EPIDEMIOLOGY OF PERIORBITAL DERMOID CYST IN PEDIATRIC AGE GROUP

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ABSTRACT

Background

Very little is known about the periorbital dermoid cyst in Iraqi Kurdistan. Therefore, this study was undertaken in Sulaimani province to describe the defects in the area and report patients' outcomes.

Objectives

The aim of this study was to identify the prevalence of Periorbital dermoid cyst among pediatric age group, characteristics of the lesion regarding location and presentation with management and its out come.

Patients and Methods

The case-series study involved 35 pediatric age group patients; who visited the clinical dermatological and neurosurgical centres, with a periorbital dermoid cyst from 2014 to 2018.

Results

Of the 35 patients who presented with a periorbital dermoid cyst, 18(51.43%) were female, and 17 (48.57%) were male—the age at presentation was mainly infancy. The lesion was situated on the right side in 18 (51.43%) patients and on the left side in 17 (48.57%) patients, and it was presented with a mass in 27 (77.14%) patients, drooping eyelid in seven (20%) patients, and dermoid sinus in one (2.86%) patient.

The lesion was superficial in 24 (68.57%) patients and deeply located in 11 (31.43%). A Cranial CT scan was done in all patients; only five (14.29%) patients showed underline bone erosion. The lesion was progressively enlarged in 26 (74.29%) patients. Surgical excision was performed for all patients, except one, without recurrent complications.

Conclusion

Our view is that if diagnosed early, the dermoid cyst should be totally removed even in asymptomatic lesions because it enlarges and causes underline bone erosion and inflammation.

Keywords: *Periorbital dermoid cyst; Cranial CT scan; Excision.*

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INTRODUCTION

A dermoid cyst is usually a clinical term used for benign cystic teratoma, a choristoma originating from surface ectoderm sequestration into underlying mesenchyme along embryonic closure lines [1]. These cysts are composed of keratinized stratified squamous epithelium, have a fibrous capsule, and skin appendices like sweat glands, sebaceous glands, and hair follicles, including lanugo hair[2]. The typical lesion is a few millimetres to several centimetres in diameter and is located in the subcutaneous fat. Tethering to the underlying tissues and an underlying bony defect may be noted. A punctum or opening to the skin surface may be present, but dermoid cysts are not usually attached to the overlying skin [3]. Although most dermoid cysts are congenital, about 70% are found in children five years old or younger. They can also develop anywhere on the body. Still, dermoid cysts are most often found in the periorbital lateral eyebrow area (in the head and neck) [4]. Dermoid cyst accounts for 3-9% of orbital tumours in children and is a typical noninflammatory space-occupying orbital lesion in the pediatric age groups [5]. Seven percent of all dermoid cysts occur in the neck and head, and 70% are located in the periorbital region, mainly in the upper outer quadrants, at the anterolateral area of the frontozygomatic suture [6].

A dermoid cyst is a firm, non-pulsatile, non-compressible subcutaneous nodule that usually reaches one to four cm, and it usually does not transilluminate [7]. Further, dermoid cysts in a periorbital location are less likely to extend into the intracranial than those on the nose or midline scalp. Besides, preoperative image studies are essential for lesions with suspicious characteristics like a draining sinus ostium to exclude its connection to the central nervous system (CNS) [7].

The dermoid cyst should be surgically removed at the ages of one to two years old: as it may enlarge and lead to deformation and erosion of orbital bony structures or sometimes rupture spontaneously, causing inflammation of the orbits and eyelids. Thence, a complete removal is mandatory to avoid inflammation and postoperative recurrence [2,8]. Therefore, we selected a periorbital dermoid cyst for analysis in this study because it is the most expected location of the congenital dermoid cyst, particularly in the lateral eyebrow [4,7].

This study aimed to acquire an accurate picture of periorbital dermoid cyst in the pediatric age group in our population to identify patterns of similarity and difference with other studies and evaluate the efficacy of management. This will enable us to create an appropriate strategy for diagnosis and treatment.

