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CONGENITAL ANTERIOR FONTANELLE SUBGALEAL CYST, DIAGNOSIS AND MANAGEMENT IN A POOR RESOURCE HOSPITAL: A CASE REPORT

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1.0 ABSTRACT:

A cystic swelling over the anterior fontanelle in an infant evokes myriad of differentials. The challenge is in delineating these differentials clinically and radiologically. It could be an encephalocoele, a congenital dermoid cyst, an epidermoid cyst or even a crisoid aneurysm. Such sincipital cystic swelling over the anterior fontanelle strongly suggest meningo-encephalocele. In its worst case, it could be a herniating brain substance and/ or its covering membranes through the non-fused calvareal fissure. Encephalocoele of the anterior fontanelle is not common, especially in black African patients. We reported an anterior fontanelle subgaleal Dermoid cyst in 1-year-old boy at a poor resource hospital in Yobe state, Nigeria. Perhaps, the first from Northern part of Nigeria.

KEY WORDS: Anterior fontanelle, subgaleal cyst, poor resource hospital

2.0 INTRODUCTION:

Congenital Dermoid cyst over the cranial bone is rare, with reported incidence of 0.1-0.7%.[1] It was reported by Adelola and Odeku in 1967 at University Teaching Hospital, Ibadan, Nigeria.[2] Over a decade, the Neurosurgery unit of the hospital recorded 18 cases of the anterior fontanelle subgaleal cystic lesion in Nigerian children. Contrast neuro-radiological studies using air was the mode of diagnosis. Air Ventriculography, Cisternal Pneumoencephalography and Air cystography were the investigations used [2] Histopathological assessments were done for the excised cyst walls and the predominant finding was that of Dermoid cyst, with 2 reports of an encephalocoele. This rare cyst has been reported by both Surgeons and Radiologists all over the world and CT scan with 3D reformatting has become the gold standard of diagnosis. [3,4,5,6]

3.0 CASE REPORT: A year-old boy was brought to the Surgical Out-patient Department of General Hospital Potiskum, with complain of a scalp swelling. The swelling was noticed by the parents 2 months after birth. They were reassured it will resolve and disappear by the Traditional Birth Attendant, as the pregnancy and labour were unsupervised. The parents became worried when the cystic mass began increasing in size a month prior to presentation. They did not notice any change in the overlying skin and the child was said to have a normal developmental milestone. On examination, a 3*2cm, soft, fluctuant, non-tender mass was found over the anterior fontanelle. It was non-pulsatile, non-compressible swelling. There was no palpable thrill or audible bruit over the swelling, and the edges of the anterior fontanelle are palpable beyond its broad sessile base. It did not transilluminate and the overlying skin over the swelling was healthy with scanty hair. (Figure 1)

Figure1: Showing The Anterior Fontanelle Cyst

Neurological examination was normal for age. No abnormality was noted in cranial nerves, motor and sensory examination. Systemic examination was grossly normal.

Skull x-rays revealed only a soft tissue swelling overlying the anterior fontanelle with an open fontanelle as the fissures are yet to fuse. (Figure 2, 3)

Figure 2: A Lateral View Showing The Intact Cranial Vault

Figure 3: An Ap View Of The Skull Showing The Open Sagittal Fissure

A working diagnosis of a subgaleal Dermoid cyst was made. A complimentary transcranial USS was done. It reported a subgaleal cystic mass with normal echoes, absence of intracranial continuation and a normal ventricular anatomy. Patient was worked up for excisional biopsy of the subgaleal cyst.

Informed consent was obtained from the parents for surgery and publication of the case. Ethical clearance for the publication was also obtained from the hospital Authority.

Preoperative aspiration of the cystic content for biochemical analysis was avoided for fear of haemorrhage and introduction of infection.

The standard radiological investigations of contrast enhanced CT scan with 3 dimensional reconstruction or Magnetic Resonance Imaging were not available at the hospital and also not affordable to the parents.

