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An unusual scalp mass in a 29-year-old woman

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CASE REPORT

We presented a case of a 29-year-old woman who noticed a swelling located in her scalp. One centimeter non-pulsatile and fluctuant paramedian mass was observed in the right parietal scalp region. A year ago, the patient had sought another service for the same complaint, a computed tomography (CT) scan was performed and there was no lesions and was discharged. A new skull CT scan with careful examination of the referred site, revealed a bone defect (Figure 1). Brain magnetic resonance imaging (MRI) along with venography was performed and showed an abnormal communication between the intra- and extracranial venous drainage pathways thought a cortical vein, characterizing a sinus pericranii (Figure 2). Because of no esthetic prejudice and no neurological symptom, our patient went on to be treated conservatively. The patient has been followed for two years without intercurrences.

DISCUSSION

Painless soft tissue masses on the scalp are commonly encountered in clinical practice and are often underestimated by the primary care provider, since the most likely diagnoses are benign lesions such as epidermoid cysts, sebaceous cysts and lipomas [1, 2]. However, clinicians should be alert to other diagnostic possibilities. Sinus pericranii, a rare vascular anomaly of the venous drainage between the intracranial and extracranial systems, is one of the differential diagnoses which should be considered when a physician encounters a patient with a subcutaneous soft scalp mass [3].

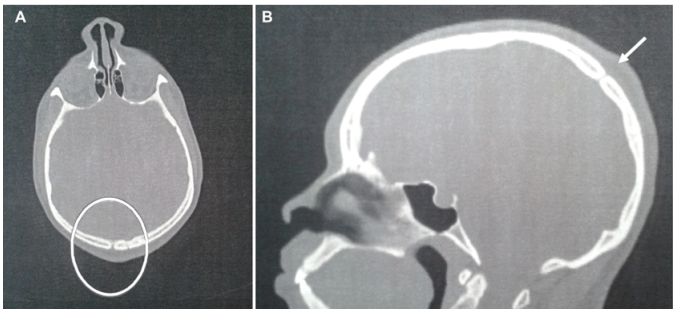

Figure 1: Axial (A) and Sagittal (B) CT scan revealing a defect in the right parietal bone (circle and arrow).

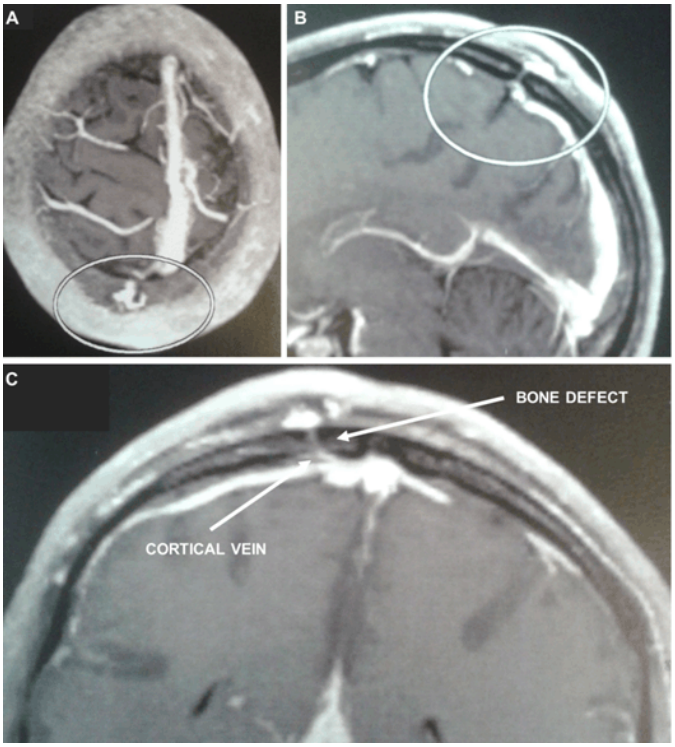

Figure 2: Axial (A), Sagittal (B) and Coronal (C) T1-weighted brain images (post-gadolinium administration) showing an abnormal communication between the intra- and extracranial venous drainage pathways (circles) thought an emissary cortical vein (arrow).

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A wide variety of scalp lesions are identified as palpable masses (Table 1) [4, 5]. They represent a challenge for clinicians and radiologists, and are frequently confounded by their small size and similar appearances on radiologic images, what may lead to diagnostic mistakes [6].

Most scalp and skull lesions in children and young adults are benign. However, in a recent series, the rate of presence of significant clinical pathologies or requiring follow-up was not negligible around 7.8% and the correct diagnosis was made in only 13–27% patients [2]. The same study indicated that diagnostic workup or interdisciplinary consultations were not performed regularly, which may be of concern since the correct diagnosis of a scalp mass may lead to reduced mortality and morbidity and may guide physicians toward the most appropriate management (surgical or nonsurgical) [6].

Sinus pericranii (SP) is a rare extradural venous anomaly in which there is an abnormal connection between the extracranial venous system and the intracranial dural sinuses via a connecting diploic vein [7]. Although the condition is usually asymptomatic, there have also been reports of symptomatic SP causing debilitating headaches, ataxia, nausea, vomiting, hearing loss, epilepsy, bradypnea, and bradycardia [8]. Some clinical clues may assist the physician in the suspicion of SP: lesion near the midline, compressible or changes with patient's position or Valsalva maneuver [9]. Neuroimaging is fundamental in diagnosis. CT is considered the best examination available to characterize bone defects, and MRI is an essential method for defining lesion extension for both the skin and intracranial spaces[10]. Because of its rarity, the exact nature and management of SP have no guidelines or recommendations. Most SP remain stable in size and flow dynamics over years with a relatively low risk of spontaneous or traumatic bleeding. Endovascular embolization and surgical ligature are effective treatment options [11].

We present a typical case of SP where the correct diagnosis was only possible due to the correct recognition of the clinical characteristics of the lesion and indication of neuroimaging investigation.

Table 1: Scalp and skull lesions

Congenital lesions
Encephaloceles / Meningocele
Dermoid / Epidermoid Cysts
Craniosynostosis
Nasal Gliomas
Benign Tumors
Vascular Lesions
Hemangioma
Venous malformation
Sinus pericranii
Lymphatic malformation
PHACE syndrome
Acquired Lesions
Sarcomas of the Head and Neck
Rhabdomyosarcoma
Infantile myofibroma
Cranial fasciitis
Plexiform neurofibroma (Neurofibromatosis)
Osteoblastoma
Lipoma
Langerhans Cell Histiocytosis
Metastasis
Infectious Lesions
Cellulitis /Abscess
Skull Tuberculosis
Traumatic Lesions

PHACE(S) Syndrome: Posterior fossa malformations, hemangiomas, arterial anomalies related to the intracranial circulation, coarctation of the aorta or cardiac anomalies, eye abnormalities.

CONCLUSION

The knowledge of a wide differential diagnosis of scalp masses enables the clinicians to reach a more accurate diagnosis in the majority of sinus pericranii cases.

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Author Contributions

Laura N. Zamproni – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

Christiana Brenner – Substantial contributions to conception and design, Acquisition of data, Analysis and interpretation of data, Drafting the article, Revising it critically for important intellectual content, Final approval of the version to be published

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Guarantor of Submission

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Consent Statement

Written informed consent was obtained from the patient for publication of this clinical image.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.