A Clinicopathological study of skin and adnexal neoplasms at a rural based tertiary teaching hospital

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ABSTRACT

Skin and adnexal tumors (SATs) are those neoplasms that differentiate toward or arise from pilosebaceous unit, eccrine sweat glands or apocrine sweat glands, and these tumors are classified into four groups that exhibit histologic features analogous to hair follicles, sebaceous glands, and eccrine glands. Objectives of present study are to study frequency, age, sex, site and histopathological distribution of skin & adnexal neoplasms at rural based tertiary teaching hospital. In this descriptive study biopsy and histopathological specimens are received over a period of six months in the department of pathology. Specimens are processed and stained with haematoxylin and eosin stain. Data regarding clinicopathological study of skin and adnexal neoplasms in rural set up are lacking in literature. Here an attempt has been made to correlate data.

Key words: Histopathology, Skin and adnexal tumors, Neoplasm

Introduction

Skin appendages consist of sweat gland, sebaceous gland and hair follicle. Skin and adnexal tumors are usually missed clinically and often confirmed by histopathology. The classification of these tumours is complex. They carry a wide histomorphological pattern, and different terms are often used to describe the same tumor. [1] These tumors are derived from multipotential undifferentiated cells which are present within the epidermis or its appendageal structures and the histologic features of these tumors are related to the activation of molecular pathways responsible for forming the mature adnexal structure. [2]Most Skin and adnexal tumors (SAT) are benign. However, diagnosing them may have important implications as they may be markers for syndromes associated with internal malignancies, such as trichelemmomas in Cowdens disease and sebaceous tumours in Muir – Torre syndrome. For every adnexal tumours described there is a malignant counterpart. Although malignant skin & adnexal tumours are very rare they are aggressive, have the potential for nodal involvement and distant metastasis with a poor clinical outcome. Therefore, establishing the diagnosis of malignancy in SAT is important for therapeutic and prognostic purposes. [3]With growing awareness & improvement in medical facilities, spectrum of diseases has been highly variable. Clinical diagnosis of different entities is often difficult, as most of the appendageal tumors present as asymptomatic papules or nodules. Anatomical location, number and distribution of lesions provide important clue but histopathology is invaluable in confirmation of the diagnosis. [4]Incidence of skin tumours has increased dramatically over the last several decades at least in part as a result of increasing sun exposure necessitating vigorous surveillance. Skin tumours at time poses a

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challenge to surgeons as some of benign tumours can be confused with malignant tumours and it is important to intervene because some can become metastatic resulting in morbidity and mortality. Most of the time clinical diagnosis is difficult because of similarity in gross appearance. Even sophisticated investigations such as CT scan and various tumour markers may not be useful in skin and adnexal tumours. In such cases histopathology alone remains a diagnostic tool. [5] Data regarding clinicopathological study of skin and adnexal neoplasms in rural set up are lacking in literature. In this study an attempt has been made to evaluate same in institution and compare with available data is exercised.

Aims and Objectives

1. To study the frequency of skin and adnexal neoplasms among all histopathology specimens in population attending rural based hospital.
2. To find out the relative frequency of benign and malignant skin and adnexal neoplasms in hospital population.
3. To note any variation regarding age, sex, anatomical site and histopathological features of these neoplasms.

Materials and Methods

- Place of study: Department of Pathology.
- Study Design: Descriptive study.
- Period of study: July 2015 – December 2015.
- Inclusion criteria: Cases of Benign and malignant skin and adnexal neoplasms diagnosed on the basis of history and clinical examination and subjected to biopsy or surgery and subsequent histopathological examination were included in this study.
- Exclusion criteria: Patients who were treated conservatively or patients referred to other hospitals were excluded from this study. All non-neoplastic lesions and tumor like lesions of skin and oral mucosa biopsies were excluded.

