

A Study of Nodular Skin Lesions with Special Reference to the Ethnic Population of Northeast India in a Tertiary Care Hospital

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ABSTRACT

Background: Nodular skin lesions vary significantly in size and colour/pigmentation. Most of these clinically resemble soft tissue lesions. Histopathology plays key role in categorizing the lesions based on which course of treatment is planned. The present study aims to find out incidence and variation of skin nodules and correlate the clinico-pathological details with special reference to ethnic population of Northeast India.

Methods: The study is a retrospective and descriptive study conducted for a period of 2 years at a tertiary care centre. The clinical and demographic details were retrieved and H&E slides are studied for histomorphology.

Result: A total of 50 cases were studied out of which five cases were diagnosed as malignant tumours and 45 cases were diagnosed as benign tumours. Seventeen cases (34%) of tumours with follicular differentiation, eight cases (16%) of melanocytic tumours, nine cases (18%) of vascular and neural tumours, thirteen cases (26%) of tumours with apocrine and eccrine differentiation, two cases (4%) of epidermal tumors and one case (2%) of tumour with sebaceous differentiation were included under the present study. Tumors with follicular differentiation, the most commonly encountered tumor in the present study, were seen in the fourth to sixth decades of life and seen more commonly among women. A total of 18 (36%) cases belonged to ethnic tribal communities of North-east India, out of which seven were tumors of follicular differentiation, five were melanocytic tumours and six were tumors of eccrine differentiation.

Conclusion: H&E-stained sections stand as the most important tool for diagnosing and differentiating skin nodular lesions. A significant percentage (36%) of the lesions in the present study have been seen in the ethnic population of the Northeast region of India.

Keywords: Nodular Skin Lesions, Skin Adnexal Tumors, Ethnic Population of Northeast India, Skin Biopsy.

Introduction

Skin, known to be the largest organ of the body, is the most common victim of various environmental agents. Even with its wide array of protective functions it often fails to combat the insults when it continues for a prolonged period or when the intensity of the damage is severe enough to fight back.

India is home to a multitude of ethnicities, each having different customs and residing in different geographical terrain^[1]. The North Eastern states of India are rich in diversity of cultures and ethnicities. The population of North-East(NE) India comprises 3.76 % of India's population. The overall density of population of NE is 159 persons/km². Assam has population density of 397/km² and the region has around 27% indigenous people in its population, recognised by the Indian constitution as Scheduled Tribes^[2]. There are numerous studies showing the association of the habitat, occupation and food consumed in these regions with the development of various diseases.

With a wide variation in size and pigmentation, the lesions of skin are commonly confused with soft tissue tumours. Colour, lobulation and variable induration

are some parameters which help in narrowing down the clinical diagnosis.³ Histopathological examination help differentiating these lesions which subsequently affects further course of the treatment and prognosis^[3,4]. It is imperative that clinical data be correlated with gross and microscopic observations in order to render a clinically relevant diagnosis^[5]. Despite the advances in molecular techniques, morphological study is still the basis of diagnosis for most neoplasms and many inflammatory skin lesions^[6].

The present study is undertaken to find out the incidence of various skin nodules and study the clinical details with special reference to the ethnic population of Northeast India.

Materials and Methods

A Hospital based retrospective and descriptive study was carried out for a period of two years from June 2019-May 2021, after taking written informed consent from the patients and after ethical approval from the institution. 50 cases of nodular skin lesions were included in the present study. The clinical and demographic details were retrieved and H&E slides were studied for histomorphology. The skin

nodules were analysed with respect to the morphological differentiation, age, sex ratio, site of occurrence and ethnicity. The gross findings like size, shape, colour and consistency were recorded. Brief history and clinical differential diagnosis were noted.

The study material included punch biopsies and excision biopsies of various skin tumours which were fixed in 10% neutral buffered formalin. Sections of size 4mm thick were prepared from the formalin fixed paraffin embedded tissue blocks and stained with Hematoxylin and Eosin.

The tumors in the present study were classified according to 2018 WHO classification of skin tumours [7]. The lesions were analysed based on anatomical site distribution and the histological line of differentiation.

Results

A total of 50 patients (31 Females and 19 males) were included in the study. Skin adnexal tumors were found predominantly. Out of 50 cases, 5 cases (10%) were diagnosed as malignant tumours and 45 cases (90%) were diagnosed as benign tumours.

