International Journal of Research in Medical Sciences
*Shrivastava V et al. Int J Res Med Sci. 2019 May;7(5):1712-1719*
www.msjonline.org
pISSN 2320-6071 | eISSN 2320-6012
DOI: http://dx.doi.org/10.18203/2320-6012.ijrms20191664

**Original Research Article**

# Clinicopathological study of skin tumours

**Vaidik Shrivastava, Ashwini Tangde*, Anil Joshi, Rajan Bindu**

Department of Pathology, Government Medical College, Aurangabad, Maharashtra, India

**Received:** 22 February 2019
**Accepted:** 30 March 2019

***Correspondence:**
Dr. Ashwini Tangde,
E-mail: ash.51090@gmail.com



## ABSTRACT

**Background:** Skin cancers are relatively uncommon malignancies worldwide, but the incidence of skin cancers has progressively increased over the last few decades. The distinction between benign and malignant neoplasm are more difficult to define when they appear in skin than when found elsewhere and histopathological examination is frequently required to establish a definitive diagnosis. Diagnosis of any skin tumours can be done by correlating clinical features and histological features. The aim and objective were to study age-sex wise distribution, clinical presentation and histopathological spectrum of various skin tumours.
**Methods:** This is a retrospective study of three years conducted in the Department of Pathology, Government Medical College, Aurangabad, India from December 2015 to December 2018. Specimens received from Department of Dermatology were fixed in formalin and after adequately processing the sections were stained routinely with H and E stain and properly evaluated for histopathological examination. This study includes tumors of epidermis along with melanogenic tumors and skin appendageal tumors. The data collected was tabulated, analysed and compared to other similar studies.
**Results:** The study consists of 130 cases. The ratio of male to female was 1.24:1. Head and neck region (48.46%) was the most common site observed where skin lesions were present followed by extremities (37.69%). Most of the malignant tumours were presented with non-healing ulcers (30.76%) and Noduloulcerative lesions (20.33%). Out of 130 cases, 83 (63.84%) were benign whereas 47 (36.15%) were malignant tumour. According to WHO classification, keratinocytic tumour 55 (42.30%) was the most common tumour type in the present study. Skin adnexal tumours and melanocytic tumours were observed in 54 (41.53%) and 21 (16.15%) respectively.
**Conclusions:** The skin is a complex organ. Because of complexity of skin, a wide range of diseases can develop from the skin. The majority of benign neoplasms are from skin adnexal group whereas most common malignant neoplasm were from keratinocytic group. Skin adnexal tumors can occur anywhere in the body, however head and neck region constitute the most common site. Skin adnexal tumours are clinically often misdiagnosed, so histopathological examination remains gold standard for their correct diagnosis and for their differentiation between benign and malignant neoplasm.

**Keywords:** Histopathology, Keratinocytic, Neoplasm, Skin and adnexal tumors

## INTRODUCTION

Skin was considered primarily a passive protective barrier to both fluid loss and mechanical injury.[1] Wide range of diseases can develop from the skin including tumors from surface epidermis.[2] 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.[3]

Differences in the trends and rates of skin cancer may be due to variation in skin types, geographical latitudes,

occupational exposure, behaviour in terms of sun exposure and skin protection and differences in disease awareness and surveillance.[4] In India, the incidence of skin malignancies is low, constituting about 1-2% of all the diagnosed cancers. BCC is the commonest skin cancer worldwide, but various studies from India have reported SCC as the most prevalent skin malignancy.[5]

Melanocytic lesions are important primarily because of malignant melanoma which is the single most common potentially lethal neoplasm of skin.[6]

Skin 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.[7] Clinical diagnosis of different entities is often difficult, as most of the appendageal tumors present as asymptomatic papules or nodules.[8] Skin and adnexal tumors are usually missed clinically and often confirmed by histopathology. They carry a wide histomorphological pattern, and different terms are often used to describe the same tumor.

Anatomical location, number and distribution of lesions provide important clue, but histopathology is invaluable in confirmation of the diagnosis. Keeping in view these facts, an attempt is made to study different varieties of tumours of skin which will bear impact on patient management and prognosis.

## METHODS

It was a retrospective study, carried out in the Department of Pathology in Government Medical College, Aurangabad, Maharashtra, India a tertiary care centre during the period of December 2015 to December 2018.

