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An unusual location of newborn huge dermoid cyst: a case report and literature review

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Abstract

Background Dermoid cysts are benign germ cell tumors with ectodermal and mesodermal components. It is a slow-growing lesion that commonly arises in the midline of the head and neck. The last location represented 7%, and the periorbital region was the most frequently arising area. True lateral neck dermoid cysts are rare. We present an unusual location of a dermoid cyst in a newborn.

Case presentation We report an unusual location of a 10-day newborn giant dermoid cyst with multiple implantation sites, namely the shoulder, scapula, cervical, temporal, and occipital scalp. Successful surgical resection was achieved, and the patient was discharged after the removal of the stitches.

Conclusion Dermoid cysts are unusual neoplasms with rare diagnoses at birth, but often in childhood. Concomitant implantation locations on the shoulder, neck, temporal, and occipital scalps are rare.

Keywords Cervical, Congenital, Neck, Cervical cyst, Dermoid cyst

Background

Dermoid cysts are benign germ cell tumors with ectodermal and mesodermal components. Histologically, it contains adnexal structures, such as hair, follicles, sweat, and sebaceous glands, surrounded by keratinizing squamous cells [1, 2]. Its incidence is approximately 1 in 4000 births, with a slight female predominance. Dermoid cysts are mostly congenital; however, 70% of them are diagnosed after 5 years of age. They exhibit slow-growing characteristics; their size can vary but reach up to 17 cm. These lesions can arise anywhere in the body; nonetheless, only 7% have been reported in the head and neck region. In the latter region, dermoid cysts are well known to appear in the midline and most often in the periorbital area. Many locations have been reported in the literature; however, the true lateral neck location and upper shoulder area are rare [3–5].

In this study, we report a case of an unusual shoulder, scapula, lateral neck, temporal, and occipital scalp implantation-based large newborn dermoid cyst. We also reviewed different dermoid cyst locations reported in the literature.

Case presentation

A 10-day newborn female with an unknown medical history from a poorly monitored pregnancy with two prenatal care visits, full-term born, was referred to the neurosurgical department for a congenital right lateral cervical mass.

The patient's hemodynamic and ventilation conditions were good on admission with no fever. Physical examination revealed a painless right lateral cervical cyst, presenting a regular shape with a soft consistency, measuring 14 cm in length and 8 cm in width (Fig. 1). The cyst was implanted on the lateral cervical, scalp edge, and upper shoulder, extending posteriorly to the scapula. Other examinations were unremarkable, with no other

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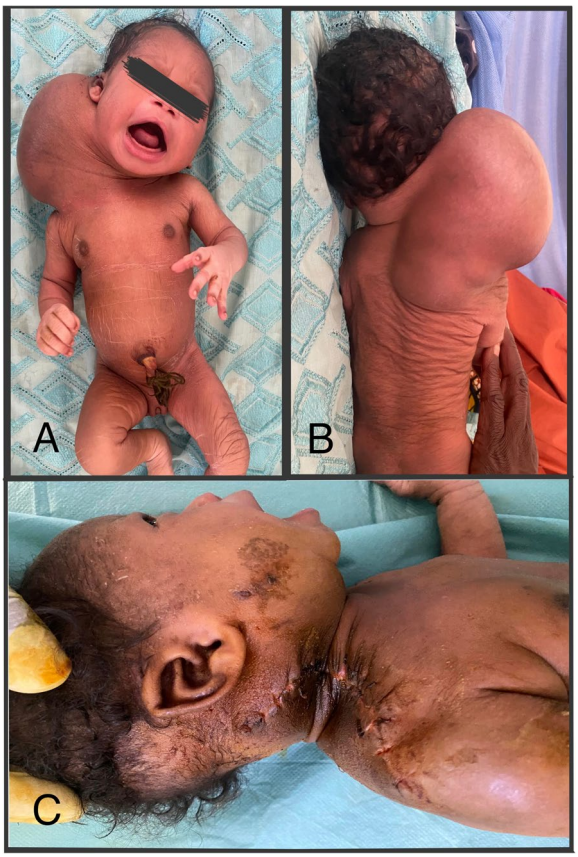

Fig. 1 **A**, **B** The anterior and posterior aspects of the cyst and its implantation and extension, respectively. **C** The postoperative 10-day surgical wound after stitches were removed

associated anomalies or deformities. Computed tomography was obtained, which showed a right lateral cervical bilocular mass measuring 9.9 cm × 7.6 cm on the axial section, a fluid-filled lesion external to the skull, cervical canal, and thorax that did not compress the trachea (Fig. 2). Based on these findings, our differential diagnoses included cystic lymphangioma, cystic teratoma, and cervical choristoma.