The distribution of tumors based on histological differentiation is shown in Table 1. Tumours with follicular differentiation accounted for 17 (34%) cases which were the most common tumors in the present study, while the least common were the tumors with sebaceous differentiation. Individual tumors were represented according to the site of occurrence, age group and sex ratio in Table 2. Head and neck along with upper and lower extremities were found to be the common sites of occurrence of these tumors. Lymphangioma was seen in the youngest age group (10-20 years) while basal cell carcinoma was seen in the eldest age group (50-60 years) in the present study. The sex ratio showed a female predominance in most of the tumors.

Out of total 50 cases in the present study, 18 (36%) cases belonged to the ethnic tribal communities of Northeast region of India, the distribution of which is represented by the bar diagram in Figure 1. Among the 18 cases belonging to the ethnic tribal communities, there were five cases of melanocytic tumours, seven cases of tumours with follicular differentiation and six cases of eccrine differentiation.

Table 1: Distribution of tumours according to histological differentiation.

Line of Differentiation	Number of Cases (%)
Tumours with follicular differentiation	17 (34%)
Melanocytic tumour	8 (16%)
Vascular and neural tumour	9 (18%)
Tumours with apocrine and eccrine differentiation	13(26%)
Tumour with Sebaceous differentiation	1 (2%)
Epidermal tumour	2 (4%)

Table 2: Distribution of the tumours according to age, sex and site.

Type of tumour	Age	Site	No. of cases	Female: Male ratio
Trichoepithelioma	30-40	Head and neck	5	3:2
Intradermal nevus	40-50	Head and neck	6	2:1
Nodular hidradenoma	20-30	Lower and upper extremities	6	1:1
Lymphangioma	10-20	Neck and thighs	4	1:1
Proliferating Trichilemmal cyst	40-50	Scalp	4	1:1
Spiradenoma	50-60	Trunk and lower extremities	4	1:1
Trichoblastoma	40-50	Scalp	3	2:1
Trichofolliculoma	40-50	Scalp	3	2:1
Poroma	25-30	Palm	2	1:1
Pilomatricoma	45-50	Head and neck	2	1:1
Foreign body granuloma	40-50	Upper extremity	2	1:1

Type of tumour	Age	Site	No. of cases	Female: Male ratio
Cutaneous Neurofibroma	40-50	Trunk	2	1:1
Pyogenic Granuloma	20-30	Finger	1	1:0
Cylindroma	25-30	Scalp	1	1:0
Melanoma	45-50	Face and upper extremity	2	1:1
Basal cell Carcinoma	50-60	Head and neck	2	1:1
Sebaceous Carcinoma	30-35	Eyelid	1	1:0

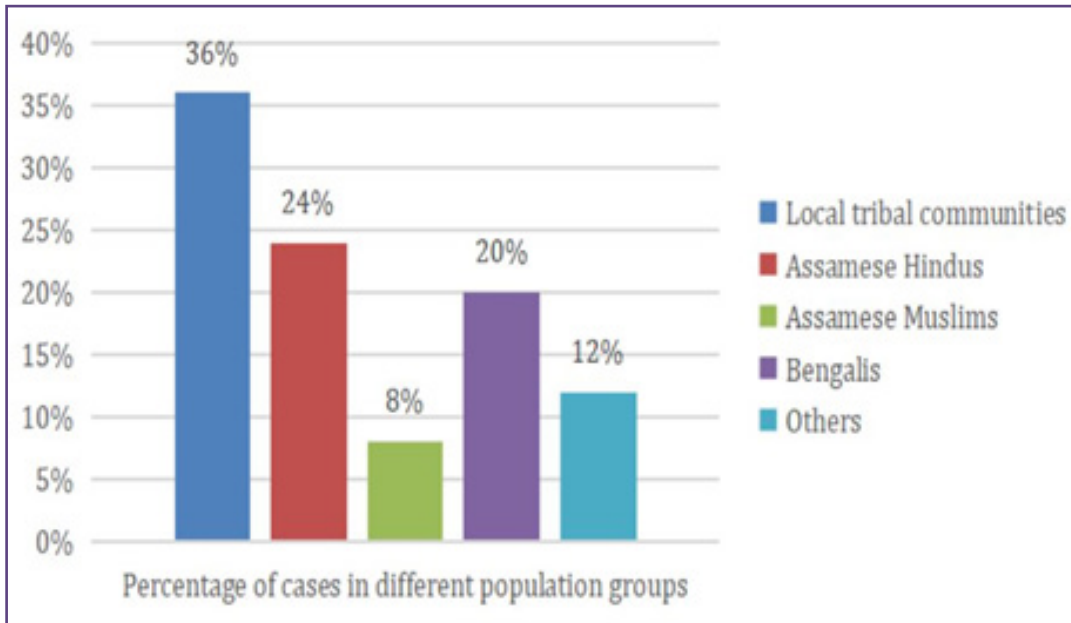


Fig. 1 : Bar-diagram showing distribution of tumors in different population groups.

