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Epidermoid CYST: A Clinicopathological Study in a Real World Clinical Setting.

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Abstract:

Background: Epidermoid cysts, sometimes called epidermal inclusion cysts or epidermal cysts, are a kind of benign intradermal or subcutaneous tumour that are commonly found on the head, face, neck, trunk, and limbs. They are quite common. A typical kind of cutaneous cyst with an epidermis-like epithelial lining (wall) is called an epidermoid cyst. An outcome of proliferation of surface epidermoid cells within the dermis.

Methodology: This is a retrospective cross-sectional observational study carried out over a period of 3 years conducted at Chettinad Hospital and Research Institute. The total samples obtained were 926 and the specimens were chosen randomly until the gathered samples were adequate as per sample size and from those patients who are willing to consent for taking part in the study. Histological examination and clinical data were collected

Results: A total of hundred cases were examined and the common diagnosis was found to be epidermal cyst in 78.9% of instances, with trichilemmal cysts following in 8.9% of cases. Steatocystoma and vellus hair cysts were uncommon varieties. One instance had proliferating trichilemmal cysts, whereas two cases had proliferating epidermal cysts. There were no incidence of any malignancy among the selected samples.

Conclusion: Epidermal cysts were found to be most common among the soft tissue swellings that were isolated in the institute and was followed by trichilemmal cysts. Since no malignant change was noted in the samples we can conclude there are very less chances of any malignant transformation to occur in epidermoid cysts.

Keywords: Epidermal cyst, epidermal inclusion cyst, benign, trichilemmal cysts, dermis

Introduction:

One of the more frequent benign intradermal or subcutaneous tumors that typically develop on the head, face, neck, trunk, and limbs are epidermoid cysts, also known as epidermal inclusion cysts or epidermal cysts. The damage to the pilosebaceous unit in the hair-bearing region is the cause of these cysts.These cysts in hairless places like the palm and sole are thought to be epidermal inclusions owing to trauma from things like sewing needles, crush injuries, or HPV infections, which cause squamous epithelium to proliferate and implant into the dermis.These cysts are smooth, dome-shaped, spherical, unilocular swellings that typically include a punctum. They range in size from a few millimetre's to a few centimetre's. An epidermis-like epithelium with a granular cell layer made of laminated keratin lines these

cysts [1]. One obvious feature is the cyst's ability to interact with the skin's surface via a punctum, which is a keratin-filled aperture. Keratin is generated by the cyst's lining. A fluid-filled protrusion that starts from the follicular infundibulum and ends just beneath the skin's surface is called an epidermoid cyst. Epidermoid cysts, also called atheroma, are frequently observed. These cysts originate mostly in the pilosebaceous apparatus but rarely in areas without hair, such as the palm and sole. The mechanism of their development has been reported to be epidermal inclusion secondary to trauma or human papilloma virus (HPV)-60 infection [2]. As a result, another name for it might be epidermal inclusion cyst. The epidermoid cyst can occur at any age, but incidence is more frequently noted in adulthood. A malignant transition into squamous cell carcinoma and basal cell carcinoma has been reported in about 1% of epidermoid cysts.The lack of sebaceous glands in the cyst lining makes the name "sebaceous cyst," which was often used interchangeably with "epidermoid cyst," unsuitable. Infundibular cyst, epidermal cyst, epidermal inclusion cyst, and epidermoid inclusion cyst are some additional frequent synonyms.

Steatocystoma is a benign adnexal tumour that originates from the pilosebaceous duct. It usually presents with multiple lesions. Steatocystoma simplex is a rare skin lesion with a histological pattern that is identical to that of steatocystoma multiplex. Steatocystoma multiplex is a condition with multiple cystic lesions inherited in an autosomal dominant pattern. However, steatocystoma is a non-inheritable solitary lesion. Brownstein, in 1982, was the first to de- scribe steatocystoma simplex [3]. Since then, there have been only 10 reports in the English literature up to 2013. Steatocystoma simplex cysts usually occur on the face, trunk and extremities. Steatocystoma simplex cysts are non-symptomatic, and the treatment is done usually for cosmetic purposes. The indications for the treatment in the present case were pain and discomfort during sexual intercourse, and cosmetic disfigurement [4].