All biopsies and resected specimens received in the histopathology section were fixed in 10% formalin. Gross features were noted down and then routine processing was carried out. Slides were stained with hematoxylin and eosin stain. The details of clinical history and relevant investigation were obtained in every case and analyzed. After histopathological examination tumours were classified into keratinocytic, melanocytic and adnexal group.

This study includes tumors of epidermis along with melanogenic tumors and skin appendageal tumors without restricting the study to any particular age group.

Haematological tumors of skin, nonneoplastic lesions, skin secondaries, soft tissue tumors and neural tumors were excluded.

Relative frequency of various lesions, distribution of age and sex were analyzed. The data collected was tabulated, analysed and compared to other similar studies.

## RESULTS

The study consists of 130 cases. There were 72 males and 58 females. The ratio of male to female was 1.24:1 (Table 1).

**Table 1: Sex wise distribution of benign and malignant lesion.**

| Sex | Benign | | Malignant | | Total |
|---|---|---|---|---|---|
| | No. of patients | % | No. of patients | % | |
| Male | 38 | 45.78 | 34 | 72.34 | 72 |
| Female | 45 | 54.21 | 13 | 27.66 | 58 |
| Total | 83 | 100 | 47 | 100 | 130 |

Tumors were observed in all age groups ranging from 0 to 79 years. Benign lesions were common in younger individuals (less than 40 years of age) whereas malignant lesions were common as age increases. Benign lesions were common in females whereas malignant lesions were common in males. Keratinocytic tumour were common in age group 40-49 years (27.27%). Melanocytic tumours were seen most commonly (28.57%) in 40-49 years of age group whereas adnexal tumors were more common in age group 30-39 years (33.33%) (Table 2).

**Table 2: Age wise distribution of lesions according to WHO classification.**

| Age (years) | Keratinocytic tumour | | Melanocytic tumour | | Skin adnexal tumour | |
|---|---|---|---|---|---|---|
| | No. of patients | % | No. of patients | % | No. of patients | % |
| 0-9 | 5 | 9.09 | 1 | 4.76 | 2 | 3.70 |
| 10-19 | 5 | 9.09 | 3 | 14.28 | 4 | 7.40 |
| 20-29 | 8 | 14.54 | 3 | 14.28 | 8 | 14.81 |
| 30-39 | 7 | 12.72 | 4 | 19.04 | 18 | 33.33 |
| 40-49 | 15 | 27.27 | 6 | 28.57 | 8 | 14.81 |
| 50-59 | 8 | 14.54 | 2 | 9.52 | 8 | 14.81 |
| 60-69 | 5 | 9.09 | 1 | 4.76 | 4 | 7.40 |
| 70-79 | 2 | 3.63 | 1 | 4.76 | 2 | 3.70 |
| Total | 55 | 100 | 21 | 100 | 54 | 100 |

**Table 3: Relative frequency of occurrence of benign and malignant skin and adnexal neoplasms.**

| Grading | No. of patients | Percentage |
|---|---|---|
| Benign | 83 | 63.84 |
| Malignant | 47 | 36.15 |
| Total | 130 | 100 |

Out of 130 cases, 83 (63.84%) were benign whereas 47 (36.15%) were malignant tumour (Table 3).

According to WHO classification, Keratinocytic tumour 55 (42.30%) was the most common tumour type in the present study. Skin adnexal tumours and melanocytic tumours were observed in 54 (41.53%) and 21 (16.15%) respectively.

**Table 4: Group wise distribution of various benign and malignant skin and adnexal neoplasms.**

| Type | Keratinocytic tumour | | Melanocytic tumour | | Skin adnexal tumour | |
|---|---|---|---|---|---|---|
| | No. of patients | % | No. of patients | % | No. of patients | % |
| Benign | 25 | 45.45 | 16 | 76.19 | 42 | 77.77 |
| Malignant | 30 | 54.54 | 5 | 23.80 | 12 | 22.22 |
| Total | 55 | 100 | 21 | 100 | 54 | 100 |

**Table 5: Distribution of patients according to the site of lesion.**

| Site | Benign lesion | | Malignant lesion | | Total | |
|---|---|---|---|---|---|---|
| | No. of patients | % | No. of patients | % | No. of patients | % |
| Head and neck | 40 | 48.19 | 23 | 48.93 | 63 | 48.46 |
| Extremities | 29 | 34.93 | 20 | 42.55 | 49 | 37.69 |
| Trunk | 14 | 16.86 | 4 | 8.51 | 18 | 13.84 |
| Total | 83 | 100 | 47 | 100 | 130 | 100 |