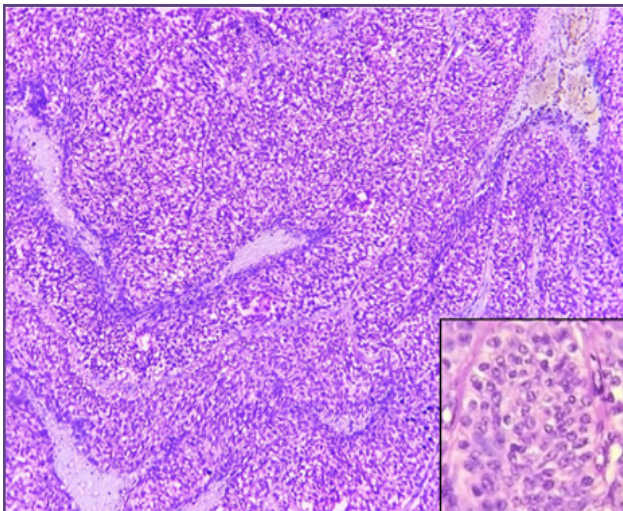


Fig. 2: Nodular hidradenoma: Cells arranged in solid pattern with duct-like structures. Cells have round to oval nucleus with basophilic cytoplasm and few clear cells (Inset).

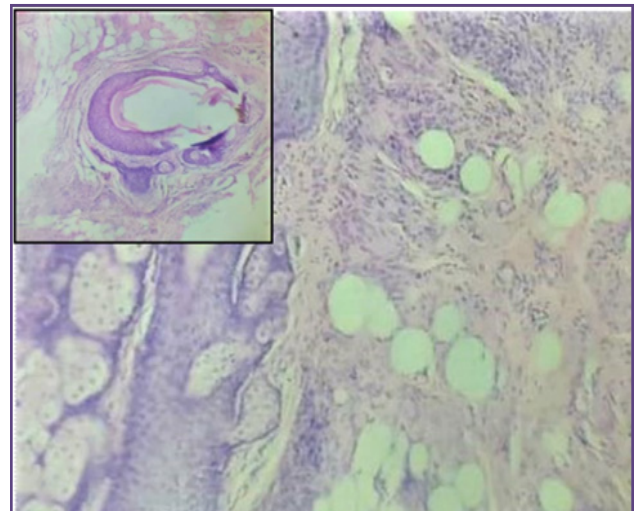


Fig. 3 (a) Trichoepithelioma showing horn cysts and basaloid epithelial formations. Inset shows a horn cyst with basaloid cells forming small papillary mesenchymal bodies

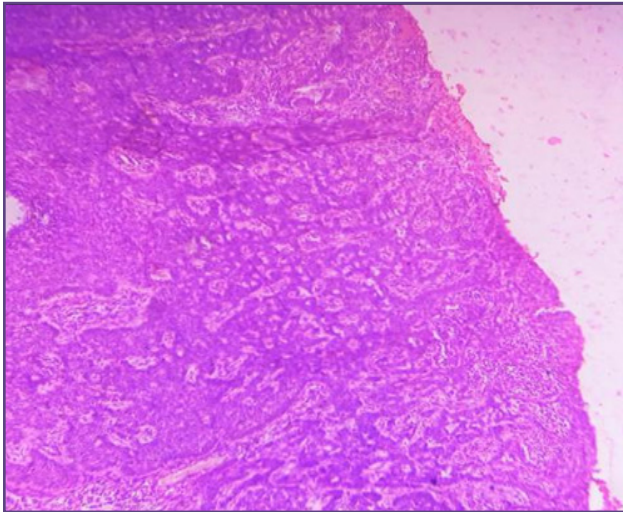


Fig. 3 (b): Basal cell carcinoma characterized by basaloid nodules, with prominent peripheral palisading and clefting between the neoplasm and surrounding stroma.