Surgical resection was performed under general anesthesia, and the mass was removed from the scalp, cervical canal, and shoulder. The histopathology was consistent with a dermoid cyst (Fig. 3). The postoperative period was uneventful, the surgical wound healed, and the patient was discharged after the removal of the stitches.

Literature review

A literature review was conducted using PubMed and Google Scholar databases, and the following search terms were used [((((cervical) OR (neck)) AND (dermoid)) AND (cyst)]. The selection criteria were dermoid cysts with histopathological confirmation, published from 2000 to 2023, regardless of the dermoid cyst location and publication language. The publications outside of that time span were excluded. The following information on age, gender, size, and location was extracted and analyzed using SPSS software. Overall, 37 cases were selected; there were 18 men (48.6%) and 19 women (51.4%), and the mean age was 27.63 ranging, 1 month to 75 years). The most reported location was the submental in 40.5% of cases, followed by the parotid gland (10.8%) (Table 1). The mean cyst was 4.85 cm ranging from 0.13 to 14 cm. The chi-square test was carried out to assess the difference in size according to the location; no significant difference was found (P value > 0.05).

Discussion

Dermoid cysts are slow-growing benign lesions that arise from the entrapment of ectodermal elements along embryonic closure lines. It is the second most common midline neck cyst, representing 25% of all congenital cystic masses of the neck [18, 40]. Despite its congenital origin, an acquired etiology was also reported to account for 10% of dermoid cysts due to trauma or implantation of epithelial cells in utero [15]. Dermoid cysts may occur anywhere in the body, with approximately 7% of cases reported in the head and neck [5]. In the last region, the periorbital dermoid cyst is the most commonly encountered, and Pryor et al. and Choi et al. reported 61% and 84% of periorbital locations [2, 4]. Dermoid cysts of the head and neck were previously classified into four groups by New and Erich [41]: group 1 periorbital, group 2 nose, group 3 submental, and group 4 midventral and middorsal fusion area of the suprasternal, thyroidal, and suboccipital regions. However, many cases were found later, and the relative location was not included in the New and Erich classification, which Pryor grouped and named "head, not neck." Choi et al. found it necessary to further develop these classifications to integrate the ear and scalp regions and extend intracranially [2, 42]. In this case, the cyst extended from the shoulder to the temporal-occipital scalp and scapula, without intracranial and intravertebral canal or intrathoracic extension. A complete classification integrating all dermoid cysts may be difficult because unusual locations still appear and may not be predictive. Imaging investigations are fundamental for the assessment of the anatomical relationship with the surrounding structures. It can allow anatomical study of the lesion and its extension and help with the resection plan. We first rolled out the intracranial and intravertebral canal extensions in this case using CT.

The diagnosis remains challenging; congenital lateral neck cystic lesions, such as cystic hygroma, cystic teratoma, epidermoid cyst, and lymphangioma, may be considered in the preliminary differential diagnosis. These lesions often present as painless, soft, compressible,

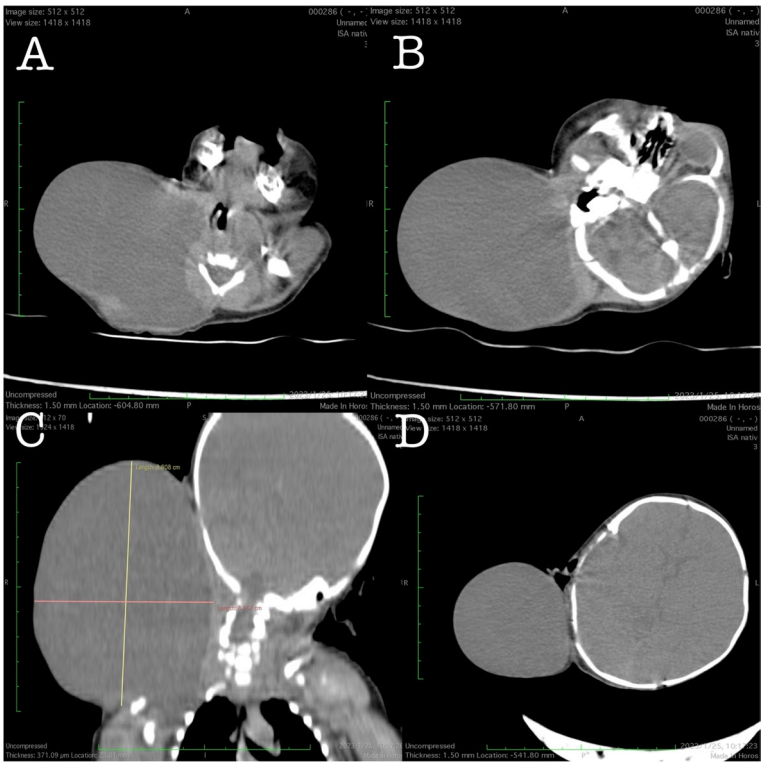

Fig. 2 **A**, **C** A right lateral neck mass non-extended in the vertebral canal C nor the thoracic cavity. **B**, **D** The scalp attaches without intracranial extension

