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# Histopathological Analysis of Epidermal Appendageal Tumors: A Descriptive Study in Tertiary Care Center

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***Abstract:*** *INTRODUCTION: Tumors of epidermal appendages are uncommon accounting for 0.2%. Most of these tumors are difficult clinically to diagnose. Histopathological examination with immunohistochemistry will be helpful to analyze and categorize these tumors effectively.*
*MATERIAL & METHODS: This study was conducted at Institute of Pathology, Madras Medical College, Chennai from January 2017 to August 2018. All the benign and malignant skin adnexal tumors were included in our study with the exclusion of non-neoplastic lesions.*
*RESULTS: Out of total 19,856 biopsies, 46 cases of skin adnexal tumors were received comprising of 0.22%. Male to Female ratio was 1:2.06. 40 cases were benign & 6 cases were malignant. 22.5% of benign cases occurred in 11-20years, whereas all 6 malignant cases were seen after 4th decade. 52.17% of cases were of eccrine origin followed by follicular tumors at 21.7%. Commonest malignant tumor was Porocarcinoma and commonest benign tumors were Eccrine poroma & Nevus sebaceous.*
*CONCLUSION: Overall incidence of skin adnexal tumors were low in South Indian population with more incidence of benign tumors. Common age group affected were 51-60years. Histopathology is the diagnostic modality for these tumors because of varied clinical presentation.*
***Key Words:*** *Epidermal appendageal tumors, Eccrine poroma, Nevus sebaceous, Porocarcinoma,*

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## I. Introduction:

Tumors of epidermal appendages arise from hair follicles, sebaceous glands, apocrine glands and eccrine glands(1,2). Histological appearance of these tumors are similar to the cell of origin. Skin adnexal tumors are very uncommon and pose a diagnostic problem to pathologists as well as clinicians(1). Adnexal tumors are not derived from mature differentiated cells but they originate from multi-potent stem cells within the epidermis or its appendageal structures(2,3). Because of the totipotent origin, the tumors exhibit varied histomorphologicappearance(2).

Most of the benign adnexal tumors are difficult to diagnose as they have non-specific clinical features. However, elaborate histopathological examination with IHC will be helpful to analyze and categorize the tumors as per recent International Classification of WHO. Aim of this study is to categorize skin adnexal tumors and to determine the frequency, distribution with respect to patient's age, sex and histological differentiation.

## II. Material and Methods:

This study was conducted at Institute of Pathology, Madras Medical College, Chennai from January 2017 to August 2018. All benign and malignant skin adnexal tumors were included in our study whereas all non-neoplastic lesions were excluded. A total of 46 cases diagnosed as skin adnexal tumors on histopathology were included. The specimens received at Institute of Pathology, MMC were fixed in 10% neutral buffered formalin and paraffin embedded tissue sections were stained with eosin and hematoxylin. Based on histomorphological analysis, tumors were categorized as per recent WHO classification. The tumors were classified and analyzed on the basis of differentiation into follicular, sebaceous, eccrine and apocrine. IHC was done as and when required to confirm the diagnosis.

## III. Result:

Of the total 19,856 biopsies received at Institute of Pathology, Madras Medical College, Chennai from January 2017 to August 2018, 46 cases were skin adnexal tumors comprising of 0.22%.

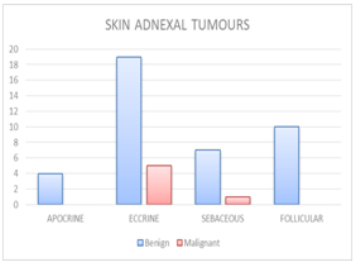



**Table 1**

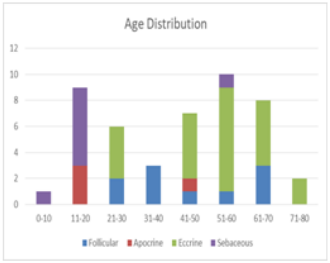
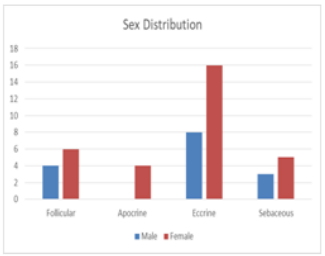