In this study, we collected clinical profile of the patients according to the age, sex, anatomical location, clinical diagnosis, relevant investigations and histopathological features. Anatomical sites were categorised as – head, neck & face, upper extremity (including shoulder, arm, forearm, wrist and hand), lower extremity (including buttock, thigh, leg and foot), trunk & others (including abdomen, back and chest wall, genitals & etc), The specimens were received in 10% formalin as a fixative. After fixation gross findings like size, shape, colour and consistency were recorded. Then sections of size 1 X 1.5 cm and 4 mm thick were taken from representative areas. Very tiny specimens received in the form of biopsy were wrapped in the filter paper. In selected cases, photographs of the specimen were taken. Tissue processing was done to prepare paraffin embedded sections and there after stained by H and E stains. Slides were studied under light microscopy. Correlation of gross and histopathological examination will be carried out. All skin and adnexal neoplasms were classified according to World Health Organization Classification of Tumours 2006. [6] Here; an attempt was made to correlate clinical presentation and histopathological diagnosis.

Results

The present study includes 36 cases of skin & adnexal neoplasms. Total numbers of all types of specimens were 1286. Skin & adnexal neoplasms contributes only 2.8% of all types of specimens in the present study.

Table 1: Frequency of occurrence of skin and adnexal neoplasms

1	**Total number of all types of histopathology specimens**	**1286**
2	Total number of skin and adnexal neoplasms	36
3	Frequency of skin and adnexal neoplasms	2.8%

In our study, 25 (69.4%) skin & adnexal neoplasms were benign and 11 (30.6%) were malignant.

Table 2: Relative frequency of occurrence of benign and malignant skin and adnexal neoplasms

Sr.No.	skin and adnexal neoplasms	Frequency (No. of cases)	Percentage (%)
1.	Benign	25	69.4
2.	Malignant	11	30.6
	Total	36	100

The majority of benign neoplasms are from soft tissue tumor group fallowed by appendageal tumors and the commonest accounted benign neoplasm is verruca. Most of malignant neoplasms are from keratinocytic group and the commonest is squamous cell carcinoma.

Table 3: Group wise distribution of various benign and malignant skin and adnexal neoplasms

Sr.No.	Group of neoplasms	Benign	%	Malignant	%	Total	%
1.	Keratinocytic	5	13.9	11	30.6	16	44.5
2.	Appendageal tumors	7	19.5	0	0	7	19.5
3.	Melanocytic	4	11.1	0	0	4	11.1
4.	Soft tissue tumors	8	22.2	0	0	8	22.2
5.	Neural tumors	1	2.7	0	0	1	2.7
	Total	25	69.4	11	30.6	36	100

Table 4: Histomorphological distribution of various benign skin and adnexal neoplasms

Benign Neoplasms	Histological Type	No. of cases	Percentage %
Keratinocytic	Seborrheic keratosis	1	4
	Verruca	4	16
Total	Total	5	20
Appendageal	Pilomatricoma	3	12
	Trichoepithelioma	1	4
	Clear cell hidradenoma	1	4
	Sebaceous adenoma	1	4
	Poroma	1	4
Total	Total	7	28
Melanocytic	Compound Nevus	3	12
	Dermal Nevus	1	4
Total	Total	4	16
Soft tissue tumors	Hemangioma	2	8
	Piloleiomyoma	1	4
	Pyogenic granuloma	1	4
	Benign fibrous histiocytoma	2	8
	Fibroma	2	8
Total	Total	8	32
Neural tumors	Palisaded neuroma	1	4
Total	Total	25	100

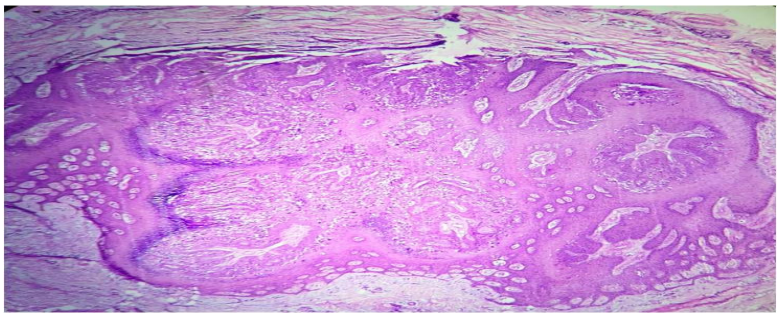

Fig 1: Verruca vulgaris - Microphotograph showing hyperkeratosis, parakeratosis and elongated rate ridges (H & E stain 10X).

