Study Of Adnexal Tumors Of The Skin: A Three Year Study Of 25 Cases
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Citation

Abstract
Adnexal tumors of skin are uncommon in routine practice and they usually cause diagnostic problems. This study was undertaken with the aim of determining the incidence of adnexal tumors of skin in our department and to study detail histopathological character of each tumor by light microscopy. A prospective study was conducted for three years period from year 2004 to 2006 in department of pathology, Government Medical College, Baroda. During this study, we observed that incidence of Adnexal tumors of Skin was very low as compared to total burden of surgical specimen received (<0.5). Most of the tumors were found to be benign. (96%) Incidence of malignancy was low (04%). Tumors were observed more common in females as compared to males. Most of tumors were localized to head & Neck region (64%). Tumors involving pilosebaceous unit (40%) and sweat glands with eccrine differentiation were common (40%). Incidence of tumor with apocrine differentiation was low (08%).

INTRODUCTION
There are literally hundreds of neoplasms that can arise from cutaneous appendages and they are known since long. They are basically classified into four groups, tumors with differentiation towards hairs follicles, sebaceous glands, eccrine or apocrine sweat glands.\(^1,2\) Most of tumors are benign and remain localized to site. Certain appendageal tumors have got importance because they behave as marker for internal visceral malignancy as in case of multiple trichilemmoma, which act as marker for breast malignancy. Association between them is called cowden’s disease.\(^3\)

 Appendageal tumors are clinically non-descript, flesh colored, solitary or multiple papules or nodule. Some of them found to have predilection for certain parts of body like eccrine poroma which is most common is lower limb, but can occur in other parts also.\(^4\)

The large majority of adnexal tumors of skin differentiate along only one line and this result in formation of reasonably distinctive types whose structure, cytochemistry and immunohistochemistry can be correlated with those of corresponding adnexa. However, since all cutaneous adnexa share same origin, so it is not surprising that the tumor arising from them may have many features in common.\(^5\)

MATERIALS AND METHODS
Materials for present study of 25 cases of skin adnexal tumors comes from patient admitted or attended O.P.D. during period 2004 to 2006 at S.S.G. Hospital, Baroda.

Detailed microscopic examination was carried out. For histological examination, 10% formalin fixed embedded representative tissue sections were stained with Hematoxylin and Eosin. Where necessary, relevant sections were stained with PAS and final confirmation of the diagnosis was done.

The details of clinical history and relevant investigation were obtained in every case and analyzed.

OBSERVATIONS & RESULTS
A total of 25 Neoplasm of Skin Appendages were diagnosed during period of 2004 to 2006 in our department at S.S.G. Hospital, Baroda.

Incidence of skin adnexal tumors as compared to total surgical pathological specimen we received found to be less than 0.5%.

Following Table No. 1 shows the Male and Female Ratio observed in Adnexal tumors.
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Figure 1
Sex distribution of Adnexal tumors in our study

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Sex</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>11</td>
<td>44%</td>
</tr>
<tr>
<td>2</td>
<td>Female</td>
<td>14</td>
<td>56%</td>
</tr>
</tbody>
</table>

We found little higher percentage of tumors in female.

Following Table No. 2 gives the Incidence of Benign and Malignant Cases observed during this study.

Figure 2
Distribution of tumor according to behaviour

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Type of Neoplasm</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Benign</td>
<td>24</td>
<td>96%</td>
</tr>
<tr>
<td>2</td>
<td>Malignant</td>
<td>1</td>
<td>4%</td>
</tr>
</tbody>
</table>

We found that in our study most of Adnexal tumors were benign (90%). Only one case (4%) of sweat gland carcinoma was found.

Grossly, the size of lesion observed during our study is shown by following Table No. 3.

Figure 3
Distribution of tumor according to size

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Size of lesion</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>≤ 2 cm</td>
<td>19</td>
<td>76%</td>
</tr>
<tr>
<td>2</td>
<td>&gt; 2 - 5 cm</td>
<td>5</td>
<td>20%</td>
</tr>
<tr>
<td>3</td>
<td>&gt; 5 cm</td>
<td>1</td>
<td>4%</td>
</tr>
</tbody>
</table>

Most of Adnexal tumors in our study were less than 2 cm (76%).

Following Table No. 4 shows the distribution of various tumors depending upon their site.

Figure 4
Distribution of Adnexal tumor according to location

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Site involved</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Head &amp; Neck</td>
<td>16</td>
<td>64%</td>
</tr>
<tr>
<td>2</td>
<td>Trunk &amp; Upper Limb</td>
<td>7</td>
<td>28%</td>
</tr>
<tr>
<td>3</td>
<td>Abdomen &amp; Lower Limb</td>
<td>2</td>
<td>8%</td>
</tr>
</tbody>
</table>

Most common region involved by Adnexal tumors in our study was Head & Neck (64%) followed by Trunk (28%).