**Table 2**

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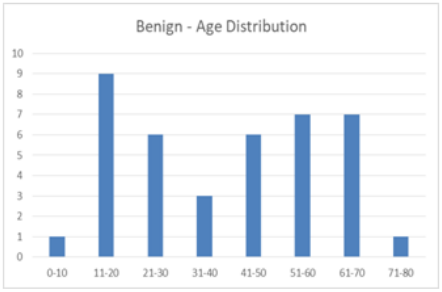


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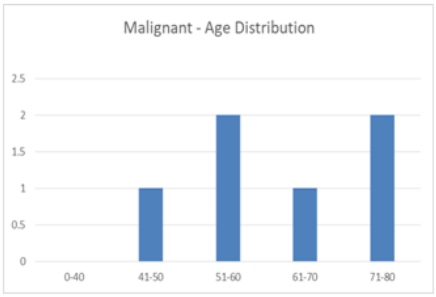
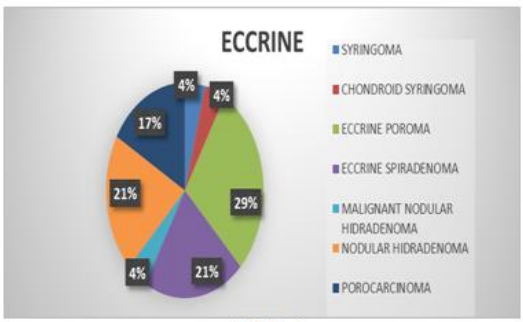



**Table 5**

Age ranges from 10-76 years comprising of male 33%(15 cases), female 67% (31 cases) with M:F ratio of 1:2.06. 21.7% (10 cases) presented in age group 51-60 years (Table 2 & 3). Out of 46 cases 86.95% (40 cases) were benign, 13.04% (6 cases) were malignant. 22.5% of the benign cases occurred in age group 11-20 years. The benign tumors had female preponderance accounting for 62.5% of cases(n=25/40). All the 6 malignant cases were seen after 4th decade of life and in females (Table 4 & 5). Of the 46 cases 52.17% (n=24) were of eccrine origin followed by follicular tumors at 21.7% (n=10). 8 were of sebaceous origin and 4 of apocrine origin (Table 1). 16/24 cases in eccrine tumor were females, 19 cases were benign. 54.16% of eccrine tumors were seen between 51-70 years of age. All the follicular tumors were benign with female preponderance (6/10). 7/8 cases of sebaceous origin were benign, 1 was malignant with female preponderance. All 4 cases of apocrine tumors were benign and all cases were female.

Commonest malignant tumor noted was Porocarcinoma (4/6 cases). Commonest benign tumor noted was eccrine poroma(7/40) and nevus sebaceous(7/40).

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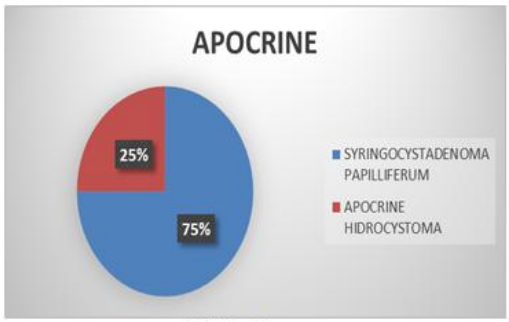



**Table 7**

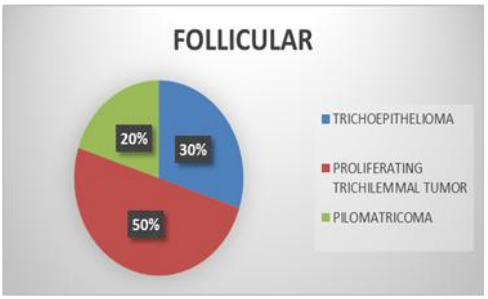



**Table 8**

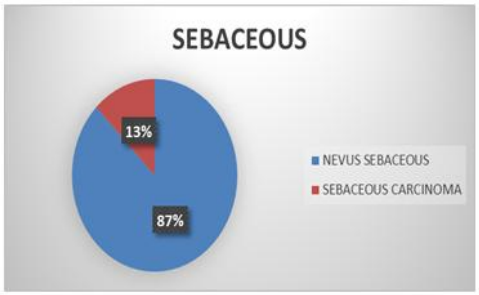



**Table 9**

## IV. Discussion:

Skin adnexal tumors are uncommon tumors comprising 0.22% of all biopsies. This in in concordance with Kaur et al (0.3%)[4], Jayanthi et al (0.27%)[5]. Male to Female ratio in our study is 1:2.06 which is similar to the studies of Saha et al[6] – 1:1.9, Nair et al[7] – 1:2.3, Vani et al [8]– 1:1.6.

