about 0.22% per year, except for venous angiomas located in the posterior fossa or during pregnancy (6). Venous angiomas are generally silent lesions because of their dynamic features, and are low flow and low pressure vascular structures draining normal brain tissue. An angioma rarely causes symptoms such as bleeding, seizure, hemifacial spasm, trigeminal neuralgia, aqueduct compression, nonhemorrhagic infarction or thrombosis of the draining vein (1, 3 - 9, 14, 15, 18). Even if it should bleed, the lesion can be managed conservatively in asymptomatic or mildly symptomatic patients (2). In this paper we report two venous angioma cases. The first patient bled twice in a short period of time and the angioma was located at the posterior fossa next to the left lateral recess. The second patient recently suffered a cerebral stroke that was located in the vicinity of the right caudate nucleus and not associated with the venous angioma that was located next to the left caudate nucleus (Figure 1, 2A, 2B, 2C). This patient had been under warfarin sodium treatment for 14 years due to his previous coronary artery bypass surgery.

Case 1: A 64-year-old woman, with a 5-day history of severe headache and mild ataxia was admitted to our neurosurgery clinic. Neurological examination revealed only right-sided ataxia. Cranial

computerized tomography (CCT) (Figure 1) demonstrated A fresh haemorrhagic area measuring 0.5 x 0.5 x 0.5 cm which was located in the vicinity of the vermis and posterior to the aqueduct. There was neither hydrocephalus nor a pressure effect. Magnetic resonance imaging (MRI) and conventional angiography (Figure 3A, 3B) were performed after cranial tomography. MRI (Figure 2A, 2B, 2C) demonstrated caput medusa appearance

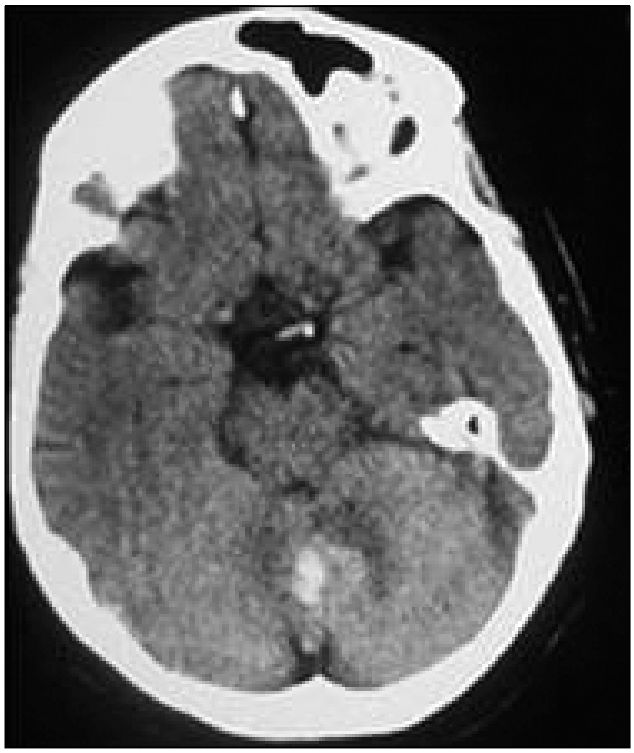


Figure 1: Non-enhanced Axial cranial tomography images showing hemorrhahic area on left side of the posterior fossa.

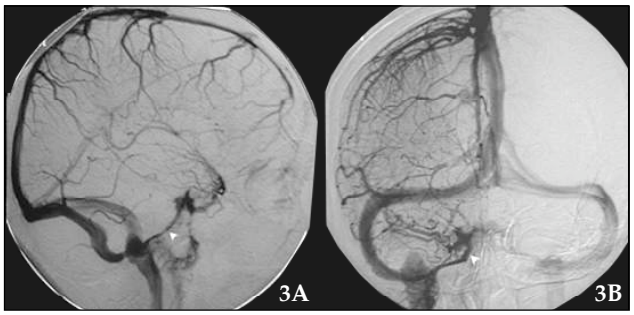


Figure 3: A) Lateral (left) **B**) anteroposterior (right) conventional angiography images showing venous structures an draining vein which is drained into the junction of the right sigmoid sinus and right jugular vein.

at the left side of the left cerebellar peduncle and left lateral recess and conventional angiography demonstrated a draining vein which drained into the junction of the left the sigmoid sinus and left jugular vein (Figure 3A, 3B). The patient was treated conservatively by controlling the blood pressure and headache. At the 22nd inpatient day, she couldn't walk alone because of her worsening ataxia and also began to vomit intermittently. Her neurological examination revealed impaired cerebellar function including ataxia, dysmetry and dysdiadochokinesia. CCT was performed again after her second deterioration, and CCT (Figure 4) study revealed an increased level of bleeding volume due to the second hemorrhage. Suboccipital craniectomy was performed followed by hematoma evacuation and the draining vein of the venous angioma was preserved during hematoma evacuation. The patient's general condition improved and new CCT (Figure 5) demonstrated that there was no infarction