**Table 6: Incidence of different benign tumours of skin.**

| Type | | No. of patients | % |
|---|---|---|---|
| Epidermal | Seborrheic keratosis | 10 | 12.04 |
| | Verruca vulgaris | 15 | 18.07 |
| Melanocytic | Blue nevus | 3 | 3.61 |
| | Intradermal nevus | 9 | 10.84 |
| | Compound nevus | 4 | 4.81 |
| Skin appendageal | Cylindroma | 1 | 1.20 |
| | Nevus sebaceous | 1 | 1.20 |
| | Sebaceous adenoma | 5 | 6.02 |
| | Nodular hidroadenoma | 8 | 9.63 |
| | Eccrine poroma | 5 | 6.02 |
| | Pilomatricoma | 13 | 15.66 |
| | Trichoepithelioma | 2 | 2.40 |
| | Syringoma | 1 | 1.20 |
| | Syringocystadenoma papilliferum | 3 | 3.61 |
| | Hidradinoma papilliferum | 1 | 1.20 |
| | Apocrine hydrocystoma | 1 | 1.20 |
| | Chondroid syringoma | 1 | 1.20 |
| Total | | 83 | 100% |

Benign tumours of Skin adnexa 42 (32.30%) were most common, followed by malignant keratinocytic tumours 30 (23.07%) (Table 4).

Head and neck region (48.46%) were the most common site observed where skin lesions were present followed by extremities (37.69%). Most of the malignant tumours

were presented with non-healing ulcers (30.76%) and Noduloulcerative lesions (20.33%) (Table 5).

It was observed that among the benign tumours, skin appendageal tumour type was the most common type 42 (50.60%) and verruca vulgaris was the most common lesion (n=15, Figure 1). There were 10 cases of seborrheic keratosis (Figure 2).

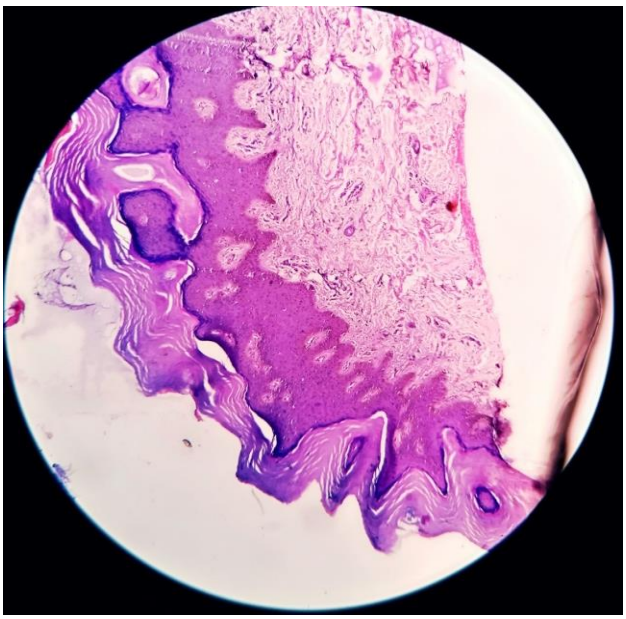

**Figure 1: Verruca vulgaris microphotograph hyperkeratosis, parakeratosis and elongated rate ridges (H & E stain 10X).**

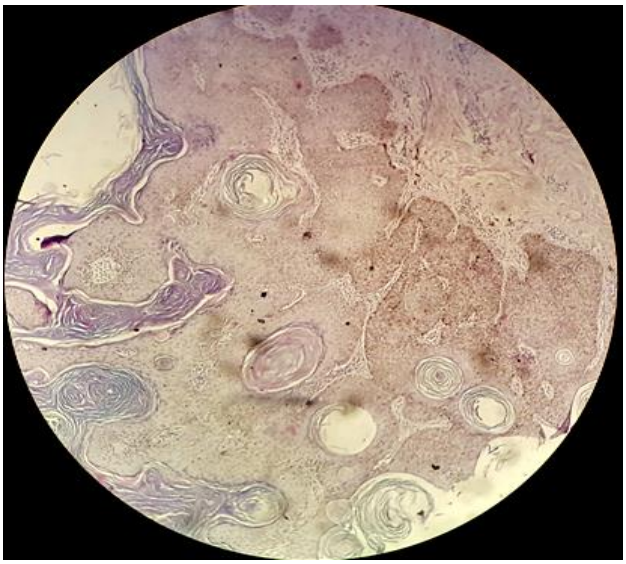

**Figure 2: Pigmented seborrheic keratosis microphotograph acanthotic proliferation of small cuboidal keratinocytes with basal pigmentation with horn pseudocyst (H & Estain 10X).**