Maximum number of cases were seen in 51-60 years (21.7%), which was similar to study conducted by Jeyanthi et al[5]. 40 cases (86.95%) were benign out of total 46 cases which was similar to studies done by Kaur et al[4], Sharma et al[3], Suri et al[1], Vani et al[8]. 6 cases (13.04%) were malignant which was in concordance with Kaur et al[4]& Sharma et al[3]. Most common benign tumor was eccrine poroma and nevus sebaceous as seen in studies conducted by Suri et al[1] and Alan et al[9]. Most common malignant tumour in our study was porocarcinoma(Table 10).

| | **Suri et al[1]** | **Sharmaet al[3]** | **Vani et al[8]** | **Kaur et al[4]** | **Jeyanthiet al[5]** | **Alam et al[9]** | **Saha et al[6]** |
|---|---|---|---|---|---|---|---|
| **INCIDENCE** | 66/10000 cases | - | 51 cases | 110 cases | 0.27% | - | - |
| **COMMON AGE GROUP** | 31-40 years (24.3%) | 51-60 years (26.78) | 40-49 years (21.56%) | 20-39 years | 51-60years (32.1%) | 40-49 years | - |
| **M:F** | 1.44:1 | 1.07:1 | 1:1.68 | 1.03:1 | 0.75:1 | 1.16:1 | 1:1.9 |
| **BENIGN (%)** | 93.94% | 80.36% | 74.5% | 82.72% | 78.6% | 92.31% | 100% |
| **MALIGNANT (%)** | 6.06% | 19.64% | 25.49% | 17.28% | 21.4% | 7.69% | - |
| **MOST COMMON BENIGN** | Pilomatricoma( 13) Nevus Sebaceous (10) | Pilomatricoma & Clear cell hidradenoma (12) | Nodular hidradenoma (6) | Pilomatricoma( 31) | Nodular hidradenoma( 6) | Eccrine Poroma (3), Pilomatricoma, Sebaceous Hyperplasia | Syringoma |
| **MOST COMMON MALIGNANT** | Sebaceous Carcinoma | Sebaceous Carcinoma | Sebaceous Carcinoma | Sebaceous Carcinoma(13 ) | Sebaceous Carcinoma, Malignant Sweat Gland Tumor | Sebaceous Carcinoma | - |
| **MOST COMMON DIFFERENTIATION** | Follicular (37.87%) | Sweat Gland (42.86%) | Sweat Gland (43.13%) | Follicular (39.09%) | Sweat Gland (61%), Follicular (21%) | Sebaceous (42.31%) | - |

**Table 10**

**Follicular:**

**Trichoepithelioma:**

Appears in childhood and gradually increase in number presenting as rounded papules and nodules. They are characterized by horn cysts with trichilemmal keratinization surrounded by basophilic cells with peripheral palisading encircled by fibroblasts (Figure 1. A,B,C).

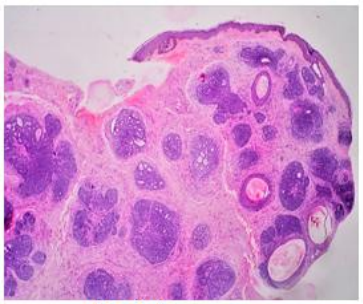


Fig. 1.A

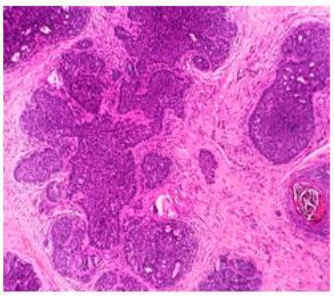


Fig.1.B

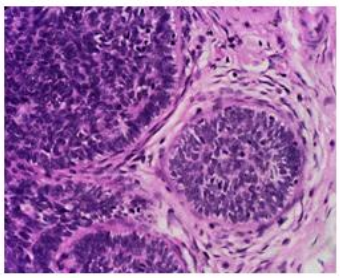


Fig.1.C

**Proliferating Trichilemmal Tumor:**

Occurs in elderly women and present as large elevated lobulated mass and can undergo ulceration. HPE shows multiple variably sized lobules of squamous epithelia undergoing abrupt change into amorphous keratin (Figure 2. A, B, C).

