

Spontaneous subgaleal aerocele

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Abstract

Apart from reporting about a case of spontaneous subgaleal aerocele this paper looks at the possible causes and management also. A 35-year-old Igbo-Nigerian female, about 4 weeks post-natal, with a 10-month old steadily and gradually enlarging mass around the back of her head, including both temporal regions was referred to us. Plain skull radiographs showed air in this mass. Needle puncture produced air leading to immediate and complete flattening of the lesion. A few hours after this procedure while still in the hospital premises, she had generalized convulsions, for which she was hospitalized and treated. With no further attacks, her request for discharge the following day was granted. At the next visit, 7 days later, there was a re-accumulation, which was treated the same way as previously and with the same result. She has not reported back since then, though she was advised to visit us again in 7 day-time. This lesion should be considered when masses on the head are presented. Our health institutions should have adequate investigative facilities.

Key words: Air, extracranium, facilities, mastoids, sinus

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Introduction

Cranial masses of diverse origin, size, shape, texture and contents are well-known, including those containing air only. Some are benign while others are malignant. Some are easy to evacuate completely while others are difficult. Spontaneous subgaleal aeroceles are not associated with any pathological condition, though a primary defect of the outer wall of a paranasal air sinus or temporal bone or skin could exist.

Causes of subgaleal aeroceles could be trauma, causing fractures involving the frontal air sinus, the paranasal sinuses and/or the mastoid air cells,^[1-3] neoplasms, such as meningiomas, eroding the above- mentioned sinuses and cells or subdural aeroceles rupturing into the subgaleal compartment and infections by gas-forming organisms, for instance; spontaneously, they could be due to leakages from the mastoid air cells, frontal or sphenoid sinuses, especially if there is increased pressure in the hyper- pneumatized air sinus or mastoids with or without defective outer walls. Other causes are coughing, straining and barotrauma.

The two sources of this extra-cranial mass have been the mastoid cells and frontal sinus, the former being much more frequent.^[4] This could also indicate an existing pneumocephalus.^[5]

Symptoms and signs include swelling of the head, headaches, sudden ear ache and/or noise in the ear.


The diagnosis is usually made with the aid of plain radiographs of the skull or computerized axial tomography scan (CT-scan), or magnetic resonance imaging scan (MRI).

An aseptic needle puncture could be all that is required therapeutically, as in this case, without anesthesia.

Steady pressure has been known to cause it to disappear.^[4] Surgical closure of the opening, if known, is the definitive treatment.^[4]

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Pre-operative complications include rupture into blood vessels, leading to emboli formation, infections and possible erosion of the skull bone. There could be infections after the puncture.

We present a case of a possible spontaneous subgaleal aerocele.

Case Report

On the 25th of July 2007, a 35-year old Igbo-Nigerian female was seen at the neurosurgical out-patient section of the Ebonyi State University Teaching Hospital, Abakaliki, Ebonyi State, Nigeria. She was about 4 weeks post-natal. The pregnancy, labor and delivery were uneventful. She had a 10- month old gradually enlarging soft mass, about 19-22 cm wide on the occipital region, about 7 cm on the right temporo-parietal region, extending from the right temporal region backwards, involving the right parietal and occipital regions, into the left occipito-parietal region [Figures 1 and 2]. She recollected feeling the sensation of a fly in the right ear while lying down. She got up, flushed the ear with water, but saw no insect. A few days later, a swelling appeared in the right temporal region, which continued to grow despite the application of native mixtures to the area. Apart from the accompanying headaches, she was well and breast feeding her new born baby. There was no history of head/neck injury, head/neck infection or surgery.

She had lost a lot of hair over the swelling, possibly due to the applied native mixtures.

The lesion was non-tender and not attached to the underlying structures. There were no crepitations, no fluctuant findings and no translucency. She had no gross neurological deficits, no general or systemic abnormality and her routine laboratory tests were within normal limits.

Plain skull radiographs [Figures 3-5] showed massive air under the scalp above the ear and marked bulging of the scalp extending backwards. No bony injury, no fluid level and no obvious intracranial air or lesion was seen. There were boselation of edges and partitions within the lesion.

There were no obvious connections to the sinuses, the mastoid air cells, the respiratory tract and/or the atmosphere. There was little air in the mastoid air cells and some in the maxillary sinuses, with the left being sclerotic.