The following Table No. 5 shows the Incidence of Various Types of Tumors Observed during the study.

Figure 5
Distribution of tumors according to their origin

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Type of Neoplasm</th>
<th>Number of Cases</th>
<th>Percentage of Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sweat gland</td>
<td>13</td>
<td>52%</td>
</tr>
<tr>
<td>2</td>
<td>Pilar Unit</td>
<td>11</td>
<td>44%</td>
</tr>
<tr>
<td>3</td>
<td>Sebaceous Gland</td>
<td>1</td>
<td>4%</td>
</tr>
</tbody>
</table>

We found that Most common tumors in our study belongs to sweat gland differentiation (52%), followed by hair follicle (44%). Only one case belongs to (4%) to sebaceous gland differentiation.

Tumors with eccrine differentiation form the main bulk (83.3%) in our study followed by Apocrine (16.7%).

The type of tumors with eccrine differentiation observed in our study is shown by the following Table No. 6

Figure 6
Subclassification of eccrine tumors

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Diagnosis</th>
<th>Number of Cases</th>
<th>Percentage of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Eccrine Acrospiroma</td>
<td>5</td>
<td>50</td>
</tr>
<tr>
<td>2</td>
<td>Chondroid Syringoma</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>3</td>
<td>Eccrine Hidrocytoma</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>4</td>
<td>Eccrine Spiradenoma</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>5</td>
<td>Eccrine syringofibroadenoma</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>6</td>
<td>Not Classified</td>
<td>1</td>
<td>10</td>
</tr>
</tbody>
</table>

We found that Eccrine Acrospiroma was the most common Benign Neoplasm in tumors with Eccrine differentiation (50%) followed by Chondroid Syringoma (10%).

Among the pilar unit i.e. tumor with hair follicle differentiation the result obtained are shown in following Table No. 7.

Figure 7
Subclassification of pilar tumors

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Type of Tumor</th>
<th>Number of Cases</th>
<th>Percentage of Cases (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Pilomatricoma</td>
<td>4</td>
<td>36.36%</td>
</tr>
<tr>
<td>2</td>
<td>Trichoepithelioma</td>
<td>3</td>
<td>27.27%</td>
</tr>
<tr>
<td>3</td>
<td>Proliferating pilar tumors</td>
<td>2</td>
<td>18.18%</td>
</tr>
<tr>
<td>4</td>
<td>Unclassified</td>
<td>2</td>
<td>18.18%</td>
</tr>
</tbody>
</table>

Pilomatricoma was the commonest tumor (36.36%) observed in our study followed by Trichoepithelioma (27.27%). No malignant tumor with pilar unit differentiation was observed. Two cases of proliferating pilar tumor
(18.18%) were observed which resembles both clinically and histologically to squamous cell carcinoma.

Among the sweat gland neoplasms (52%) with apocrine differentiation (16.7%), one case of syringocystadencma papilliferum (50%) and one case of apocrine hydrocystoma (50%) was observed. No malignant lesion was found.

Among the tumor with sebaceous differentiation (4%) only one case of Nevus sebaceous was observed.

The commonest tumors we found in our study were – All above mentioned tumors are benign. We found only one case of malignancy i.e. sweat gland carcinoma (4%) in our study.

The following Table No. 8 shows the Decade Wise Break up of Five Commonest Tumor observed.

**Figure 8**
Age wise distribution of most commonly observed tumors during study

<table>
<thead>
<tr>
<th></th>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0–10</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>11–20</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>21–30</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>31–40</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>41–50</td>
<td>1</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>51–60</td>
<td>1</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Pilomatricomas and eccrine acrospiroma were common tumor observed (75%) during first decade. Proliferating pilar tumors were common among 5th to 6th decade.

**DISCUSSION**

The present study was carried out in Department of Pathology, Baroda Medical College, Vadodara (Gujarat) during a period of 2004 to 2006. Twenty five Adnexal tumors of skin were reported during this period and detailed histopathological examination was carried out.

During present study we observed that incidence of Adnexal tumors of skin is very low as compared to total burden of surgical specimen received (<0.5%). Most of tumors were found to be benign (96%). Incidence of malignancy was low (4%). Tumors were observed slightly more common in female (56%) as compared to male (44%). Most of Adnexal tumors were found to be less than 2 cm (76%). Tumors greater than 5 cm observed were low (4%). Most of tumors observed were common in Head and Neck Region (64%).

Tumors involving pilosebaceous unit (48%) and sweat gland with eccrine differentiation (40%) were common. Incidence of tumors with apocrine differentiation were low (8%), only one case of malignant sweat gland carcinoma was observed (4%).