Fig. 2.A

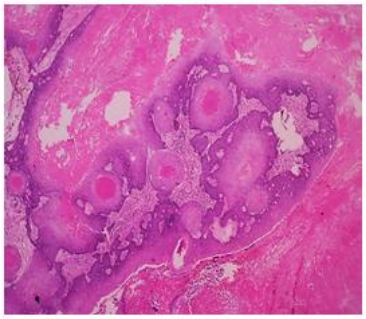


Fig.2.B

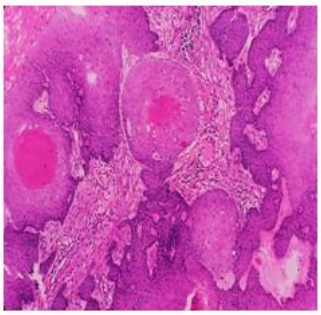
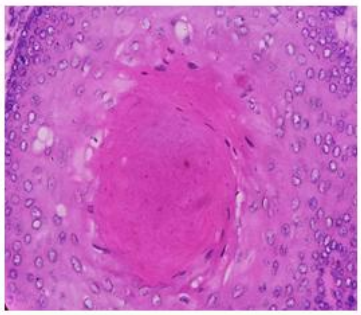


Fig.3.C



**Pilomatricoma:**

Can occur in any age with 60% of cases seen in first two decades of life presenting as firm, sharply demarcated, deep seated nodule. Microscopically tumor is well circumscribed composed of islands of basophilic cells transforming into shadow cells with loss of nuclei.

**APOCRINE:**

**SyringocystadenomaPapilliferum:**

Occurs in early childhood presents as papule. Microscopically, the lesion exhibits cystic invagination extending as papillary projections lined by luminal columnar cell with outer cuboidal cells. Papillary core show plasma cells.

**Apocrine Hidrocystoma:**

Presents as solitary, translucent cystic nodule. Microscopically dermis contains a multiloculated cyst into which there are papillary projection lined by columnar secretory cells with peripheral elongated myoepithelial cells.

**SEBACEOUS:**

**Nevus Sebaceous:**

Presents often at birth & in childhood the lesion is circumscribed as slighty raised hairless linear plaque. At puberty the lesion becomes verrucous and nodular. Microscopically shows epidermal hyperplasia, papillomatosis with incompletely differentiated hair structures presenting as cords of undifferentiated cells (Figure 3. A, B).

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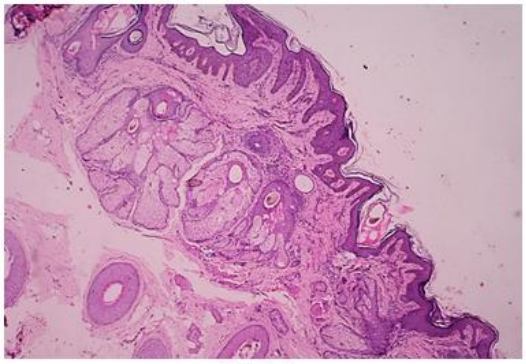


Fig. 3.A

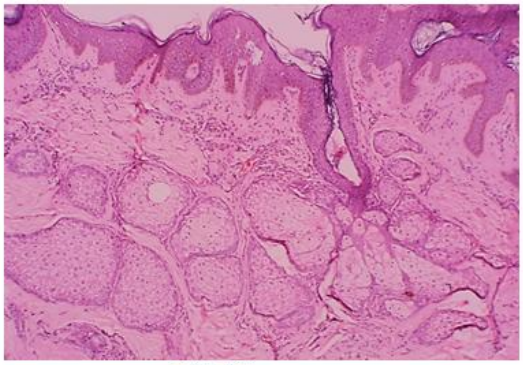


Fig. 3.B

**Sebaceous Carcinoma:**

Occurs more frequently in eyelids. Microscopically, the tumor shows irregular epithelial lobules with cells exhibiting cytological atypia with focal sebaceous differentiation.

**ECCRINE**

**Eccrine poroma:**

Generally arises in middle aged person presenting as pedunculated papules. Microscopically, tumor arises from lower epidermis extending down as broad, anastomotic bands of small cuboidal epithelial cell, with deep basophilic nucleus connected by intercellular bridges (Figure 4. A, B, C).