PATIENTS AND METHODS

A retrospective case-series review was made on medical records of 35 pediatric patients from birth to 18 years of age who presented with a periorbital cystic lesion and visited the two clinical centers, Dermatological and Neurosurgical Centers. Most patients had been referred from other specialities like general surgery, ophthalmology, and pediatric clinics.

The study was conducted after receiving approval from the Kurdistan Board of Medical Specialties (KBMS). The patients were clinically diagnosed, and an excisional biopsy was done for their lesion in the dermatological and neurosurgical center and sent to the different histopathological centers for confirmation between 2014 and 2018.

The study inclusion criteria included the pediatric age group with periorbital dermoid cyst lesions. Therefore, medical records such as clinical files, imaging studies, and histopathological results were inspected.

The patients' raw data included age at the initial visit, age at surgery, gender, clinical manifestations, location of the cyst, and type of imaging studies performed. In addition, further analysis was performed for the surgical approach, depth of the cyst, and complications.

Diagnostic investigations, including computed tomography (CT) scan, were performed preoperatively in all the patients to find out intracranial extension of cysts and orbital bony defects. All surgeries were done under general anaesthesia, except for two patients who underwent surgery under local anaesthesia.

Surgery was performed to excise the entire cyst or eradicate the epithelial lining. All the resected lesions were sent to the histopathological laboratory of the hospital and confirmed the diagnosis as dermoid. Moreover, the data were analyzed using MS Excel (2010) program, and descriptive statistics were used to show the results.

RESULTS

Patient characteristics

Thirty-five pediatric age group patients aged from birth to 18 years of old were recorded with a periocular

dermoid cyst; 18 (51.4%) were females, and 17 (48.6%) were males with a female: male ratio of 1.06:1 (Figure 1). The age of patients at presentation ranged from newborn (Figure 2) to 17 years (mean is 3.14 with a standard deviation of 1.41).

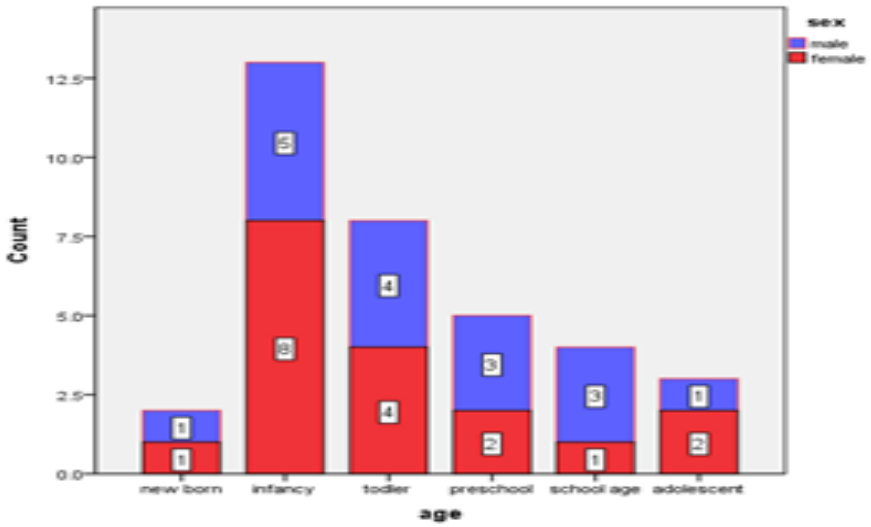

Figure 1. Sex and age of patients with a periorbital dermoid cyst.

