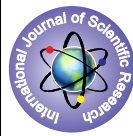


Study of Demographic Profile and Histomorphology of Epithelial Cysts of Skin



Medical Science

KEYWORDS : Epidermal cyst, Trichilemmal cyst, dermoid cyst, proliferating pilar tumor

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ABSTRACT

Cysts are commonly encountered lesions in histopathology. Epithelial cysts are classified into epidermal, trichilemmal and dermoid cysts based on the structural composition of wall. Objective of the study is to determine the age, sex and site distribution and detailed histomorphological characteristics of epithelial cysts of skin. A retrospective study conducted for a period of 5 years at a tertiary care hospital. Out of 94 cases, epidermal cysts were the most common type (77%) followed by pilar cysts (17%) and dermoid cysts (6%). Age distribution was wide. Epidermal cysts were seen commonly in males where as pilar cysts in females. Dermoid cysts did not show any sex predilection. A spectrum of secondary changes like infection, giant cell reaction, calcification, cholesterol cleft formation and neoplastic transformation were observed. Though the clinical diagnosis may be as simple as sebaceous cyst it is necessary to study these cysts in detail because of their varied morphological presentations.

Introduction: Cystic lesions are commonly seen in surgical practice with the most common clinical diagnosis of sebaceous cyst. A cyst is an enlarged space within a tissue, containing fluid material and lined by epithelium.¹ These cysts are classified according to their pathogenesis² and structural components of their wall.³ Sebaceous cyst is preferably described as either an epidermal cyst or trichilemmal (pilar) cyst.⁴

Epidermal cysts are the most common type of epithelial cyst of skin⁵ and has varied presentations in different parts of the body.³ They occur at every site on the body, especially on the face, scalp, neck and trunk and they occasionally on the palms or soles.⁶ The epidermal cyst has a wall nearly identical to that of epidermis and is filled with laminated keratin. These cysts are usually the result of the proliferation of epidermal cells within a circumscribed space of the dermis. They grow slowly and are usually asymptomatic until they become inflamed or secondarily infected.⁷

Pilar cysts are less common than epidermal cysts.¹ They occur preferentially in areas with dense hair follicle concentrations; therefore, 90% occur in the scalp. The wall is composed of squamous cells with peripheral palisading arrangement and the cells close to the cystic cavity appear swollen with lack of granular layer and undergo abrupt keratinization. The content of the cyst consists of homogeneous eosinophilic material.^{3,8} The term "trichilemmal cyst" was coined by Pinkus when he identified the external root sheath of the hair follicle at follicular infundibulum as the exact origin of these pilar cysts.¹

Dermoid cysts lack any entry port and have a predilection for lines of embryonic fusion.⁶ Younger patients predominate for dermoid cyst presentation. Histologically, pilosebaceous structures are noted within the wall of a dermoid cyst.⁴

The present study was undertaken to study the demographic profile and various morphological patterns of cutaneous cysts encountered in surgical pathology practice.

Materials and methods: The histopathology files of the Department of Pathology were reviewed for a period of five years between 2005 and 2010. Cases coded as epidermal, trichilemmal and dermoid cyst were accessioned in the aforementioned period were retrieved from our institutional files. The paraffin embedded and H and E stained histopathology slides were reviewed and detailed histomorphological features were noted. The relevant clinical details available from the histopathological examination request forms were also noted.

Results: We received a total of 94 cysts for histopathology during the study period. Out of 94 cases epidermal cyst was the most common type (72 cases -77%) followed by pilar cyst (16

cases -17%) and dermoid cyst (6 cases-6%).

Table 1: Age distribution of cysts of skin

Age in years	Epidermal cyst	Pilar cyst	Dermoid cyst
0-10	2	1	0
11-20	7	0	4
21-30	27	3	2
31-40	14	5	0
41-50	8	4	0
51-60	13	1	0
61-70	1	1	0
71-80	1	1	0
Total No of cases	72 (77%)	16 (17%)	6 (6%)

Table 2: Sex distribution of epidermal, pilar and dermoid cysts

Sex	Epidermal cyst	Pilar cyst	Dermoid cyst
No of cases in males	44	5	3
No of cases in females	28	11	3

Table 3: Site distribution of epidermal and pilar cyst.

Site	Epidermal cyst	Pilar cyst
Scalp	6	13
Face	21	1
Neck	7	0
Trunk	26	1
Leg and hand	8	0
Palm and heel	2	0
Scrotum	2	1
Total No of cases	72 cases	16 cases

In the current study epidermal cyst was the most common type accounting for 77% of cases. The age distribution was wide ranging from one and half months to 72 years with peak incidence between 20-40 years (Tab1). Trunk and face was the most common site observed (Tab 3). Majority of cases occurred in males (61%) with male to female ratio of 1.5: 1 (Tab2).