Trichilemmal cysts (TC) is a benign skin lesion requiring pathological diagnosis; prognosis is good with total excision. Trichilemmal cysts are characterised by They originate from the outer hair root sheath of hair follicles and are commonly found in areas with dense hair follicles, particularly the scalp. The cysts contain eosinophilic hair keratin and its destruction products, with a tendency for the contents to be dense and cheese-like. The cyst wall is composed of epidermal tissue without a granular layer, and the spinous and basal layers are intact [5]. Proliferating trichilemmal cysts (PTCs) are uncommon variants of trichilemmal cysts distinguished by accelerated development and cellular proliferation. Whereas a PTC can grow quickly and can develop into cancer, a normal TC is a benign lesion that grows slowly. It is referred to as a malignant transformation of PTC (MPTC) when it develops into cancer. MPTC usually manifests as a rapidly expanding ulcerating mass with a rigid, uneven edge. It might spread to different areas of the body by invading the tissues around it [6].

Trichofolliculomas, also known as vellus hair cysts, are an uncommon type of benign skin lesion that include vellus hairs inside of the wall and lumen of cystic cavities , typically seen in regions with a high density of hair follicles . Vellus hair cysts are uncommon, which has prevented many thorough investigations on their incidence and features. The genesis of these cysts is currently unclear . Surgical excision being the primary therapeutic approach for vellus hair cysts, aiming to completely remove the cyst and its wall to reduce the likelihood of recurrence [7].

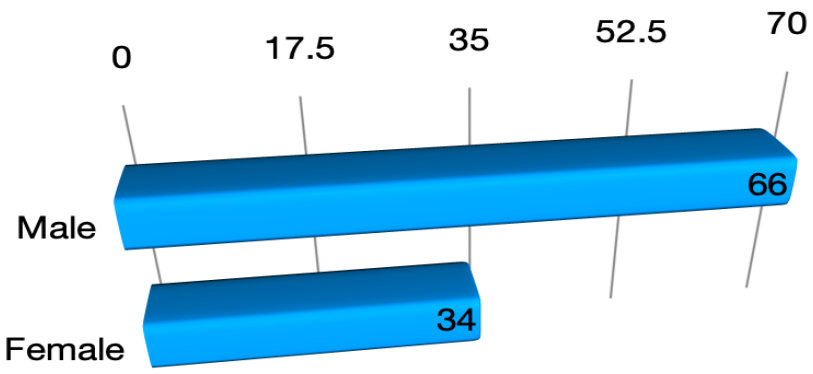
Aim: The aim of the study is to evaluate the clinicopathological details related to epidermoid cysts in a real world clinical setting.

Materials and Method: This study will be a cross-sectional, retrospective observational study, that will

be conducted on skin swelling specimens that were sent for histopathological evaluation from the Department of General Surgery, CHRI over the past 3 years. The total samples that were marked for epidermoid cyst for the duration of the study was found to be 926. A minimum 10% of the population to be studied gives a size of 92.6 , rounded to a sample size of 100. Those specimens labelled as epidermoid cyst or sebaceous cyst will be considered to be included into the study. After obtaining consent from the patients whose specimens were identified and after obtaining the approval from the Intra Hospital Ethics Committee the relevant data will be collected. The specimens to be included in the study will be chosen randomly until the gathered samples are adequate as per sample size from patients who are willing to consent for taking part in the study. All the patient details pertaining to the study will be collected from the medical records department and histopathological details collected from the department of pathology and the history of presenting traced back through the patients medical records. All the patients will be explained in detail regarding the study and the patients are to provide their informed consent for taking part in the study and for publication of the results. Clinicopathological information for the specimens in the specified period will be obtained from the Medical Records Department and the Department of Pathology and will be assessed with a focus on anomalous findings pertaining to epidermoid cysts. Histological examination included cyst wall lining, type of keratinisation, complications like rupture, inflammation, foreign body giant cell reaction, calcification, and malignant change. Clinical data including age, gender, site of involvement, and associated symptoms were retrieved from patients' records and histopathological data retrieved from the Department of Pathology, CHRI. For Histopathological evaluation, Hematoxylin and Eosin was used to stain the block sections that have been paraffin embedded and treated with formalin. When necessary, special stains like Ziehl-Neelsen and periodic acid-Schiff applied. The findings of the study collectively summarised. We use IBM SPSS for the statistical analysis of this study due to its ease of use for analysis of data and gives us a well put study outcome. Compared to all the other study tools possible this tool is noted to be of better purpose for our study.