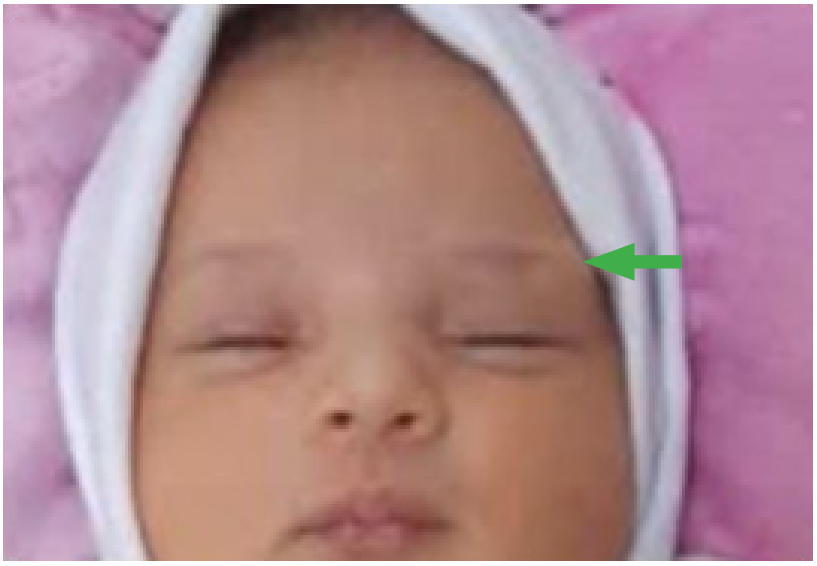

Figure 2. Periorbital dermoid cyst presented in a neonate.

Lesion characteristics

A total of 18 (51.4%) cysts occurred in the left supraorbital rim and 17 (48.6%) in the right supraorbital ridge (Table 1). On examination, 27 (77.2%) patients had visible mass (Figure 3), 7 (20%) patients had a visible mass with some dropping of the ipsilateral eyelid (Figure 4), and 1 (2.8%) patient had sinus with intermittent discharge.

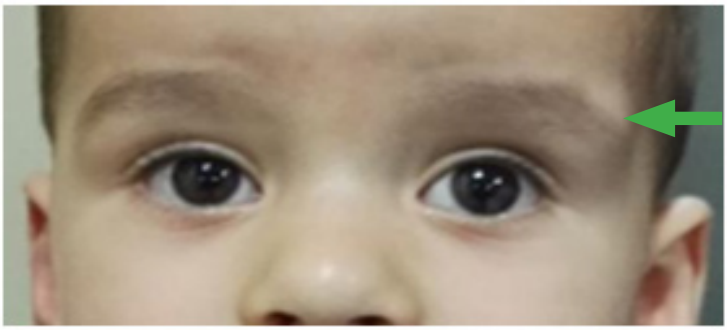

Figure 3. periorbital dermoid cyst presented in a preschool child with a supraorbital mass.

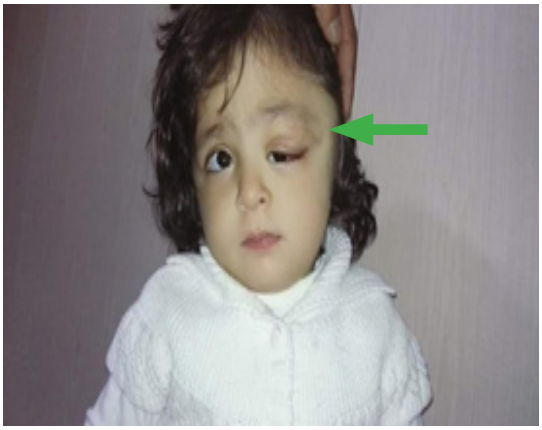

Figure 4. periorbital dermoid cyst in a toddler patient presented with a drooping eyelid.

The size varied from less than 1 cm diameter in 15 (42.85%) patients to more than 1cm in 20(57.15%) patients (the largest one was 3cm).

Progressive enlargement of the mass was found in 22 patients (62.86%), and in 5 patients (14.29%), the mass was stable.

The swelling became more prominent during crying, and when palpated, the mass was described as a mobile mass in 30 cases (85.71%) and fixed in the remainder. The texture was firm or rubbery.

The duration of symptoms before seeking medical was variable; 19 patients (54.29%) presented since birth, one patient (2.85%) had presented for one month, seven patients (20%) had symptoms for one month to a year, and eight patients (22.86%) for more than one year.

Computed tomography (CT) scan was performed for all the patients preoperatively to determine the presence of an intracranial extension of cysts and orbital bony defect; only 5 (14.3%) patients showed bone erosion, and the remaining (85.7%) revealed no abnormality (Table 2 and Figure 5).