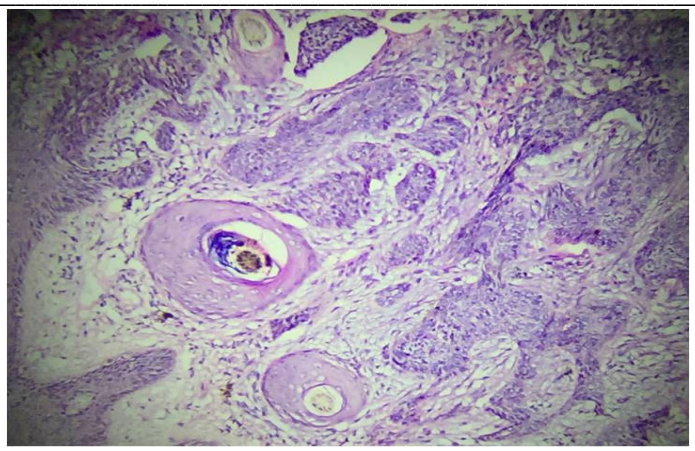

Fig 2:Trichoepithelioma - Microphotograph showing horn cyst surrounded by and basaloid cell islands. (H & E stain 10X)

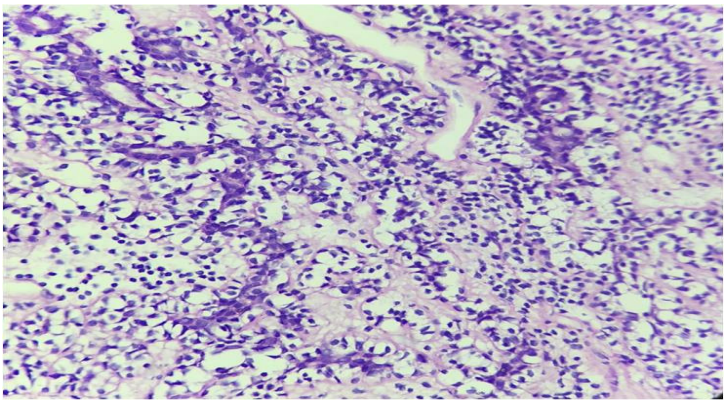

Fig 3: Clear cell hydradenoma - Microphotograph showing proliferation of clear cells with benign small hyperchromatic nuclei. (H & E stain 40X)

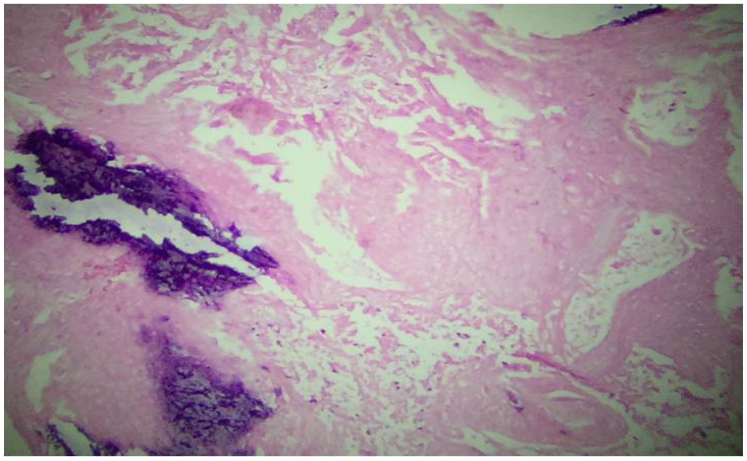

Fig 4: Pilomatricoma - Microphotograph showing sheets of ghost cells with areas of calcification. (H & E stain 10X)