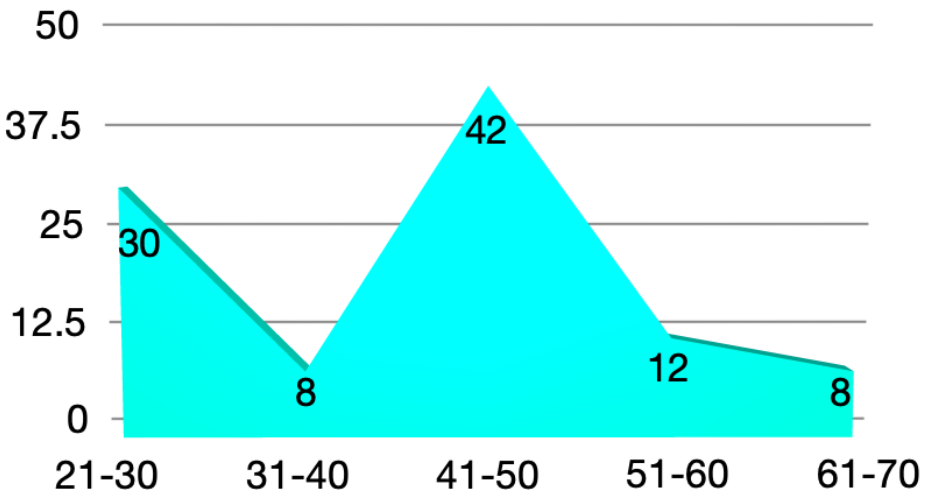
Results and Discussion: Gender distribution (Figure 1) revealed that males had a higher incidence of being diagnosed with soft tissue swelling as compared to females. In our study we came across 66 male participants and 34 female participants, this is about the ratio of 2:1, which is similar to the study conducted by Chandrasekaran V et al. (8) and de Mendonça, *et al*. (10). These findings are discordant with the findings of Chughtai et al. (9).