In melanocytic tumour, intradermal nevus (n=9) was the most common benign tumour followed by compound nevus (n=4) and blue nevus (n=3). In appendageal tumour, pilomatricoma (n=13, Figure 3) was the most common benign tumour. Other skin adnexal tumour include nodular hidroadenoma, sebaceous adenoma (Figure 4), eccrine poroma, syringocystadenoma papilliferum (Figure 6), trichoepithelioma, cylindroma (Figure 5), nevus sebaceous, hidradinoma papilliferum, apocrine hydrocystoma, chondroid syringoma (Table 6).

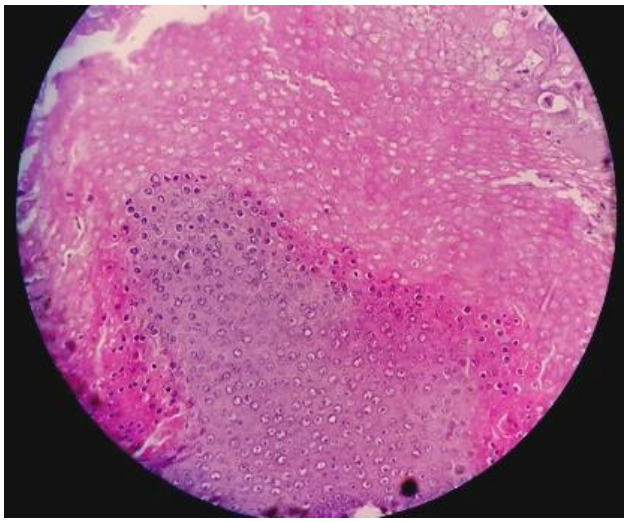

**Figure 3: Pilomatricoma microphotograph sheets of ghost cells with basaloid cells undergoing abrupt trichilemmal keratinization (H & Estain 40X).**

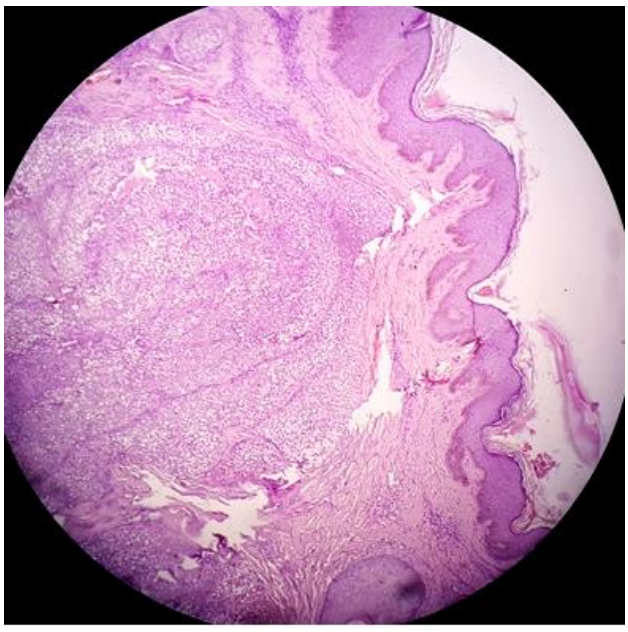

**Figure 4: Pilomatricoma microphotograph sheets of ghost cells with basaloid cells undergoing abrupt trichilemmal keratinization (H & Estain 40X).**

Squamous cell carcinoma (27.65%, Figure 7) was the most common malignant variant of skin tumour of epidermal origin which was followed by basal cell carcinoma (21.27%).