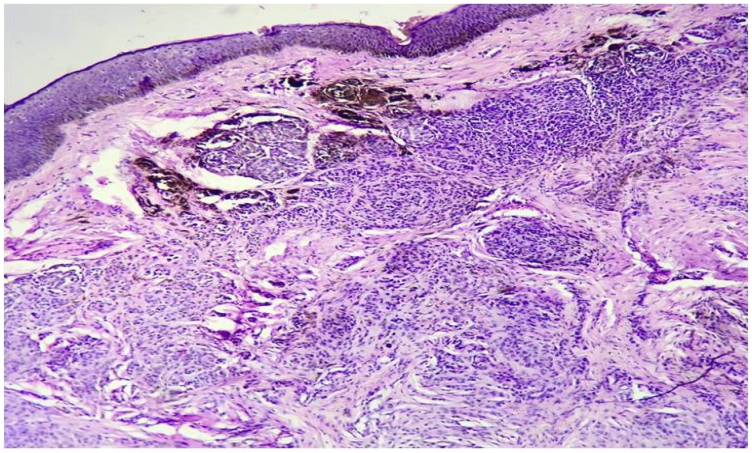

Fig 5:Intradermal nevus - Microphotograph showing nests of small nevus cells in the dermis. (H & E stain 10X)

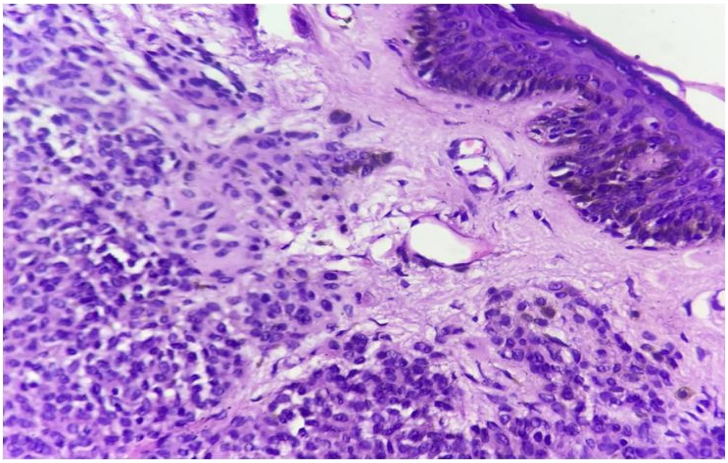

Fig 6: Compound nevus - Microphotograph showing nevus cells both in epidermis and dermis. (H & E stain 40X)

Table 5: Histomorphological distribution of various malignant skin and adnexal neoplasms

Malignant Neoplasms	No. of cases	Percentage
Keratinocytic		
Squamous cell carcinoma (SCC)	5	45.5
Basloid SCC	2	18.1
Verrucous carcinoma	1	9.1
Basal cell carcinoma (BCC)	1	9.1
Adenoid BCC	1	9.1
Hybrid carcinoma	1	9.1
Total	11	100

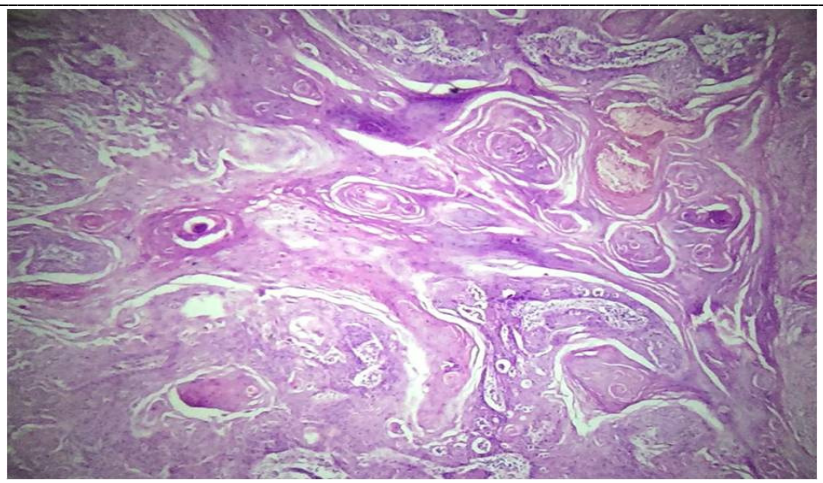

Fig 7: Squamous cell carcinoma - Microphotograph showing cells malignant cells arranged in sheets and cluster with keratin pearl formation and focal areas of necrosis. (H & E stain 40X)