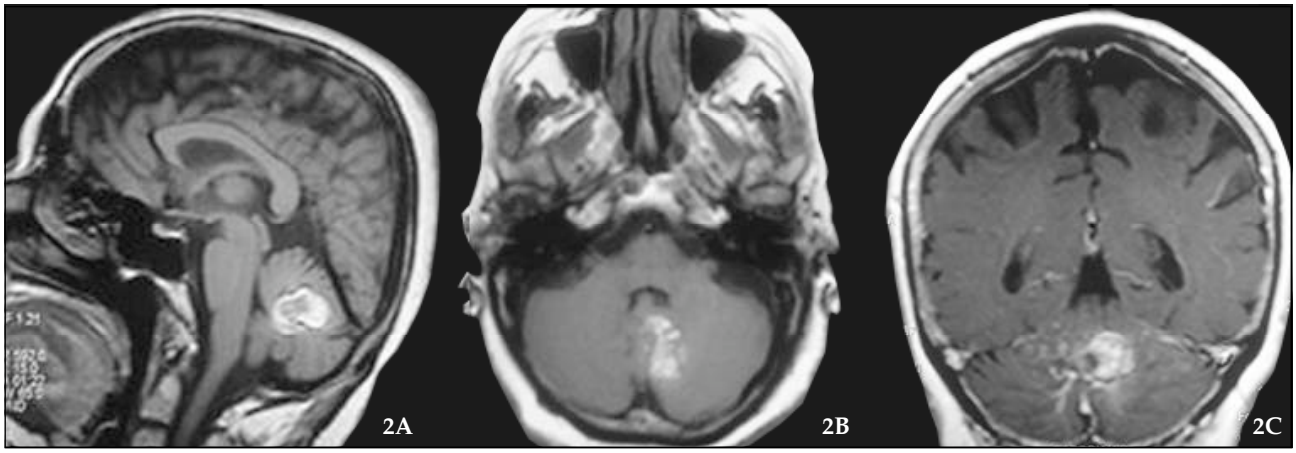


Figure 2: A) Sagittal (left), **B**) axial (middle), **C**) coronal (right) **A**) T1 – weighted sagittal MRI showing hemorrhagic area in the posterior fossa **B**) T1 – weighted MRI axial image showing hemorrhagic area in the posterior fossa **C**) T1 – weighted coronal MRI with Gd- enhanced showing venous structures around hemorrhagic area.

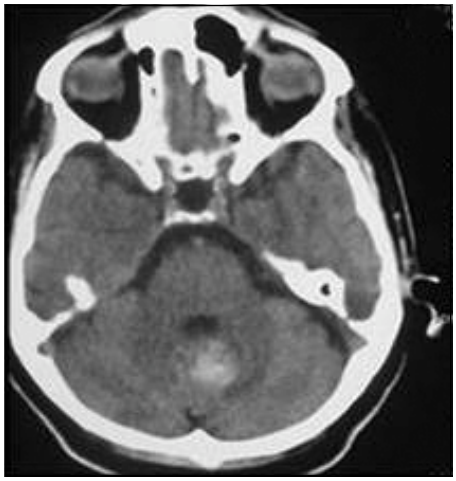


Figure 4: Axial cranial tomography (without contrast) images which was taken after patient clinical condition get worsened showing hemorrhahic area on left side of the posterior fossa. Hemorrhagic area is located next to the lateral recess.

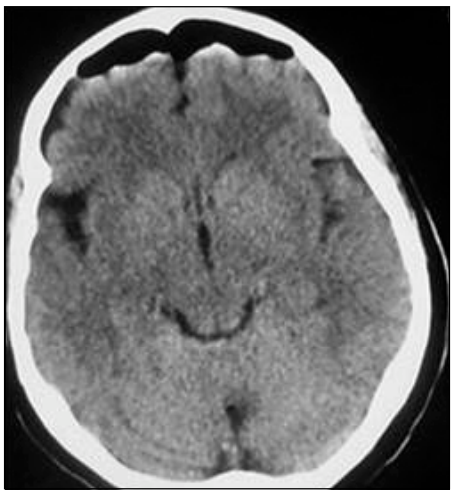
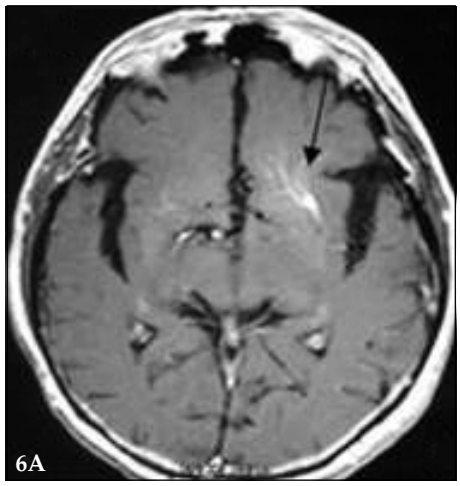


Figure 5: Axial cranial tomography (without contrast) images which was taken first postoperative day showing no hemorrhahic area and infarct area but there is air in the anterior fossa due to sitting position suboccipital craniotomy.

and residual hematoma. The patient was discharged with only mild ataxia.