In four cases, an ultrasound scan already was done before referring the patient to these two centers and confirmed the cystic nature of the lesion.

Table 1. Correlation of clinical presentation with CT scan finding of the lesion.

Presentation	CT scan			
	No bone erosion		Bone erosion	
	N (%)		N (%)	
Mass	23	85.2%	4	14.8%
Drooping eyelid	7	100.0%	0	0.0%
Sinus	0	0.0%	1	100.0%

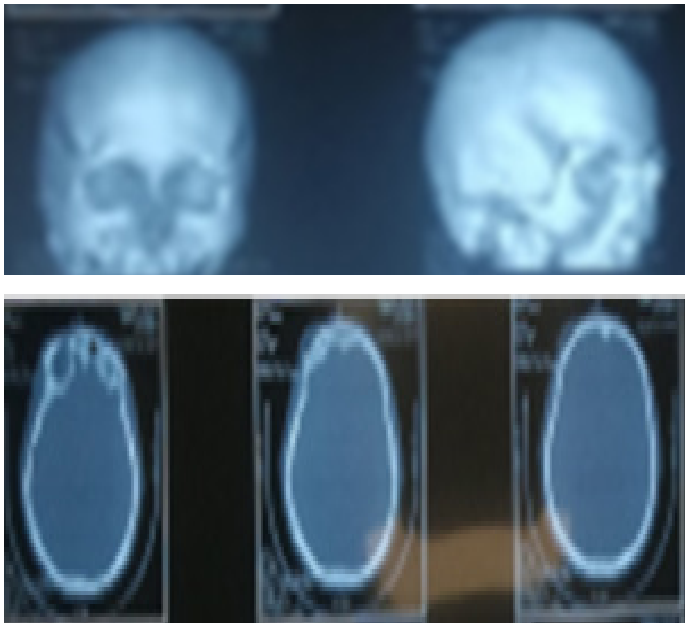

Figure 5. cranial CT scan of periorbital dermoid cyst showed supraorbital bone erosion with remodelling.

Operation and outcome

Age at the time of surgery ranged from one month to 17 years. The cyst was either located superficially without deep attachment in 24 (68.6%) patients or deeply seated between muscles attached to the periosteum in 11 (31.4%) patients.

The operative procedure, which was excisional biopsy, included a small incision over the mass, removing the mass totally in one piece, debunking the cyst content, and then removing the wall (Figure 6).

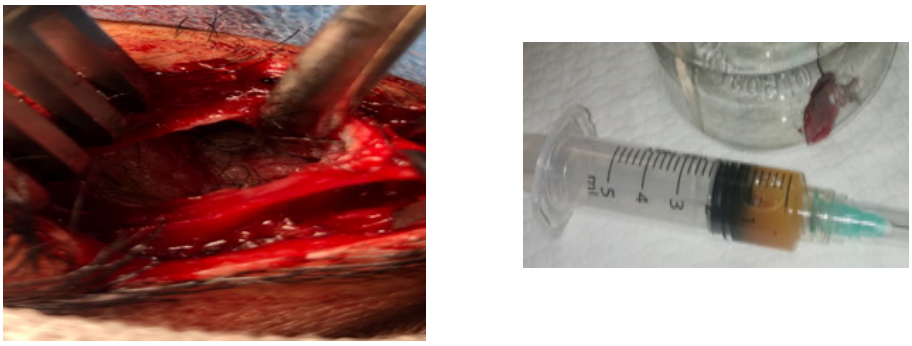

Figure 6. operative finding showed the presence of fine hairs with a thick yellow fluid in a patient 17 years old age.

Thirty-four patients underwent surgical excision; however, one patient (sinus) had been treated with antibiotics because of refusing the surgery. Besides, all of the cysts had histological evidence of chronic inflammation. Further, no patient developed recurrence postoperatively. Also, good clinical outcome was obtained in all patients.

Table 2. Essential features in 35 patients with a periorbital dermoid cyst.