The present study was compared with study carried out at Aga Khan University, Karachi (Pakistan) by N. Yaqoob etal during five period from Jan, 1997 to Dec. 2001 and study carried out at Department of Pathology, University of Malaya, by Jayalakshmi etal(1996). Our results were comparable to these studies in respect to incidence of benign and malignant tumors and also in respect to gross size of tumor (8). Most common site for Adnexal tumors found to be head and neck region in all studies. Results were also comparable to similar studies carried out by Nair PS (9) and Samalia MO (10). Tumors showing pilar differentiation and sweat gland differentiation were the commonest tumors observed in all studies. Among the sweat gland differentiation eccrine tumors were commonest one. The commonest tumors benign found in present study were:

We observed only one case of malignancy i.e. sweat gland carcinoma during our study.

1) **ECCRINE ACROSPPIROMA (20%)**

Of the 10 tumors observed with eccrine differentiation, 5 were eccrine acrospiroma (40%). No predilection for site shown by eccrine acrospiroma. We observed two on back, one on scalp, one on chest and one on neck. On microscopy, Tumor composed of lobules located in dermis having tubular Lumina with in. Two cell population, one with basophilic cytoplasm and other with clear cytoplasm were seen, proportion of which varied from tumor to tumor. Foci of characteristics eosinophilic stroma were also seen.
3) TRICHOEPITHELIOMA (12%)
We observed three cases of (12%) Trichoepithelioma. All were in Head and Neck region and were in later half of life. Horn cyst with fully keratinized centre along with tumor islands composed of basophilic cells constitutes the major histological features.\cite{1,2,11} We found presence of foreign body giant cell reaction in vicinity of ruptured horn cyst in one of our case (Case No.24).

Figure 11
Low power view showing horny cyst and proliferation of basaloid cells

4) CHONDROID SYRINGOMA (4%)
Also known as mixed tumor of skin because the tumor is epithelial with associated mesenchymal changes. We observed one case of chondroid syringoma (4%) located in Head and Neck region with size was less than 3 cm. Histologically, abundant mucoid fibrillary basophilic stroma along with tubules with branching lumina of variable size and shape observed as described in literature \cite{1,2}.

2) PILOMATRICOMAS (16%)
It is also known as pilomatrixomas or calcifying epithelioma of Malherbe and Show differentiation towards hair cortex cells. We observed 3 (75%) tumor in Head and Neck region and 1 (25%) as Arm swelling. Most of tumors (75%) observed during first decade. Only one case (25%) found to be in 4\textsuperscript{th} decade. Histopathological features were presence of characteristics ghost cells having central unstained areas representing lost nuclei and very distinctive cell borders \cite{1,2,11}.

Figure 10
High power view showing ghost cells in pilomatricoma
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Figure 12
Low power view showing characteristic stroma and ductal proliferation

5) PROLIFERATING PILAR TUMOR (8%)
Also known as proliferating trichilemmal cyst occurs in elderly women and 90% of case occurs in scalp, with the residual 10% occurring mainly in back. We observed two cases; both were females one of 50 years and one of 40 years. Both presented as fungating swelling on scalp. Histologically well demarcated lesion and composed of multiple lobules composed of squamous epithelium showing abrupt keratinization(1,2,11). Main differential diagnosis of this tumor is squamous cell carcinoma.

Figure 13
Low power views showing abrupt keratinization in proliferating pilar tumor

6) SWEAT GLAND CARCINOMA (4%)
We observed only one case of malignant Adnexal tumor during our study (4%). Patient was 60 years old male with skin covered swelling measuring about 2.5x2.5 cm present on lower back. On microscopic examination, cords of clearly malignant cells with pleomorphism and mitosis were seen infiltrating the stroma. Focal areas give resemblance to sweat gland differentiation. So possibility of sweat gland adenocarcinoma was given based on microscopic findings with a caution to rule out metastatic adenocarcinoma. Chintamani et al have described that sweat gland represent a rare group of tumors with potent local tissue infiltration and regional as well as distant metastasis(12). Histological resemblance to mature gland in biopsy contributes to diagnosis but confirmation is primarily based on histochemical, immunohistochemical, or ultra structural study. The differentiation between apocrine and eccrine sweat gland carcinoma is often difficult.

Figure 14
High power view showing focal ductal differentiation in sweat gland carcinoma

7) BENIGN TRICHOGENIC TUMOR (8%)
During present study we observed two tumors in which trichilemmal differentiation was seen but they were not fitting in any of the classified lesion. So, were given as benign trichogenic tumors. J. Rosai have written one wonders how useful or sensible it will be to continue this subdivision, as opposed to using a more encompassing term such as Benign trichogenic tumor.(1)

To conclude Adnexal tumors of skin are uncommon and are mostly benign so surgical excision is curable in most cases.

References
867-914.
2. Rosai J. Skin Tumours and Tumour like conditions In: Ackerman’s Surgical Pathology. Mosby, St. Louis, 140-154.
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