16 cases (17%) of pilar cysts were encountered. 13 cases were located on the scalp and 1 each on nose, back and scrotum. The study showed female predominance with male to female ratio of

2.2: 1(Tab2). Age ranged from two half months to 77 years with peak incidence between 20-50 years (Tab1).

Six cases of dermoid cysts were seen. All 6 cases occurred in the eyelids with equal sex distribution. Age at presentation ranged from 11 to 25 years with a mean of 17 years (Tab1).

Discussion: Cysts of skin are commonly encountered lesions in histopathology. Detailed examination of the type of keratinization involved will reveal the exact nature of the cyst.¹ These cysts can have varied morphological presentations and may cause difficulty in diagnosis. At times, clinically these cysts may become tender and inflamed. When these cysts rupture, they evoke inflammation in the surrounding tissue.⁸

Epidermal cysts

Epidermal cysts were more common in males. The commonest site was trunk and face. In the study by Kim SK et al⁵ the ratio of male to female patients was 1.7:1, with face being the commonest site and the age distribution ranged from 11 months to 83 years. We found acute inflammation to be present in 9 cases (12.5%). It is a matter of debate whether bacterial infection plays a role in the inflammatory process in epidermal cysts. According to V. Chandrasekaran et al⁹ bacteriological study of clinically inflamed cysts showed that inflammation in these lesions was usually aseptic unless there is bacterial contamination due to communication between the cyst cavity and the exterior. Another study by Kuniyuki S et al¹⁰ highlights the predominance of anaerobes in inflamed epidermal cysts, strongly suggesting that anaerobic bacterial infection may play a significant role in the inflammatory process.

Of 72 cases of epidermal cysts 2 of them occurred on sole of the foot and these could be classified as implantation cysts. Because there are no pilosebaceous unit on the palms and soles, palmoplantar epidermal cysts may arise due to deep implantation of an epidermal fragment as a result of a blunt penetrating injury.⁶ Some investigators have suggested that HPV infection could be closely related to palmoplantar epidermal cysts.⁶

Older cyst may exhibit secondary changes like calcification or foreign body giant cell reaction.⁷ In our study calcification was found in 3(4.16%) cases and giant cell reaction was observed in 11(15.3%) cases. The foreign-body reaction usually leads to disintegration of the cyst wall, but may also cause pseudoepitheliomatous proliferation in remnants of the cyst wall, mimicking squamous cell carcinoma.⁸ However development of squamous cell carcinoma and basal cell carcinoma in epidermal cysts is a rare event.⁸

Trichilemmal cyst

In the current study pilar cysts were seen commonly in females(68.75%) with scalp being the commonest site (81.25%). Foci of calcification are seen in approximately one-fourth of trichilemmal cysts.⁸ A considerable foreign-body reaction results when the wall of a trichilemmal cyst ruptures and the cyst may then undergo partial or complete disintegration.^{8,11} In the current study out of 16 pilar cysts calcification was noted in 5(31.25%) cases, cholesterol cleft formation in 2(12.5%) cases and giant cell reaction in 3(18.75%) cases. Two of the subjects had multiple cysts on the scalp. Proliferating trichilemmal cyst is thought to arise from a preexisting ordinary pilar cyst following trauma and inflammation.¹² Pilar cyst and proliferating trichilemmal tumor(PTT) can occur together and lesions intermediate between pilar cyst and PTT have been evidenced,^{1,13,14} one is essentially a cyst and the other a neoplastic proliferation.¹ The key factor in proliferation may be vascularisation of cyst epithelium possibly secondary to focal injury.¹³ There was one such case in our study in a 60 year old male who presented with multiple scalp swellings and histopathologically showed presence of both these lesions.

Dermoid Cyst

Dermoid cysts are relatively rare lesions. In our series, all 6 cases were located in the eyelid. Dermoid cysts have been reported to have no obvious gender predilection. 15, 16 Our results showed equal sex distribution. Although dermoid cysts are considered congenital lesions, they may present in a wide age range.¹⁶ These cysts are postulated to arise from ectodermic elements entrapped during the midline fusion of the first and second branchial arches between the third and fourth weeks of intrauterine life.⁷ Our results showed a relatively young mean age of 17 years. This finding supports a congenital origin of this lesion.⁷

Conclusion: Epithelial cysts of skin are commonly encountered in histopathology. They have a wider age range and distribution. Epidermal cysts were the commonest type with male predominance where as pilar cysts showed female predominance. It is essential that every cyst excised from the skin should be closely studied, especially the larger lobulated masses, although the clinical diagnosis may be very simple sounding "sebaceous cyst" as these cysts may have varied presentations like infection, giant cell reactions, calcification, cholesterol cleft formations, multiplicity of lesions and rarely neoplastic transformation.

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