Fig. 4.A

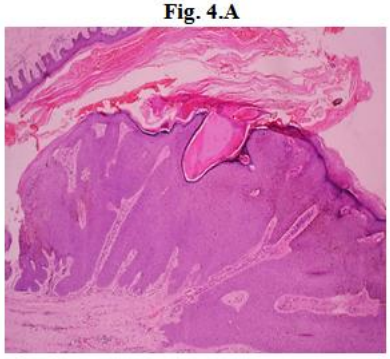


Fig. 4.B

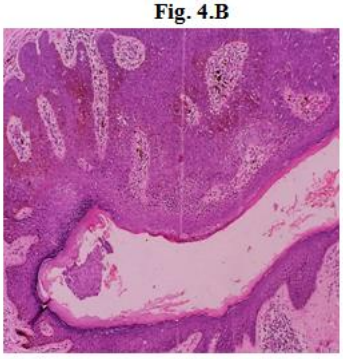
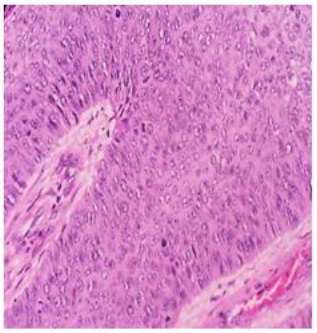


Fig. 4.C



**Syringoma:**

Occurs in women at puberty or late in life presenting as small skin colored soft papules. Microscopically tumor is seen as numerous tubules, ducts lined by inner vacuolated cells, outer epithelial cells with some ducts possessing small comma like tails of epithelial cells (Figure 5. A, B, C).

Fig. 5.A

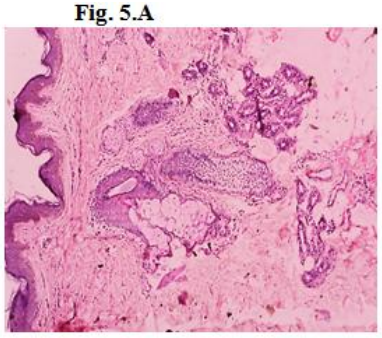


Fig. 5.B

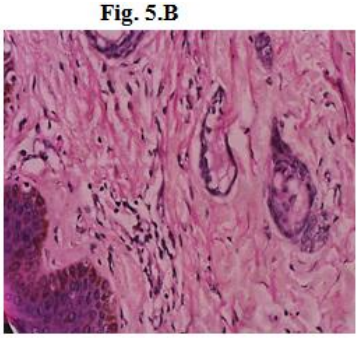
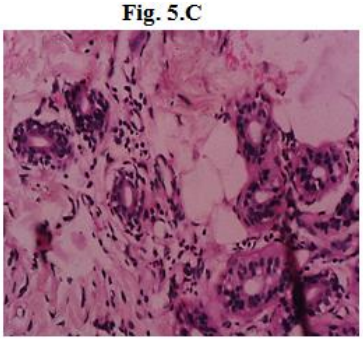


Fig. 5.C



**Chondroid Syringoma:**

Presenting as subcutaneous nodules. Microscopically the tumor is nodular composed of tubular lumina lined by luminal cuboidal cells, peripheral flattened cells. Tubular lumina contains amorphous eosinophilic material stromal cells having chondrocytic appearance.

**Eccrine Spiradenoma:**

Presents as solitary intradermal nodule. Microscopically, the tumor consists of several lobules of epithelial cells arranged in interwiring bands composed of cells with large, pale nuclei present in centre of the aggregates and cells with small dark nuclei lying at the periphery of the aggregates (Figure 6. A, B, C).