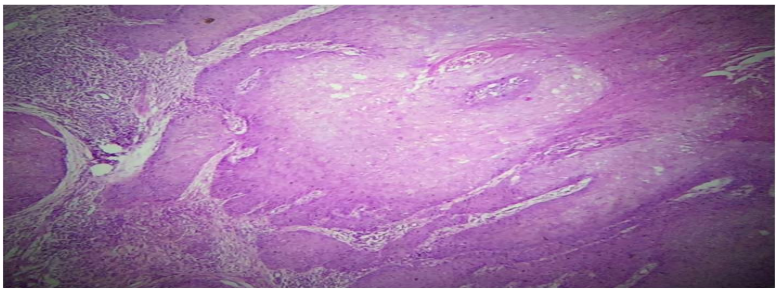

Fig 8: Verrucous carcinoma - Microphotograph showing malignant cells protruding downwards in deep dermis. (H & E stain 10X)

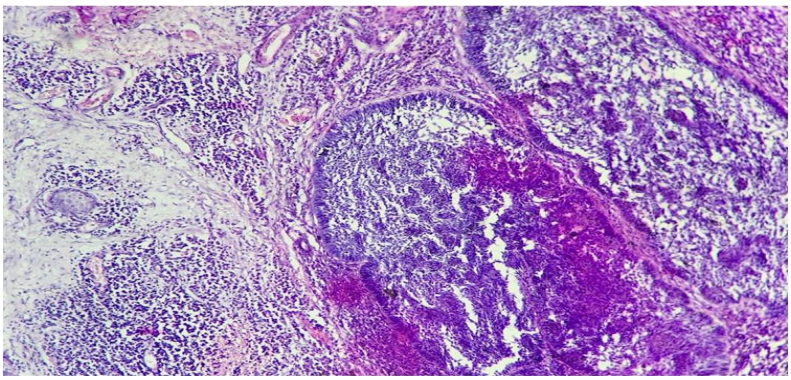

Fig 9: Basal cell carcinoma - Microphotograph showing clusters and nests of basaloid cells with peripheral palisiding and retraction artefacts. (H & E stain 40X)

In our study, mean age for benign skin & adnexal neoplasms was 46.04 years and for malignant was 56.54 years

Table 6: Age distribution (in years) of benign skin and adnexal neoplasms

Sr.No.	Group of neoplasms	0-20	21-40	41-60	61-80	Total
1.	Keratinocytic	0	1	3	1	5
2.	Appendageal tumors	0	2	3	2	7
3.	Melanocytic	1	1	1	1	4
4.	Soft tissue tumors	1	3	4	0	8
5.	Neural tumors	0	0	1	0	1
	Total	2	7	12	4	25

Mean age: 46.04 years Range: 12 – 65 years

Table 7: Age distribution (in years) of malignant skin and adnexal neoplasms

Sr.No.	Group of neoplasms	0-20	21-40	41-60	61-80	Total
1.	Keratinocytic	0	3	3	5	11
2.	Appendageal tumors	0	0	0	0	0
3.	Melanocytic	0	0	0	0	0
4.	Soft tissue tumors	0	0	0	0	0
5.	Neural tumors	0	0	0	0	0
	Total	0	3	3	5	11

Mean age: 56.54 years Range: 28 – 75 years

In this study, overall skin & adnexal neoplasms showed 1.4:1 M: F ratio whereas benign showed 1:1.2 and malignant showed 10:1.

Table 8: Sex wise distribution of all skin and adnexal neoplasms

Sr.No.	Group of neoplasms	Male	Female	M: F Ratio	Total
1.	Keratinocytic	14	2	7: 1	16
2.	Appendageal tumors	2	5	1: 2.5	7
3.	Melanocytic	0	4	-	4
4.	Soft tissue tumors	4	4	1: 1	8
5.	Neural tumors	1	0	-	1
	Total	21	15	1.4: 1	36