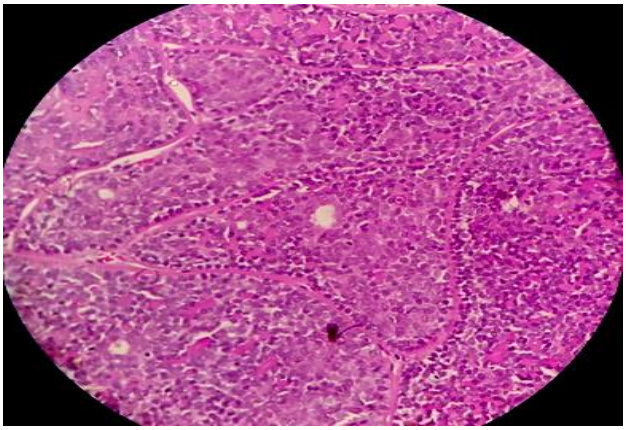

**Figure 5: Cylindroma microphotograph showing nest of dual population of cells, basaloid cells at periphery & cells with eosinophic cytoplasm at centre arranged in jigsaw puzzle with thick basement membrane (H & Estain 40X).**

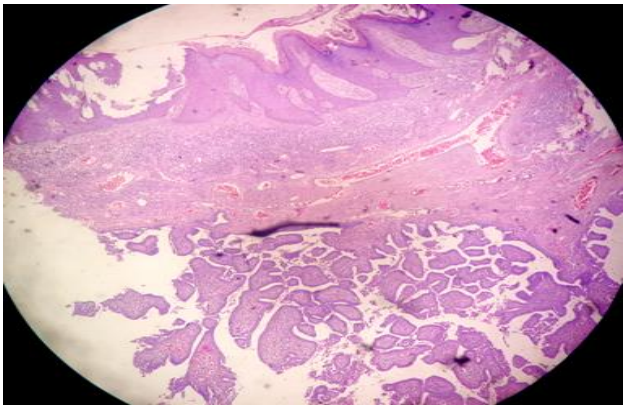

**Figure 6: Syringocystadenoma papilliferum microphotograph showing epidermis underneath papillary proliferation with plasma cell infiltrate (H & Estain 10X).**

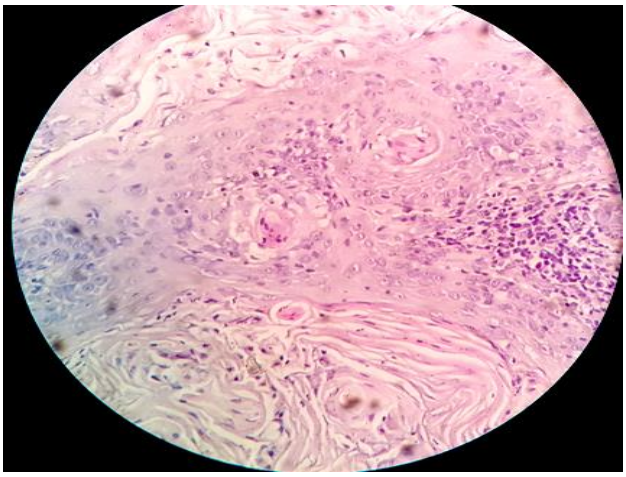

**Figure 7: Squamous cell carcinoma microphotograph showing malignant squamous cells arranged in sheets and cluster with keratin pearl formation (H & E stain 40X).**

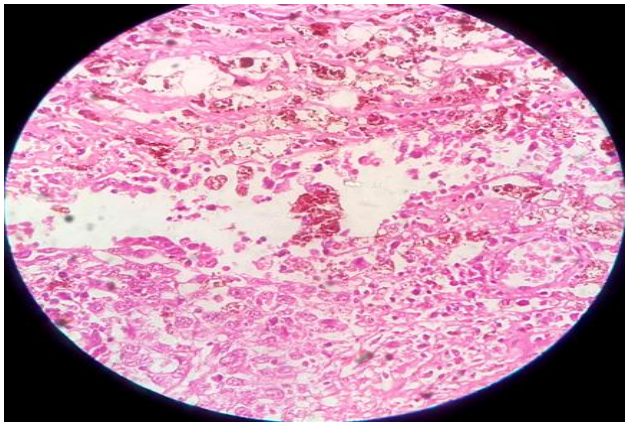

**Figure 8: Malignant melanoma microphotograph showing polygonal neoplastic cells arranged in lobules with intracytoplasmic pigment (H & E stain 40X).**