A needle puncture there and then, under sterile conditions, yielded air and immediately completely deflated the mass. The deflation was so rapid that the quantity of air could not be measured. A pressure bandage was applied round the head to prevent a re-accumulation. She was then told

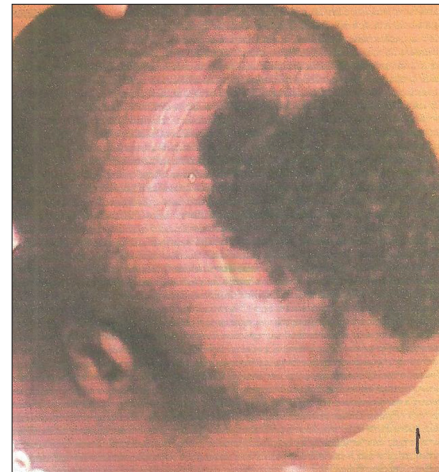


Figure 1: Right lateral view of patient showing hair loss over the lesion

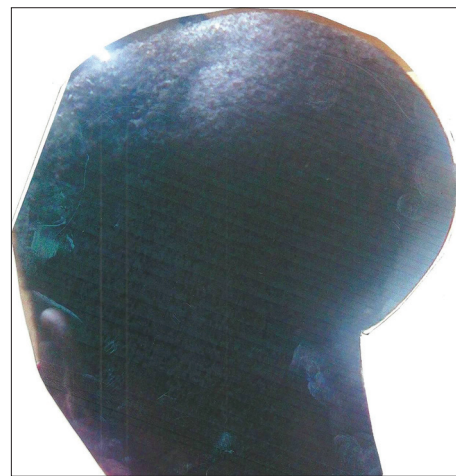


Figure 2: Posterior view of patient



Figure 3: Lateral view of plain skull radiograph showing air in the lesion (posterior aspect arrowed) and in the mastoid and paranasal sinuses



Figure 4: Straight view of plain skull radiograph showing air in the lesion on the right (arrowed), ethmoids and maxillary antra



Figure 5: More posterior aspect of the lesion (arrowed) laterally

to see us in 7 day-time. A few hours after the procedure and while still in the hospital premises, she had generalized convulsions for which she was hospitalized and treated accordingly. Without further attacks, her request for discharge the following day was granted. However, the anti-convulsion therapy was continued.

A week later, there was re-accumulation of air, which was handled in the same way and with the same result as previously. She had had no more convulsions. The anti-convulsion therapy was continued. She was, once more, requested to visit us again in 7 day-time. A repeat plain skull radiograph was recommended together with a computerized tomography (CT) scan or MRI, where available and affordable. We have not seen her since then. Several attempts to reach her were not fruitful.

Discussion

This is the 1st time the authors are encountering this lesion.

It could have been a hematoma, pus collection or new growth on clinical examination. The boselation of edges and partitions within the lesion were non-homogenous, could be at the suture lines, healed fractures or due to external pressure and/or irregular tumor growth. Though this lesion was close to the mastoid air cells and paranasal air sinuses, there was no obvious connection to these sinuses, the mastoid air cells, the respiratory tract and/or the atmosphere.

The origin of the air has not been ascertained, which makes it problematic to explain the re-accumulation of air and that, beyond tissue resorption. This suggests a steady supply from some unidentified mechanism or source, possibly through a one-way valve connection. The ‘fly entry’ sensation could have been the initial force of air from the source into the subgaleal area. Since there was no history or finding of trauma, neoplasm, infection or previous surgery, a leakage from the paranasal air sinuses, middle ear and/or the mastoid air cells seems most probable. The convulsions could indicate an intracranial extension of the lesion, source of the lesion or other pathology or, coincidentally, just part of the endemic epilepsy in this part of the world. CT-scan or MRI could have been of much use in this case. We should think of such a lesion, when confronted with swellings on the head. Our hospitals, especially the teaching hospitals, should be adequately equipped with modern facilities, CT and MRI machines, for proper investigations and management. There should be insurance coverage for all illnesses if free medical treatment is not feasible.

Conclusion

We should always consider this pathology, when dealing with masses on the head. Adequate investigative facilities, like CT, MRI equipment, are necessary to rule out other possible associated lesions.

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AA Folashade, OT Adetutu, FM Bolanle

Should read as

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The error is regretted

- Editor in Chief, NJCP