Figure 1 : Gender distribution



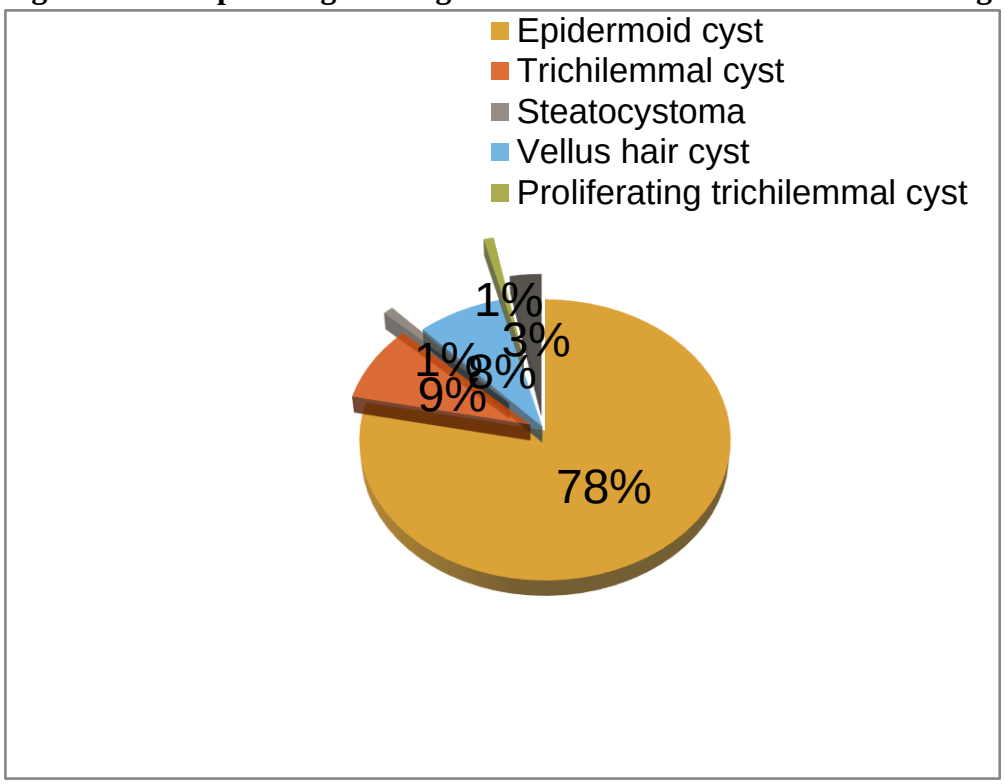
Age distribution of the samples showed a maximum occurrence of epidermoid cysts in the middle aged group (41 - 50 years) followed by predominance in the young adults (21 - 30 years). Age distribution is depicted in Figure 2. The mean age was found to be 46 years which lies in the group of maximum occurrence. The maximum age of the patient in our study was 69 years and the youngest included un our study was found to be of 26 years. Chughtai et al. (9) in his study also fund the predominant incidence of benign cutaneous cyst in the fourth decade of life.

Figure 2 : Age distribution



Of all the 100 cases we studied, punctum was present to naked eyes in about 67% cases, while 33% of cases were without punctum. The most common sites of occurrence were face and back, especially in the inter scapular region. The other sites of occurrence were fingers, scalp, chest and nape of neck. We also came across 10 instances of epidermoid cyst where the site of occurrence was scrotum. Histological examination included cyst wall lining, type of keratinisation, complications like infection, rupture, inflammation, foreign body giant cell reaction, recurrence, calcification, and malignant change. A total of hundred cases were examined and the most common diagnosis was found to be epidermal cyst in 78% of instances, with trichilemmal cysts following in 9% of cases. Steatocystoma and vellus hair cysts were 1% and 8% respectively. One instance had proliferating trichilemmal cysts, whereas three cases were of proliferating epidermal cysts.

Figure 3 : Histopathological diagnosis of the different soft tissue swellings



Conclusion:

Epidermoid cysts are the most common type of benign skin lesions. Although benign intradermal or subcutaneous tumors, epidermoid cysts can present with atypical symptoms and histological abnormalities. Because epidermoid cysts can affect both appearance and functionality, early identification and treatment are essential. Epidermal cysts instances were common in the inter scapular region which can be attributed to difficulty in approaching the inter scapular region which when traced revealed peri-arthritis of the shoulder joint. The incidence of epidermoid cyst over the scrotum can be attributed to the fact that men often ignore to stretch the scrotal skin and cleanse.

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Institutional Human Ethics Committee for Faculty Research (CARE IHEC-II)

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To **03.05.2024**

DR.MUTHURAJ.K
Professor
Department of General Surgery
Chettinad Hospital and Research Institute

Sir/Madam,

Sub: Your proposal Reviewed - Communication of decision - Regarding

Ref No : IHEC-II/0659/24

The Institutional Human Ethics Committee (CARE IHEC-II) has reviewed your proposal titled " **Epidermoid cyst: A clinicopathological study in a real world clinical setting.**" on **03.05.2024** and the following decision has been taken based on the deliberations and discussions.

Decision: Approved

Comments :

Yours Sincerely

Dr R Arunkumar MD PhD
Member Secretary
CARE-IHEC for Faculty Research
(CARE IHEC-II)