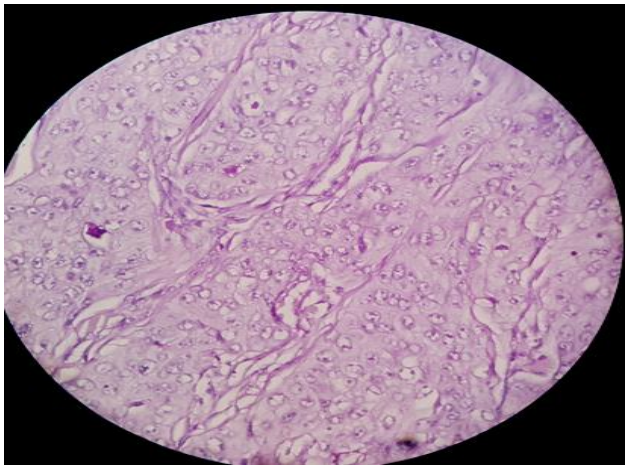

**Figure 9: Sebaceous carcinoma microphotograph showing pleomorphic sebocytes with nuclear atypia and mitosis arranged in nest separated by fibrous septae (H &E stain 40X).**

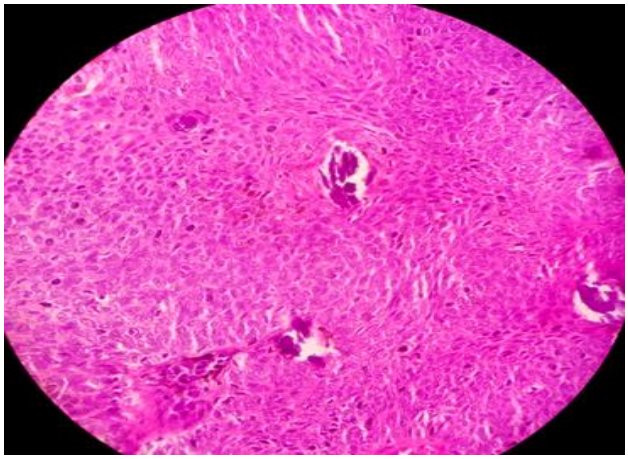

**Figure 10: Malignant eccrine porocarcinoma microphotograph showing tumour cells arranged in solid pattern having pleomorphic hyperchromatic nuclei with areas of calcification.**

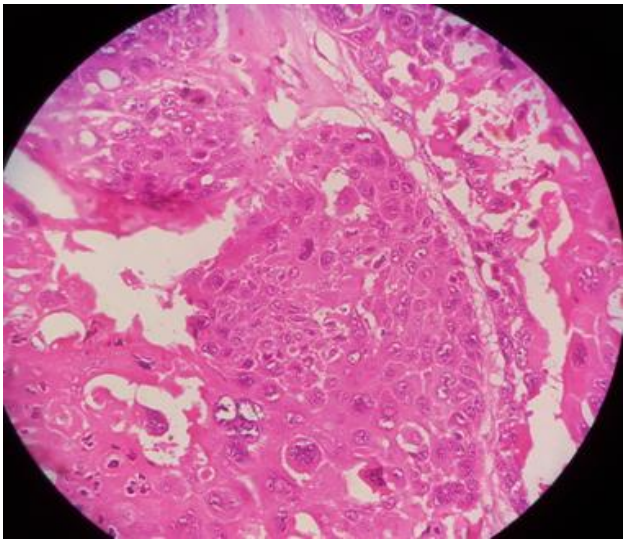

**Figure 11: Malignant proliferating trichilemal tumour microphotograph showing pleomorphic tumour cells in lobules with pleomorphic nuclei & mitosis. (H &E stain 40X).**

