Huge Congenital Angioma of the Scalp

— A Case Report —

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Summary: The authors encountered a case of a rare sized huge congenital angioma of the scalp and cured it by total removal.

A two-month-old male infant was born at full term by spontaneous vaginal delivery. A tumor the size of an adult's fist was recognized at the left temporal region. Selective external carotid arteriogram revealed four main feeders: namely occipital artery, frontal branch and parietal branch of superficial temporal artery, and posterior auricular artery. The main drainers were occipital vein and superficial temporal vein. At operation, this tumor was easily stripped from galea and was noted to have a capsule. While the feeders were being tied off and sectioned, the tumor rapidly reduced in size. Then, after ligation and sectioning of the occipital vein and superficial temporal vein as drainers, the tumor was removed in its original form.

In the histological examination of this tumor, it was observed that inner layer of the epithelial tissue was almost evenly filled with capillary, thus, providing a diagnosis of capillary angioma.

Key words: angioma of the scalp—capillary angioma—arteriovenous fistula—arteriovenous malformation—congenital tumor—scalp—hemangioma

Introduction

Angiogenic neoplasms of the scalp may be divided into two subtypes: congenital and acquired (Jiemenz and Goree, 1969). There are many reports in the literature concerning traumatic arteriovenous fistulas, the most common acquired angiogenic disorders. In this paper we described a patient with congenital angioma (or arteriovenous malformation) of the scalp of unusually large size who responded to total excision of the tumor and was cured.

Case Presentation

The patient was a 2-month-old male infant. He was born at full term by normal spontaneous vaginal delivery, Apgar of 10 at 1 minute. At the time of birth his weight was 3,200 g and there were no abnormalities noted on examination except for a tumor the size of an adult's fist located on the left side of the scalp. He was transferred for care to the Department of Neonatology, St. Mary's Hospital.

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The tumor measured $7 \times 6 \times 2.5$ cm. The surrounding skin was erythematous and a necrotic erosion was observed in the center. Expansion of the lesion resulted from laceration, and reduction could be attained by pressing the carotid artery (Fig. 1). No abnormal extension of the cranium or increased tension of the anterior fontanelle were observed. There were no abnormal findings on neurological examination. His early growth, including neurological development, was normal.

Neuroradiological examination: On plain skull films there were no abnormal findings. Specifically, there were no bony deficits or abnormal images, and no signs that indicated intracranial hypertension such as diastosis of the suture. On CT scan, a tumor was observed in the left temporal region on the outside of the cranium. The structure of the inside of the cranium was normal. With contrast enhancement of the CT scan, the image of the tumor standing along the outside of the cranium was markedly enhanced. On left sided external carotid arteriogram,

we demonstrated four main feeders: the occipital artery, the frontal and parietal branches of the superficial temporal artery, and the posterior auricular artery. The major veins draining the tumor were the occipital and the superficial temporal veins (Fig. 2-a, b, c).

Fig. 1. See text for legends

Fig. 2-a. See text for legends

Fig. 2-b. See text for legends

Fig. 2-c. See text for legends

Surgical treatment: The operation was performed under general anesthesia. First, the occipital artery (i.e., the major feeding artery) was ligated and a scalp incision was performed along the edge of the tumor, approaching the discolored, red wine, skin as closely as possible. The tumor was easily stripped from the galea and was found to be encapsulated. While ligation and cutting the four main feeders, the tumor promptly reduced in size. After ligating and cutting the occipital vein and the superficial temporal vein, we removed the tumor in its entirety. Since the proximal aspect of the tumor adhered firmly to the periosteum, it was removed together with adjacent periosteum. The surface of the skull underlying the tumor appeared normal to the naked eye. We were able to suture the damaged skin primarily in a straight line, at a right angle to the vertical of the cranium. The postoperative course was uncomplicated and after two weeks the baby left our clinic in good condition.

The histological examination of the tumor revealed that the inner layer of the

epithelial tissue was almost evenly filled with capillaries, confirming the diagnosis of capillary angioma.

Discussion

Rappaport and Yim (1973) discussed the causal mechanisms of hemangioma originating in the scalp as consisting of three stages during the fetal development of the vascular system of the head and neck (Table). The cavernous angioma and capillary angioma occur during stage 1 of development, and during stage 2 mixed hemangioma and A-V fistulae arise (Takahashi et al., 1977). Pochczevsky et al. (1972) noted that congenital angioma are subdivided into capillary angioma and cavernous angioma. They also noted that contrast medium on angiogram pooled in a nidus with innumerable small blood vessels which resembled a net. These and other complications pose problems in clinical management. One such problem is the reduced blood circulation to the brain due to the considerable loss of blood from the scalp caused by the development of the angioma itself, and the siphoning of blood to the angioma. The other major complication is heart failure which may occur depending upon the size of the A-V fistula. Pohl et al. (1976) reported that 2 out of

TABLE 1

Stage 1	Endothelial stage: masses of endothelial cells only.Hemangioma of cavernous or capillary type.
Stage 2	Retiform stage: formation of capillary channels.Mixed hemangioma and/or arteriovenous fistula.
Stage 3	Stage of gross differentiation: division into artery and vein.

(Modified from Rappaport and Yim, 1973)

5 subjects failed to survive despite careful examination of the cardio-vascular system prior to surgery. They noted that one of the causes of death was heart failure. The case reported in this paper is considered to represent a capillary angioma caused by a disorder during stage 1 as categorized by Rappaport et al. (1973). these conditions resolved spontaneously during the second month after birth. Since we were able to identify precisely feeders and drainers by photographing the blood vessels in the course of external carotid arteriogram prior to surgery, we experienced a minimum of blood loss in the course of the operation. We believe that these factors contributed to the smooth curative procedure.

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