		Count	Percentage
Side	Right	18	51.4
	left	17	48.6
Size	less than 1 cm	15	42.9
	1cm or more	20	57.1
Presentation	mass	27	77.1
	drooping eyelid	7	20.0
	sinus	1	2.9%
Complication	no	35	100.0
	yes	0	.0
CT scan	No bone erosion	30	85.7
	bone erosion	5	14.3
Enlargement	not enlarged	9	25.7
	progressively enlarged	26	74.3
Location	superficial	24	68.6
	deep	11	31.4
Duration	since birth	19	54.3
	month	1	2.9
	month to year	7	20.0
	more than year	8	22.9

DISCUSSION

This study reports on 35 congenital periorbital dermoid cyst cases in Pediatric age group patients. In 54.3% of patients, the lesions were present since birth. One of the patients who visited the clinic came because the cyst had not been completely removed in a prior procedure at another clinic.

Female gender was 51.4% of patients, 51.4% of cases, the left side was affected, 68.6% were superficially located 77.1% of the patients were clinically presented with a mass, the mass was progressively enlarging with age in 74.3% of the patients because it contains hair follicles, skin tissue, and sweat glands that produce skin oil. The glands continue to produce these substances, causing the cyst to grow. In addition, 14.3% had bone erosion on cranial CT scans due to local inflammatory reactions.

The operation was performed on 97.1% of cases with a 2.9% incidence of recurrence due to incomplete removal of its wall Table1.

A dermoid cyst is a pathological congenital or acquired cyst [9].

In the current study, females were predominant; 51.4% of the patients were female, with a female: male ratio of (1.05:1). However, in other studies, gender distribution was variable; in some studies, the males

were predominant (1.03-1.2:1) [1,10]. In addition, like our study, females were predominant in another study (1.2:1) [4].

The most common side was the left supertemporal quadrant in 18 patients (51.4%), and in which is closer to the incidence reported in two of the other studies in which the lesion mainly was located on the left side (60%-70.8%) [1,2]. While in one further study, the Cysts were right-sided in 17 (61.5%) [11].

The majority (77.1%) of the patients in the current study were present with a mass similar to other studies [10]. Further, the size varied from < 1 cm in diameter (42.9%) to ≥ 1 cm, up to 3 cm, (57.1%). The mass was ether superficially located (68.6%) or deeply located (31.4%), which is consistent with other studies [10] in which the majority was located superficially.

Those which are superficially located are presented early as a mobile mass, and its posterior wall can be palpated. In contrast, those located deeply and surrounded by muscles are fixed and not mobile also posterior wall cannot be palpated; it is recognized late when they become enlarged due to the accumulation of the debris inside the lumen [2,10].

Although it is a congenital lesion, most of them are not present at birth, they appear later when they slowly enlarge, inflame, or become infected [6-7], and our results demonstrated that 74.3% were enlarged with time. However, this study found that in approximately 80% of patients, the lesion was noted in children five years old or younger, which was higher than that reported in other studies; 70% [3] and 52% [4], but the majority occur at that age group, thus, in general, it is consistent with results of other studies.

This study also found that 85.2% of those presenting with a mass had a normal cranial CT scan; which was the most commonly used imaging technique performed for the patients in the current study, while 14.8% of those presented with a mass and 100% of those has sinus, their cranial CT scan showed bone erosion; therefore, the results are in agreement with previous research [5,7,12]. In general, imaging studies are not required for a lesion in the lateral periorbital region presented with a mobile mass without any associated finding like sinus or nevus. However, suppose the lesion is located medially, cannot be palpated in its posterior aspect, or has associated findings. In that case, a cranial CT scan becomes necessary to determine the lesion's posterior extent, bone erosion, and intracranial extension.

Treatment was performed through a direct approach in all patients. No recurrence or any complications were noted in three months follow up, which is consistent with other studies [2,4]. In addition, because the cyst had been wholly removed, recurrence is not happening [5].

In conclusion, if the lesion was found early in life and the mass was mobile and not fixed to underline structure, it can be removed without a cranial CT scan. However, if the lesion remains for a long time without treatment and is set to highlight structure, it will erode the skull bone and invade intracranially; at that time, it needs a cranial CT scan to exclude intracranial connection.

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