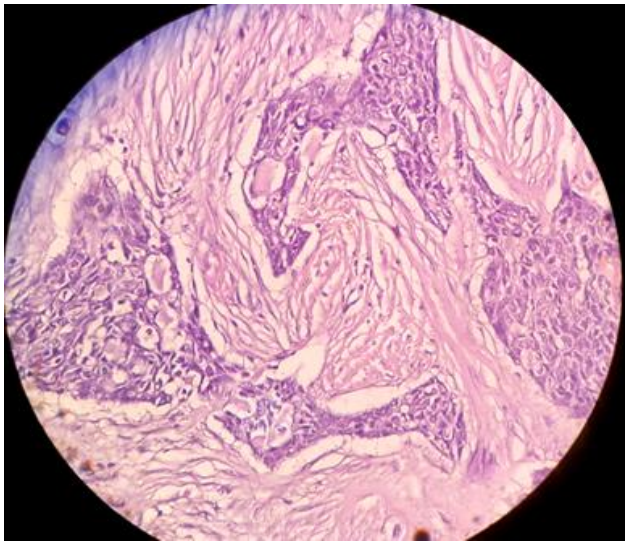

**Figure 12: Adenoid cystic carcinoma microphotograph showing nest of basaloid cells with cribriform and tubular pattern. (H &E stain 10X).**

**Table 7: Incidence of different malignant tumours of skin.**

| Type | | No. of patients | % |
|---|---|---|---|
| Epidermal | BCC | 10 | 21.27 |
| | SCC | 13 | 27.65 |
| | Verrucous carcinoma | 7 | 14.89 |
| Melanocytic | Malignant melanoma | 5 | 10.63 |
| Skin appendageal | Malignant eccrine porocarcinoma | 2 | 4.25 |
| | Trichilemmal carcinoma | 1 | 2.12 |
| | Malignant proliferating trichilemal tumour | 1 | 2.12 |
| | Sebaceous carcinoma | 7 | 14.89 |
| | Adenoid cystic carcinoma | 1 | 2.12 |
| Total | | 47 | 100% |

Malignant melanoma (Figure 8) was diagnosed in 10.63% cases. Sebaceous carcinoma (14.89%, Figure 9) was the most common malignant tumour of skin appendeal origin. Other malignant skin adnexal tumour include malignant eccrine porocarcinoma (Figure 10), malignant proliferating trichilemal tumour (Figure 11), adenoid cystic carcinoma (Figure 12) and trichilemmal carcinoma (Table 7).

## DISCUSSION

A total of 130 skin and adnexal neoplasms were studied in the present study. Incidence of benign tumors is more as compared to malignant cases. Benign skin and adnexal neoplasms contributed 83 (63.84%) and malignant tumors contributed 47 (36.15%) which was also seen in studies of Sharma A et al, Vani D et al, and Narhire V et al, who reported 45, 51 and 25 benign and 11, 13 and 11 malignant lesions respectively (Table 8).[3,8,9]

In the present study, commonest benign tumor group was skin adnexal (50.60%) followed by keratinocytic tumors (30.12%) and commonest encountered benign tumor was verruca. In the study of Bari V et al, commonest encountered group was keratinocytic followed by soft tissue tumors and commonest tumor was verruca, where as in the study of Gundalli S et al, commonest encountered group was appendageal tumor followed by melanocytic tumor.[10,11] In Narhire V et al study, skin adnexal tumours were the most common benign tumours (Table 9).[3]

In the present study, commonest malignant tumor group was keratinocytic and squamous cell carcinoma was the

commonest malignant skin tumour followed by basal cell carcinomas (Table 10).

In the present study, skin and adnexal neoplasms showed male predominance with M:F ratio of 1.24:1 which is comparable with the study of Sharma A et al, with M: F ratio of 1.07:1 and Bari V et al, Narhire V et al.[3,8,10] Benign skin and adnexal neoplasms showed female predominance with M:F. In this study, head, neck and face region (48.46%) was the commonest involved site fallowed by extremities which is comparable with the study of Bari V et al, (44.8%), Kamyab-Hesari K et al, (83.5%), Vani D et al, (64.7%) Sharma A et al, (64.3%) and Narhire V et al, (55.5%).[3,8,9,10,12]

**Table 8: Comparative frequency of benign and malignant skin and adnexal neoplasms.**

| Authors | No. of cases | Benign | Malignant | B:M ratio |
|---|---|---|---|---|
| Sharma A et al[8] | 56 | 45 | 11 | 4.1:1 |
| Vani D et al[9] | 51 | 51 | 13 | 2.9:1 |
| Narhire V et al[3] | 36 | 25 | 11 | 2.3:1 |
| Present study | 130 | 83 | 47 | 1.7:1 |