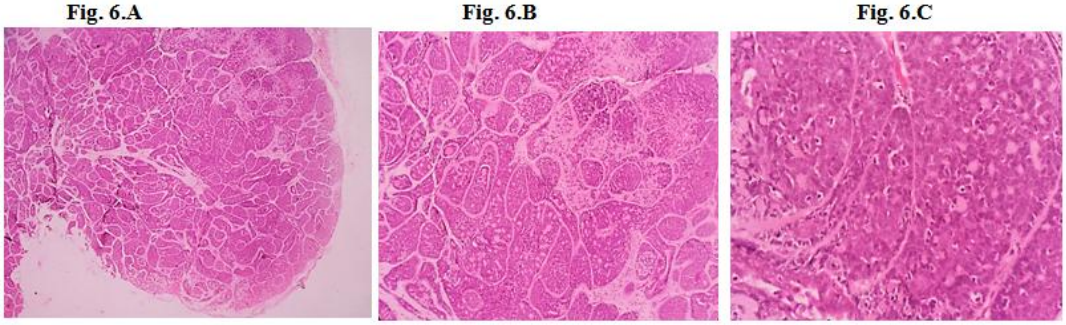


Fig. 6.A Fig. 6.B Fig. 6.C

**Nodular hidradenoma:**

Presenting as intradermal nodules. Microscopically tumor is seen as lobules of tumor cells within dermis with tubular lumina of various sizes. Tumor shows two types of cells; one polyhedral cell with rounded nuclei and basophilic cytoplasm and other is round cells with clear cytoplasm and distinctly visible cell membrane, nucleus is small and dark staining.

In malignant nodular hidradenoma, angiolymphatic invasion and invasion into surrounding tissue seen with focal necrosis, marked cytological atypia and high mitotic activity (Figure 7. A, B, C, D).

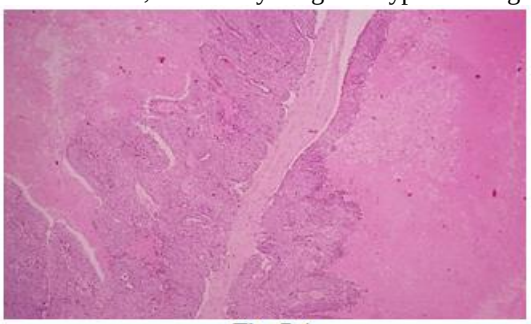


Fig. 7.A

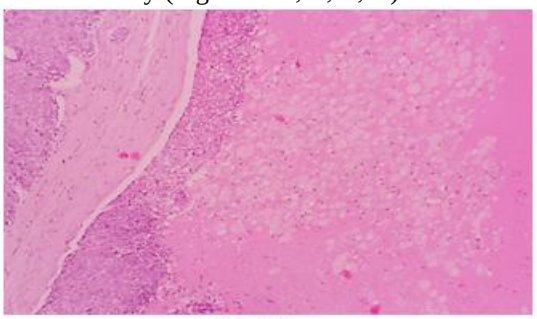


Fig. 7.B

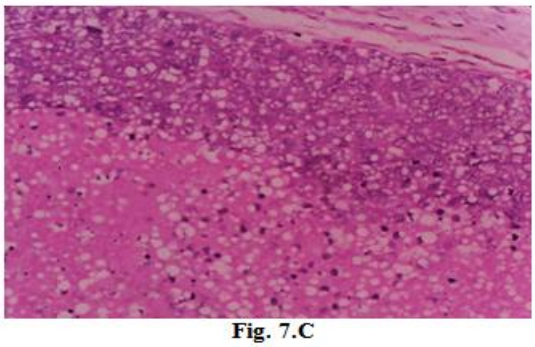


Fig. 7.C

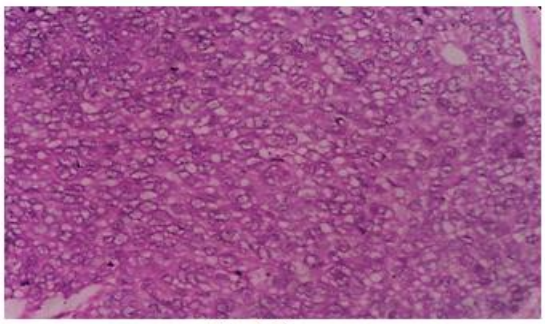


Fig. 7.D

**Porocarcinoma:**

Manifests itself as nodule or plaque with ulceration. The cells are large with hyperchromatic, irregularly shaped nuclei presenting as islands with central necrosis. The islands shows cords and lobules of polygonal tumor cells with nuclear atypia, frequent mitosis and necrosis.

## V. Conclusion:

Overall incidence of skin adnexal tumor is low in south Indian population. The incidence of benign tumor is more compared to malignant tumors. Common age group affected is 51-60 years. Clinically it is difficult to differentiate these lesions from other epithelial and mesenchymal tumors, hence histopathology becomes the gold standard for diagnosing epidermal appendageal tumors.

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