3.1 SURGERY:

A general anaesthesia with intranasal oxygenation was used. An infiltrative local anaesthesia with 2% lignocaine with adrenaline at 4mg/kg was used in the scalp surrounding the mass to reduce primary haemorrhage. Patient was placed in left lateral position, operative site cleaned with cetramide followed by 5% povidone iodine and draped, exposing the operative area only. (Figure 4,5)

Figure 4: Intraoperative Local Infiltration With 2% Lignocaine

Figure 5: Surgically Prepared Operative Field Exposing Only The Cystic Mass

An elliptical incision with size 11 blade was made across the summit of the cystic mass. A subgaleal flap was raised in the cephalad and caudal margins to expose the cyst. Meticulous haemostasis was ensured and the cystic swelling was excised completely. The cyst was well encapsulated, and has no intracranial connection. Surprisingly, the content does not have the classical pultaceous nature of dermoid cyst, but rather a thick straw coloured fluid. A mattress suturing with Vicryl 1was done to close the scalp defect and for haemostasis. (Figure 6, 7,8,9)

Figure 6: The Cephal And Caudal Sxalp Flaps Raised

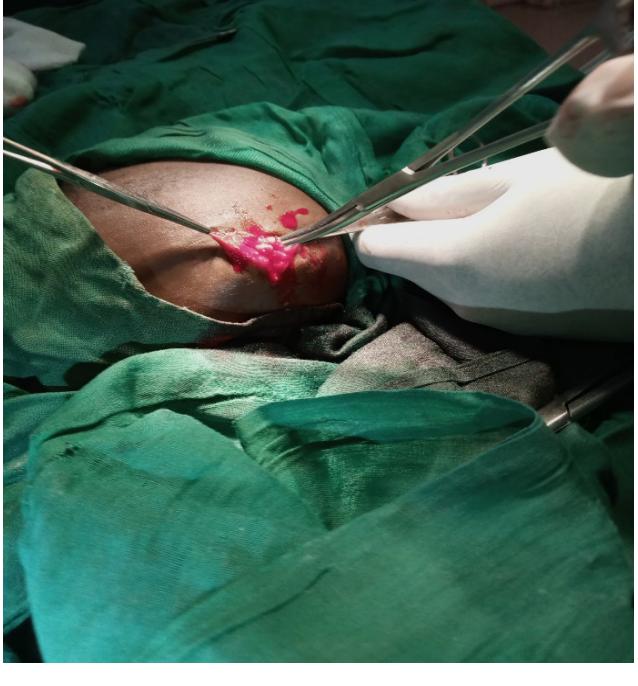


Figure 7: Showing The Subgaleal Skull After Cystectomy

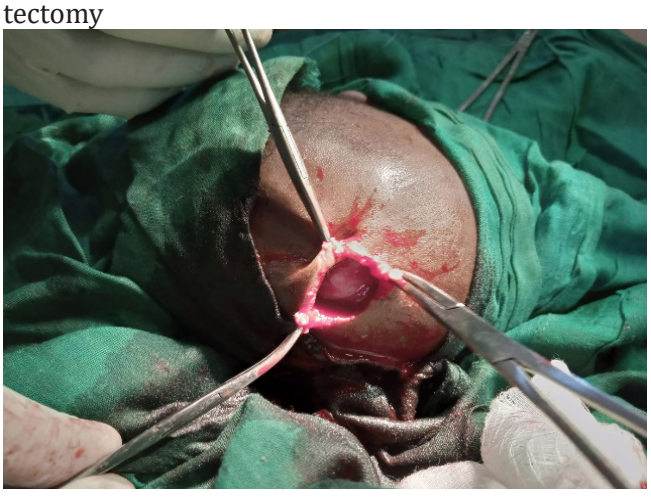


Figure 8: Showing The Scalp Cavity After Cystectomy

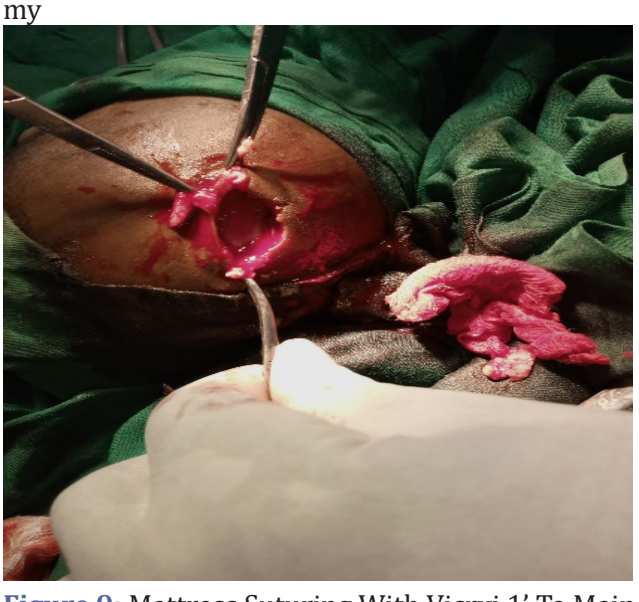
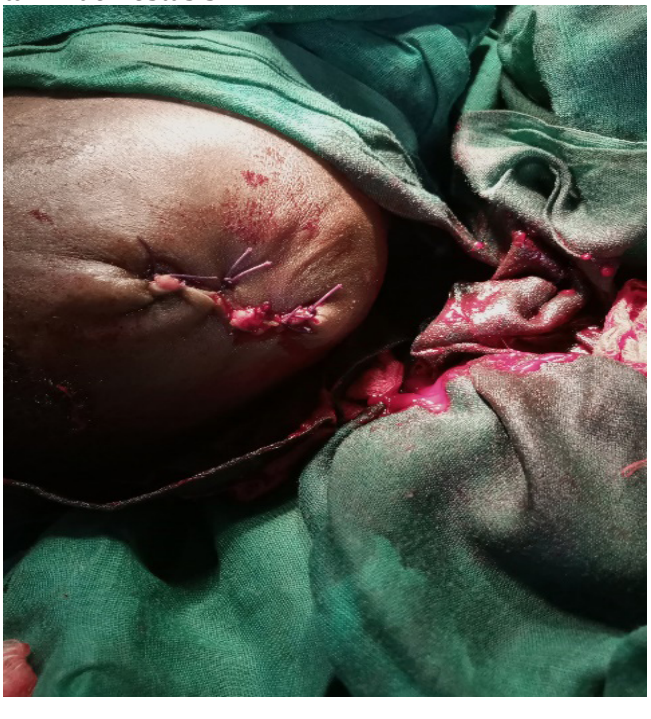


Figure 9: Mattress Suturing With Vicryi 1' To Maintain Haemostasis



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4.0 DISCUSSION:

Initial reports of the anterior fontanelle subgaleal cysts were in black African children. 7, 8, 9 subsequent reports observed its occurrence in other races. [10, 11, 12]. In most case series there is a female preponderance for the anterior fontanel dermoid cysts,[13,14]. We reported a single case involving a male child. We hope to run a case series and assess the gender predilection.