Table 9: Sex wise distribution of benign skin and adnexal neoplasms

Sr.No.	Group of neoplasms	Male	Female	M: F Ratio	Total
1.	Keratinocytic	4	1	4: 1	5
2.	Appendageal tumors	2	5	1: 2.5	7
3.	Melanocytic	0	4	-	4
4.	Soft tissue tumors	4	4	1: 1	8
5.	Neural tumors	1	0	-	1
	Total	11	14	1: 1.2	25

Table 10: Sex wise distribution of malignant skin and adnexal neoplasms

Sr.No.	Group of neoplasms	Male	Female	M: F Ratio	Total
1.	Keratinocytic	10	1	10: 1	11
2.	Appendageal tumors	0	0	0	0
3.	Melanocytic	0	0	0	0
4.	Soft tissue tumors	0	0	0	0
5.	Neural tumors	0	0	0	0
	Total	10	1	10: 1	11

In our study, largest number of skin & adnexal neoplasms accounted in head neck and face region fallowed by trunk and extremities. Whereas benign accounted commonly in head neck and face region and malignant accounted commonly in head neck face and trunk region.

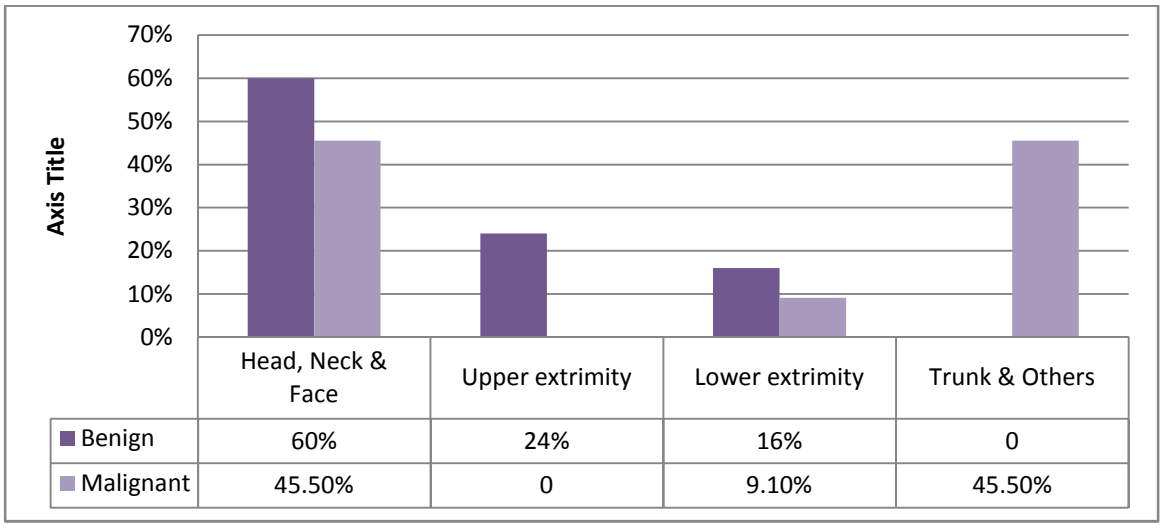

Fig 10: Anatomical site wise distribution of all soft tissue neoplasms

Discussion

In the present study, skin and adnexal neoplasms comprised 2.8% of all types of histopathology specimens received over a period of six months in the department of pathology, which is comparable with the study of Kamyab-Hesari K (2013) et al [7] (3.3%) and Bari V (2014) et al [8] (1.3%).

Table 11: Comparative frequency of benign and malignant skin and adnexal neoplasms

Sr.No.	Authors	No. of cases	Benign (B)	%	Malignant (M)	%	B:M Ratio
1.	Sharma A et al (2014) [2]	56	45	80.4%	11	19.6%	4.1: 1
2.	Vani D et al (2015) [9]	51	38	74.5%	13	25.5%	2.9: 1
3.	Present study (2016)	36	25	69.4%	11	30.6%	2.3: 1

A total of 36 skin and adnexal neoplasms were studied in the present study. Benign skin and adnexal neoplasms contributed (25 cases) 69.4% and malignant tumors contributed (11 cases) 30.6%. Data is comparable with all above studies.

