A Case of Scalp Cavernous Hemangioma Simulating Sinus Pericranii

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ABSTRACT

The authors report a case of cavernous hemangioma in the occipital region, which resembled sinus pericranii, protruded in the recumbent posture. A 28-year-old male was admitted with a chief complaint of an occipital fluctuating mass, 5cm in diameter, accompanied by slight pain. The skull X-P was normal. A direct puncture revealed that the lesion was a blood cyst. A cystogram by percutaneous needle puncture revealed paramedian blood pooling with some draining veins but did not show any transcranial communicating vessels. A T2 weighted MR image demonstrated a well demarcated high intensity lesion just beneath the corium. The subtotally removed specimen turned out to be a cavernous hemangioma.

We discerned a conceptual confusion of pseudosinus pericranii with scalp cavernous hemangioma, based on the literature review. And we propose that scalp cavernous hemangioma, even if it changes its size according to posture, should not be simply designated as sinus pericranii.

Key words: Cavernous hemangioma, Scalp, Sinus pericranii, Magnetic resonance imaging

Cavernous hemangioma is a common disease in the cutaneous region2,5,11, but is not so familiar in the head2,8,10, especially in the scalp region. We experienced a case of cavernous hemangioma in the occipital region which had no mass effect in an upright posture but protruded in a recumbent posture, and remarkably so with the Valsalva’s maneuver. We are reporting this case especially with regard to the clinicopathological correlation of this disease with sinus pericranii and the diagnostic usefulness of MRI.

CASE REPORT

A 28-year-old male was admitted to the Department of Neurosurgery at Hiroshima University School of Medicine on October 25, 1990 with a chief complaint of occipital mass. He had not had a severe head injury. He had first noticed the lesion when he was 13 years old, but had not worried about it because of its small size and the lack of pain. From about two years ago, it gradually became larger and caused slight pain when lying in a recumbent posture.

On admission, he was in good health and had no skin lesions, except the occipital one. The neurological examination was also normal. The occipital mass could not be identified in the upright posture, but it appeared as a subcutaneous immovable, ovale, non-pulsatile, and fluctuant mass, 5cm in longer diameter in the recumbent posture, an protruded remarkably when he raised intrathoracic pressure (Valsalva’s maneuver). It was accompanied by port wine skin stains in the rostral and caudal adjacent regions (Fig.1). Bruit was not audible. A needle aspiration disclosed that the mass was filled with venous blood of which the O concentration was 49.9mmHg, and the CO2 concentration was 42.4mmHg. A plain cranogram showed no abnormality. Enhanced CT revealed a subcutaneous poorly differentiated enhanced mass, difficult to distinguish from the nuchal muscles. Neither an external nor internal carotid angiogram showed any feeding vessels or tumor stain. A cystogram by percutaneous needle puncture revealed paramedian suboccipital blood pooling with some draining veins, believed to drain mainly into the vertebral plexus, but did not show any communication with the intracranial dural sinuses (Fig.2). A T1 weighted MR image revealed a slightly low signal intensity lesion, which was partially enhanced by means of a gadolinium-DTPA injection. A T2 weighted MR image, most useful for ascertaining the real extent of the lesion, revealed a well demarcated high intensity lesion, 10cm in length (rostral to caudal), extending from just below the external occipital protuberance to just behind the C2 spinous process.
Fig. 1. A photograph of the patient's occiput.
left: in upright posture.
right: in recumbent posture.
The occiput subcutaneous mass protruded in the recumbent posture.

Fig. 2. The cystogram through the direct needle puncture.
left: antero-posterior view.
right: lateral view.
The cyst was filled with 5ml contrast media. No opacification of the intracranial venous system was seen.
left middle right

Fig. 3. left: T1 weighted MRI showed an indistinct lesion with slightly low signal intensity (white arrow). middle: The lesion was partially enhanced by gadolinium injection (arrow head). right: T2 weighted MRI clearly showed the lesion with high signal intensity (arrow).

Fig. 4. upper: Photomicrograph of the tumor. The tumor is composed of numerous spaces of various sizes and fibro-collagenous strands. In some places, these spaces are contiguous to the muscle fiber and peripheral nerve. (H.E. x50) lower: Endothelial lining (arrow) and underlying scant smooth muscle fibers (arrow head) are shown. (H.E. x400)

An operation was performed under general anesthesia in the prone position. Using a suboccipital Z shaped skin incision, the subcutaneous soft tumor was exposed. The tumor lay just beneath the corium and extended into the suboccipital muscle group. The tumor had a tough and white capsule which was filled with blood, and it could be easily detached from the corium and the cranium. However, the separation from the muscles was relatively troublesome because of the adhesion. A few small feeding arteries crossing the margin of the tumor were manageable. Slow venous bleeding occurred when the capsule was torn, resulting in the transient collapse of the tumor. The tumor was pursued into the nuchal muscles, and was finally subtotally excised.

A histological examination revealed that the tumor was composed of a honeycomb of unequal numerous spaces, sometimes large, which were separated by fibrous strands (Fig.4a). In some places, the spaces adjoined striated muscles. The stroma consisted of fibro-collagenous tissue, which was lined with a single layer of endothelial cells. Under the endothelial lining, scant smooth muscle fibers could be seen (Fig.4b). The histological diagnosis was cavernous hemangioma.

DISCUSSION

This case involved scalp cavernous hemangioma, which protruded in the recumbent posture, and by Valsalva's maneuver. In this case, increased intrathoracic pressure might have cause the engorgement of the draining veins and the subsequent distention of the blood space in the angioma, resulting in the marked swelling of the lesion.

When we first came across this kind of scalp fluc-
tuant swelling which changes its size depending on posture, our first impression was that it was an encephalocele, posttraumatic leptomeningeal cyst, or sinus pericranii. According to the literature review, eosinophilic granuloma must be added. However, in this case, a plain craniogram and CT scan easily ruled out the two kinds of lesions.

Sinus pericranii is an epicranial blood cyst, which changes its size depending on posture and has communications with the intracranial dural sinuses. It is only a symptom complex, so etiologically it must be added. However, since it is hindered by the intratumoral septa. Many authors report the superiority of MRI in diagnosing hepatic cavernous hemangioma. They are composed of lakes of slowly flowing blood and have a long T2 relaxation time. So, on T2 weighted images they have a significantly greater signal intensity. On the other hand, T1 weighted images do not show the tissue specificity. Conventional gadolinium administration rarely enhances the lesions because of very slow blood circulation accompanied by large vessels in this lesion.

These characteristics of cavernous hemangioma on MRI were also appeared in our case, and the MRI was more useful than the cystogram in ascertaining the real extent of the lesion and was felt to be a very useful method for diagnosing scalp cavernous angioma.

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REFERENCES