Congenital dermoid cysts develop within the 3rd to 5th weeks of intrauterine life along the midline or lateral fusion lines of the neural groove [15]. The anterior fontanel has been frequently noted as a site of congenital inc1usional dermoid cysts [16] but, the external angular and internal angular regions of the orbital bone and the Nasal bridge have also been reported [16] About 163 dermoid cyst and epidermoid cyst case reports have been reported over the anterior fontanel. But, teratomatous cysts are rarely reported [16].

Cruveilhier pioneered the report of Dermoid cysts in the cranio-spinal axis. [17] Since then, reports have been mainly about those in the intracranial and intraspinal cavities. [18,19]

The fluid biochemical analysis revealed: a yellowish thick fluid with high protein (26mg/dl) and sugar content (5.2mmol/l). The pH was 6.0, sodium (56 mmol/l) and chloride (68 mmol/l). There is relatively high potassium of 5.9 mmol/l and it was Sterile bacteriologically. This is similar to reports by Adeloye et al.[2]

Histopathological analysis after H&E staining indicated that the cyst wall was lined by attenuated, thin stratified squamous epithelium. Adnexal structures such as hair follicles and sweat glands were seen. No sebaceous glands were present in the cyst wall. This was reported by Odeku et al also.[7]

No scientifically plausible explanation has been given for the predilection of the midline Dermoid cyst for the anterior fontanel region. It was thought to be an encephalocoele that was sequestered extracranially devoid of any connection with the intracranial content.[2] This hypothesis is said to be supported by the relative rarity of Encephalocoele in the anterior fontanelle regions of Nigerian Children.[2]

The lack of intracranial connection has rendered this lesion easily accessible and amenable for surgical excision even in a poor resource centre.

5.0 CONCLUSION:

The presence of a cystic mass in the anterior fontanelle of a child should call for caution. Although, many reports indicated the increased likelihood of a subgaleal Dermoid cyst, an Encephalocoele is still a strong differential. Detailed clinical and radiological assessment must be done before any surgical intervention. With a clear-cut diagnosis a trained surgeon could perform the cystectomy safely.

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