Table 12: Comparative analysis of distribution of various benign skin and adnexal neoplasms

Study / Tumor Type	Bari V (2014) et al [8]	Gundalli S (2015) et al [5]	Present study (2016)
Keratinocytic	45.3%	20.8%	20%
Appendageal tumors	15.7%	54.7%	28%
Melanocytic	9.4%	24.5%	16%
Soft tissue tumors	26.4%	-	32%
Neural tumors	3.2%	-	4%

In the present study commonest benign tumor group was soft tissue tumors (32%) fallowed by appendageal tumors (28%) and commonest encountered benign skin and adnexal tumor was verruca. In the study of Bari V (2014) et al [8] commonest encountered group was keratinocytic fallowed by soft tissue tumors and commonest tumor was verruca, where as in the study of Gundalli S (2015) et al [5] commonest encountered group was appendageal tumor fallowed by melanocytic tumor. This difference can be explained by the inherent bias in a referral population.

Table 13: Comparative analysis of distribution of various malignant skin and adnexal neoplasms

Study / Tumor type	Bari V (2014) et al [8]	Gundalli S (2015) et al [5]	Present study (2016)
Squamous cell carcinoma (SCC)	45.9%	46.3%	45.5%
Basloid SCC	-	-	18.1%
Verrucous carcinoma	-	5%	9.1%
Basal cell carcinoma (BCC)	34.5%	26.3%	9.1%
Adenoid BCC	-	-	9.1%
Hybrid carcinoma	-	-	9.1%

In the present study keratinous group was the single most affected malignant neoplasm. Malignant neoplasms of other groups were not accounted in our study. The Squamous cell carcinoma was the commonest malignant skin and adnexal neoplasm fallowed by basal cell carcinomas. Data is comparable with all study groups.

Table 14: Comparative analysis of age wise distribution of benign and malignant skin and adnexal neoplasms

Mean age in years / Studies	Benign	Malignant
Bari V (2014) et al [8]	3 rd decade	7 th decade
Gundalli S (2015) et al [5]	3rd – 5 th decade	6th – 8 th decade
Present study (2016)	5th – 6 th decade	7th – 8 th decade

In the present study, most of benign neoplasms encountered in 5th – 6 th decade (Mean age 46.04 years) and malignant in 7th – 8 th decade (Mean age 56.54). Gundalli S (2015) et al [5] found most of benign neoplasms in 3rd – 5 th decade and malignant in 6th – 8 th decade. Bari V (2014) et al [8] found most of benign neoplasms in 3 rd decade and malignant in 7 th decade. In the present study, skin and adnexal neoplasms showed male predominance with M: F ratio of 1.4: 1 which is comparable with the study of Sharma A et al (2014) [2] with M: F ratio of 1.07: 1 and Bari V (2014) et al [8]. Benign skin and adnexal neoplasms showed female predominance with M: F ratio of 1: 1.2. Males outnumbered females with M: F ratio of 10: 1 among malignant skin and adnexal neoplasms.In our study, Head, Neck & Face region (55.5%) was the

commonest involved site fallowed by extremities which is comparable with the study of Bari V (2014) et al [8] (44.8%), Kamyab-Hesari K (2013) et al [7] (83.5%), Vani D (2015) et al [9] (64.7%) and Sharma A (2014) et al [2] (64.3%).

Conclusion

Skin and adnexal neoplasms accounts very small percentage among all histopathological lesions reported. Benign skin and adnexal neoplasms outnumber the malignant neoplasm by a marginal difference. The majority of benign neoplasms are from soft tissue tumor group fallowed by appendageal tumors and the commonest accounted benign neoplasm is verruca. Most of malignant neoplasms are from keratinocytic group and the commonest accounted malignant neoplasm is squamous cell carcinoma. Skin and adnexal neoplasms affects all age groups. However, benign neoplasms shows peak in 5^{th} – 6^{th} decade (Mean age 46.04 years) and malignant in 7^{th} – 8^{th} decade (Mean age 56.54). Skin and adnexal neoplasms in general have male predominance and Head, Neck & Face region being the commonest site of involvement.Due to its characteristic histomorphological findings Haematoxylin and Eosin (H & E) stained sections remain the best method for establishing the primary diagnosis.

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