**Table 9: Comparative analysis of distribution of various benign skin and adnexal neoplasms.**

| Authors | Keratinocytic tumour | Melanocytic tumour | Skin adnexal tumour |
|---|---|---|---|
| Bari V et al[10] | 45.3% | 9.4% | 15.7% |
| Gundalli S et al[11] | 20.8% | 24.5% | 54.7% |
| Narhire V et al[3] | 20% | 16% | 28% |
| Present study | 30.12% | 19.27% | 50.60% |

**Table 10: Comparative analysis of distribution of various malignant skin and adnexal neoplasms.**

| Authors | Squamous cell carcinoma | Basal cell carcinoma | Verrucous carcinoma |
|---|---|---|---|
| Bari V et al[10] | 45.9% | 34.5% | - |
| Gundalli S et al[11] | 46.3% | 26.3% | 5% |
| Narhire V et al[3] | 45.5% | 9.1% | 9.1% |
| Present study | 27.65% | 21.27% | 14.89% |

## CONCLUSION

The skin is a complex organ. Because of complexity of skin, a wide range of diseases can develop from the skin including tumours from surface epidermis, epidermal appendages and dermal tissue. In Indian population, an overall incidence of skin adnexal tumors is very low. The incidence of benign tumors is more as compared to the malignant ones.

The majority of benign neoplasms are from skin adnexal group whereas most common malignant neoplasm were from keratinocytic group. Skin adnexal tumors can occur anywhere in the body, however head and neck region constitute the most common site. Histopathological examination is indispensable in the diagnosis of skin adnexal neoplasms owing to their wide spectrum and frequency of differentiation.

*Funding: No funding sources*
*Conflict of interest: None declared*
*Ethical approval: The study was approved by the Institutional Ethics Committee*

## REFERENCES

1. Lazar AJF, Murphy GF. The skin. In: Robbins and Cotran Pathological basis of disease. 8th ed. Philadelphia: Saunders; 2010: 1185-1204.
2. Shivaprasad PN, Prabhu MH, Siraj AS. Benign tumors of skin. Global J of Med Res Microbiol Pathol. 2014;14(3):10-4.
3. Narhire VV, Swami SY, Baste BD, Khadase SA, D'costa GF. A clinicopathological study of skin and adnexal neoplasms at a rural based tertiary teaching hospital. Asian Pac J Heal Sci. 2016;3(2):153-62.
4. Koh D, Wang H, Lee J, Chia KS, Lee HP, Goh CL. Basal cell carcinoma, squamous cell carcinoma and melanoma of the skin: analysis of the Singapore Cancer Registry data 1968-97. Brit J Dermatol. 148:1161-6.
5. Deo SV. Surgical management of skin cancer: Experience from regional cancer centre in North India. Ind J Cancer. 2005;42(3):145-50.
6. Elder DE, Elenitsas R. Benign pigmented lesions and malignant melanoma. In: Levers histopathology

of skin. 9th ed. Philadelphia: Lippincott Raven; 2005: 715-804.
7. Ahmed TSS, Priore JD, Seykora JT. Tumors of epidermal appendages. In: Elder DE, Elenitsas R, Johnson BL, Murphy GF. Lever's Histopathology of the Skin. 9th ed. Lippincott Williams and Wilkins, Philadelphia, USA; 2005: 867-868.
Sharma A, Paricharak DG, Nigam JS, Rewri S, Soni PB, Omhare A, et al. Histopathological study of skin adnexal tumours-institutional study in South India. J Skin Cancer. 2014;543756.
8. Vani D, Ashwini N, Sandhya M, Dayananda TR, Bharthi M. A 5-year histopathological study of skin adnexal tumors at a tertiary care hospital. IOSR J Dent Med Sci (IOSR-JDMS). 2015;14:1-5.
Bari V, Mumbai T, Murarkar P, Gosavi A. Skin tumours-histopathological review of 125 cases. Ind Med Gaz. 2014:418-27.
9. Gundalli S, Pai K. Histopathological study of skin tumours. Int J Heal Sci. 2015;2(2):155-63.
Kamyab-Hesari K, Balighi K, Afshar N, Aghazadeh N, Rahbar Z, Seraj M, et al. Clinicopathological study of 1016 consecutive adnexal skin tumors. Acta Med Iran. 2013;51:879-85.

**Cite this article as:** Shrivastava V, Tangde A, Joshi A, Bindu R. Clinicopathological study of skin tumours. Int J Res Med Sci 2019;7:1712-9.