Case 2: A 76-year-old male patient was admitted to our hospital with a complaint of left-sided loss of power in the upper and lower extremities. His medical history revealed that he had undergone coronary artery bypass surgery twice 14 years ago, and had been under warfarin sodium therapy since then. His INR values had been kept between 2.5 and 4.0. Neurological examination showed left-sided hemiparesia and a positive babinski sign on this side together with increased deep tendon reflexes response on the left side. His vital signs were stable. T1-T2 weighted and diffusion-perfusion weighted MRI was performed. T1-T2 weighted imaging (Figure 6A) showed a venous angioma that had collecting venules and a draining vein in the vicinity of the left caudate nucleus. Diffusion–perfusion weighted imaging showed that there was an acute infarct next to the right caudate nucleus; the size of the infarct area was measured as 1x 2x 1.5 cm (Figure 6B) His clinical condition improved over time and warfarin sodium therapy was continued during his hospitalization. The patient was discharged on coumadin and antihypertensive medication with a slight left hemiparesis.



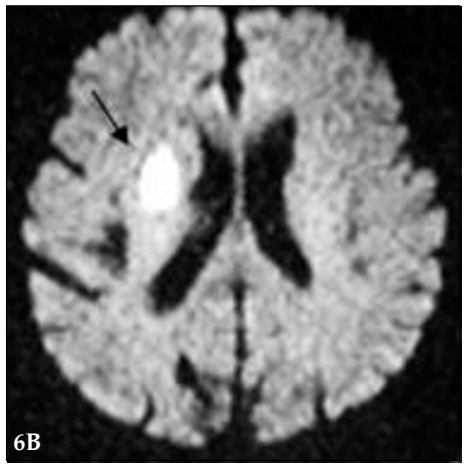


Figure 6: A) Axial Gd-enhanced T1-weighted MRI showing venous angioma next to the left caudate nucleus. **B)** Axial Diffusion- Perfussion MRI showing hyperintense area next to the right caudate nucleus.

DISCUSSION

Due to widespread use of MRI in the last twenty years in clinical practice, neurosurgeons have encountered more and more patients diagnosed with coincidental venous angiomas (2, 10). The problem is deciding which patient should be operated. The recent concept has been a conservative approach to this pathology. The surgical evacuation of the venous angiomas was advocated about twenty years ago (11, 13) but a conservative approach has been accepted in the last few years (2). Surgical evacuation of this lesion in asymptomatic patients is unnecessary and may even lead to an infarct postoperatively due to inadvertent damage to the draining vein (2, 12, 16, 17). Surgical intervention can be performed for a venous angioma in the presence of symptoms such as trigeminal neuralgia, hemifacial spasm, aqueduct compression, bleeding or seizure. When our patient's clinical condition worsened, we performed a second CCT that showed an increased amount of blood around the same area. As we normally expected the resorption of this amount of blood from the bleeding area within 22 days, we thought that this was a second hemorrhage in the same area. Instead of conservative treatment, we preferred to operate on the patient after the second bleeding (Figure 4). Another clinical aspect of venous angioma is asymptomatic patients is that these patients may have coexisting pathologies such as coronary artery disease, cerebral stroke and deep venous thrombosis. In this case, we have to decide whether using anticoagulant agents may be helpful or not. We also need to be aware of the possibility of bleeding due to venous angioma. Our second patient had used anticoagulant therapy for 14 years with an undiagnosed venous angioma located in the vicinity of the left caudate nucleus. He has undergone coronary artery bypass surgery twice 14 years ago and had also suffered from cerebral stroke recently. He had used anticoagulation therapy for 14 years and did not experience any bleeding from his venous angioma although his INR values were kept between 2.5 and 4. We therefore believe that anticoagulation therapy can be used in asymptomatic patients with coronary artery disease, cerebral stroke and deep venous thrombosis.

These two cases showed us that the importance of being conservative as well as being flexible when patients with venous angioma have worsening clinical condition associated with bleeding or coincidentally found venous angioma together with other diseases such as cerebral infarct, coronary artery disease and deep venous thrombosis.

CONCLUSION

Every venous angioma case should be evaluated on an individual basis. We think that surgery should be avoided in asymptomatic patients. Our second case has indicated that anticoagulation therapy can be used if it is indicated for any other medical condition such as cerebral stroke, deep venous thrombosis or coronary artery bypass surgery. Warfarin sodium therapy has not had any adverse effect on our second patient who had been under anticoagulation therapy for 14 years. Anticoagulation therapy can be used cautiously if such patients need anticoagulation therapy for any reason except hemorrhagic infarct due to thrombosis of the draining vein of the venous angioma.

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