Spontaneous subgaleal hematoma associated with a periosteal varix

Case report

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The spontaneous onset of an acute subgaleal hematoma in a 13-year-old boy is recorded. The underlying lesion causing the hemorrhage was believed to be an anomalous periosteal venous structure, which is briefly illustrated angiographically, grossly, and histologically.

KEY WORDS: subgaleal hematoma □9 periosteum □9 varix □9 angiomata □9 sinus pericranii □9 scalp

THE spontaneous atraumatic onset of a subgaleal hematoma has been rarely reported, and the particular pathological entity of periosteal varix has to our knowledge not been previously recorded. We are reporting the spontaneous onset of a subgaleal hematoma in a 13-year-old boy who had experienced no previous injury to the scalp. Radiological studies and subsequent surgical and pathological evaluation indicated the presence of a venous anomaly in the periosteum with associated changes in galea, periosteum, and outer table suggestive of multiple episodes of hemorrhage.

Case Report

This 13-year-old boy noticed a soft swelling on the right side of his scalp 5 days before visiting his pediatrician for evaluation. There had been no history of trauma. The area was slightly tender to the touch and gradually increased in size over the ensuing 4 days. He denied the presence of headache.

Examination. The patient was afebrile. The right side of the scalp was swollen, soft, and tender to palpation, but normal in color. No bruits were heard. There was no change in the size of the lesion with changes in the position of the head. The remainder of the general and neurological physical examination was normal. His white cell count was 8700/ml, and his hematocrit 37%. The platelet count was 235,000/ml, and a prothrombin time and partial thromboplastin time were normal. A skull series revealed only soft-tissue swelling over the right parietal area. No emissary foramina were noted.

Two days later, the area of swelling was aspirated, revealing old liquid blood: 60 cc was withdrawn, and a Gram stain and subsequent culture were negative. The area was flattened following aspiration. The patient was sent home but returned in 6 days because of a 3-day history of recurrent swelling. This had now spread to involve the entire forehead bilaterally, including the eyelids and the right hemicalvaria. This area of swelling could be digitally compressed to a depth of 1 in. Lymph nodes were palpable in the right posterior cervical chain but were not tender. He remained afebrile. Results of repeat complete blood count and clotting factors remained normal.

The patient underwent computerized tomography (CT), which was normal with the exception of a finding of subgaleal blood (Fig. 1). Internal and external carotid angiography failed to reveal evidence of any intracranial arterial or venous abnormality but did demonstrate beading and caliber change in veins in the right frontoparietal scalp area (Fig. 2). An excisional biopsy was advised because of a radiographic differential diagnosis which was thought to include angiosarcoma.
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FIG. 1. Axial computerized tomography scan demonstrates a right frontal subgaleal hematoma which extends to the midline.

FIG. 2. Angiography, lateral right external carotid artery injection, demonstrating the opacification of multiple small beaded venous channels (arrow) adjacent to the outer table of the skull in the right frontal region.

FIG. 3. Periosteal varix exposed surgically, showing the periosteum (open arrow), varix (small arrow), and thrombosed “bead” (large arrow).

Operation. The lesion was localized radiographically, and an excisional biopsy was carried out in the appropriate area of the scalp. A large amount of subgaleal hematoma was evacuated beneath a thickened and discolored galea. The periosteum was thickened and yellow in appearance. The beaded venous structure was visible lying on the periosteum, crossing from the superior to the inferior margins of the exposure (Fig. 3). This was excised complete with periosteum, revealing a rough and irregular outer table with multiple spicules of bone as if the diploe were directly exposed to periosteum.

On microscopic examination, much of the specimen consisted of cellular granulation tissue with foci of old and organizing hemorrhage. One portion showed a collection of irregular blood-containing channels lined by a single layer of endothelium with walls of variable thickness composed of dense connective tissue (Fig. 4). This was believed to be consistent with a clinical diagnosis of periosteal varix. A section from the outer table of the skull showed reactive new bone formation.

Postoperative Course. The patient had an uneventful course. His wound healed well, and at an outpatient visit a month later his scalp was flat and fixed to palpation. There has been no further recurrence of hemorrhage in a 6-month follow-up period.

Discussion

Subgaleal hematomas occur commonly as a result of trauma; they have been noted as a chronic condition following repetitive seizures, and in one instance a subgaleal hematoma was associated with the delayed onset of an osteoblastoma. In a recent review of the neonatal literature discussing infants with subgaleal...
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Fig. 4. Photomicrographs of the varix showing irregular endothelial-lined channels with fibrous wall. H & E, X 25 (left) and X 90 (right).

hematomas, 64% of cases were found to occur after instrument delivery, with both mid-forceps extraction and vacuum extraction being implicated. This entity was also noted after spontaneous vaginal delivery and Caesarean section. The mortality rate was 22.8%. Subgaleal hematomas in childhood have also been reported in association with vigorous hair combing in black children and with hair pulling in the battered child.

The spontaneous appearance of a subgaleal hematoma has, to our knowledge, been recorded only twice previously and was considered to be a clinical feature associated with “atypical scurvy.” Angiography was not carried out in either previous report.

We believed initially that sinus pericranii might represent an embryologically related process. That anomaly, however, may be readily differentiated clinically from the lesion described here. Cohn’s review of the literature in 1926 depicted the clinical presentation in both congenital and acquired forms of sinus pericranii: “a soft, fluctuant, slowly growing vascular tumor of the scalp which communicates directly with an intracranial sinus through an anomalous opening of congenital or acquired origin. These tumors as a rule are not evident when the patient is erect but they become prominent when the patient coughs, sneezes, compresses the jugular vein or does anything which increases his intracranial pressure which interferes with venous return from the skull. The tumor is reduceable into the skull. A bony defect is evident on palpation.” Our patient both clinically and radiologically had none of the features associated with sinus pericranii.

The gross anatomic, histological, and radiographic features of the periosteal varix in this case are presented in the illustrations. We have no explanation for the appearance of hemorrhage with this anomaly, but think that the minimal repetitive scalp trauma associated with changes in head position during sleep and with hair combing might have been sufficient to produce hemorrhage from this attenuated structure.

References

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