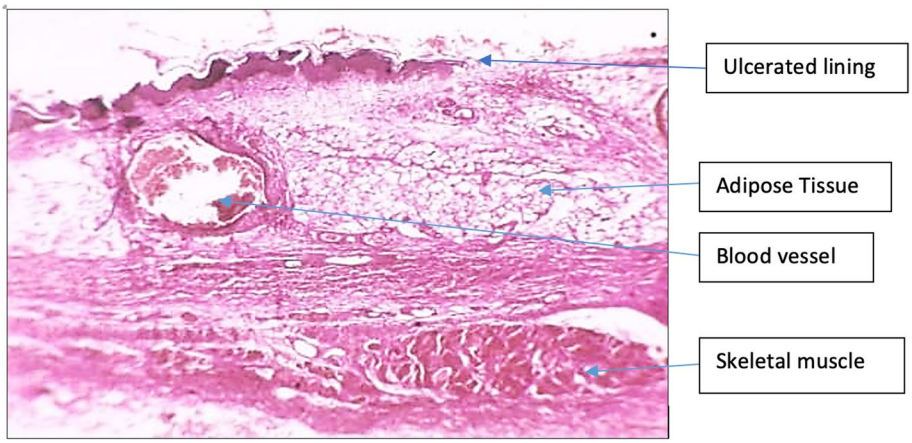

Fig. 3 Describe the dermoid cyst wall with a completely attenuated lining comprised of smooth and skeletal muscle bundles, adipose tissue, and congested cavernous blood vessels

non-tender transluminal masses. The presentation can sometimes be related to complications such as respiratory distress, feeding difficulty, and lesion infection. Histology remains the only tool to differentiate between these lesions and provide a final diagnosis [43, 44].

Dermoid cysts are common in infants and adults. The mean age of the cases reported in the last decade was 27.63 years ranging from 0 to 75 years. Pryor et al. reported the mean age at presentation was 39 months [2]. Additionally, Choi et al. enrolled 62 patients with dermoid cysts; almost half of them were older than six [4]. In this case, the diagnosis was made at birth, and the reason may be the huge size and its location; we think the age of the diagnosis may depend on the

Table 1 Summary of common dermoid cyst locations in the literature

Location	Number (*n*)	Percentage (%)	Author references
Submental	15	40.5	[6–20]
Parotid gland	4	10.8	[5, 21–23]
Orbit	3	8.1	[24–26]
Ear	2	5.4	[27, 28]
Midline neck	2	5.4	[29, 30]
Nasal	1	2.7	[31]
Epiglottis	1	2.7	[32]
Lateral neck	1	2.7	p3]
Postauricular	1	2.7	[33]
Retroperitoneal	1	2.7	[34]
Penis	1	2.7	[35]
Lambdoid	1	2.7	[4]
Cervical intramedullary	1	2.7	[36]
Eyebrow	1	2.7	[37]
Fronto-orbital	1	2.7	[38]
Intraoral	1	2.7	[39]
Total	37	100	

lesion's location and size. Therefore, small dermoid cysts in a hidden location may not be visible at birth or may be neglected by parents. This can explain why many childhood or adult cases are diagnosed after the lesion grows and may become symptomatic.

Overall, the prognosis for these lesions was good when complete surgical resection was achieved. Many authors reported no recurrence in their series, and the patients recovered very well [10, 15, 31].

Conclusion

Dermoid cysts are unusual neoplasms with rare diagnoses at birth, but often in childhood. Concomitant implantation locations on the shoulder, neck, temporal, and occipital scalps are rare. In this case, it would be wise to roll out intracranial and intravertebral canal extensions by imaging prior to the removal attempt. The prognosis was good with no recurrence after complete resection.

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Authors' contributions
The authors contributed equally. All authors read and approved the final manuscript.

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Availability of data and materials
The datasets used and/or analyzed during the current study are available from the corresponding author upon reasonable request.

Declarations

Ethics approval and consent to participate
Written informed consent to participate was obtained from the parent. This publication fulfills the ethical requirements of the Declaration of Helsinki.

Consent for publication
Written Informed consent has been obtained from the patient parents to publish the case report and accompanying images.

Competing interests
The authors declare that they have no competing interests.

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