Discussion

The pattern of skin morbidity largely depends on climate and geography, socioeconomic status, nutrition, genetics and habits of the community [8]. The prevalence of skin diseases in the general population varies from 6.3% to 11.2% [9]. Moreover, in developing countries, poor hygiene, lack of basic amenities, and overcrowding also play significant role in occurrence of few skin diseases [10,11].

The Northeast region of India is well known for its distinct culture and traditional lifestyle. It is a land inhabited by more than 145 fascinating tribes. Each tribal group of northeast India has its own unique tribal culture and ethnic diversities [12]. The present study had maximum of patients belonging to lower socioeconomic strata mostly involved in tea garden and agricultural activities.

In the present study, the maximum number of biopsies were in the age group 40-60 years which is similar to the study reported by Singh S *et al* [13], Thamiselvi R *et al* [14], Bansal M *et al* [15] and Singh R *et al* [16]. Female predominance was seen in the present study which bears similarity to the finding in the study conducted by Kouser T *et al* [1].

Majority of skin lesions in the present study were seen in the head and neck regions, akin to the study of Bansal M *et al* [15]. Sharma A *et al* [17] also reported most tumors in the head and neck region while Thamiselvi R *et al* [14] reported maximum lesions in the extremities. Similar findings were observed by other studies conducted by Prasad BVS *et al* [18], Arora A *et al* [19], Gandhi R *et al* [20] and Kaur K *et al* [21].

Out of 50 cases, five cases (10%) were diagnosed as malignant tumours and 45 cases (95%) diagnosed as

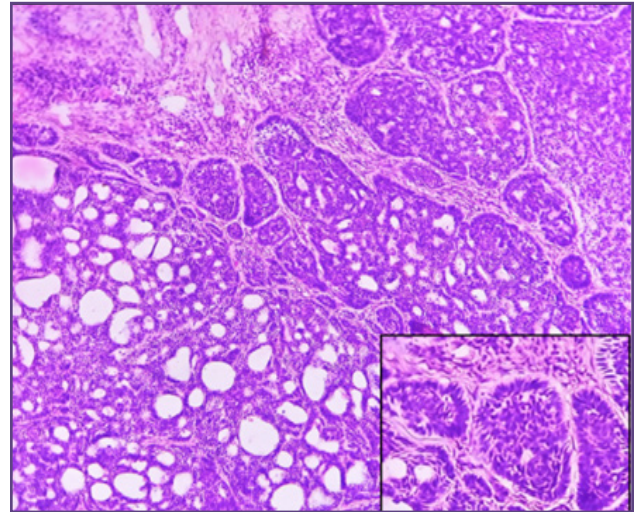


Fig. 3 (c): Trichoblastoma showing irregular nests of basaloid cells with variable stromal condensation and follicular germ like structures wedged to a follicular papilla

benign tumours. The most common tumours in our study were tumours with follicular differentiation (34%). Tumours with apocrine and eccrine differentiation (26%) were second most common cases of tumors. In this study there were five cases of Trichoepithelioma in the head and neck regions out of which three cases were in the scalp. This was comparable to the study by Radhika K *et al* [22] in which two cases of trichoepithelioma were reported in the scalp. The present study reported two cases of basal cell carcinoma which is comparable to the study done by Aboud K *et al* [23] who also reported basal cell carcinoma as the most common malignant tumor in their study.

The representation from Figure 1 showed that the highest number of cases in the present study belonged to the ethnic tribal communities of Northeast India. Further analysis of the data showed that these population groups contributed 62.5 % of total melanocytic tumours, 41.17 % of total tumours with follicular differentiation and 46.15 % of total tumours with eccrine differentiation. The present study is one of the first to determine this association.

Nodular hidradenoma (Figure 2) was found to be the commonest tumour with sweat gland origin in the present study, which is similar to the finding of Samanta M *et al* [3]. Trichoepithelioma and Basal cell carcinoma are assumed to originate from pluripotent stem cells which bring about a histomorphological overlap between the two tumors and clinical information is of utmost important to distinguish between these tumours [6]. Clinical and morphological overlap has also been found with Trichoblastoma and Basal Cell carcinoma (Figure 3) [24].

Most common melanocytic tumour is intradermal nevus (N=6). This observation is in concordance with the study conducted by Goel P *et al* [25]. It is these benign nevi that were found in the ethnic tribal population in the present study.

Conclusion

The present study is an attempt to find an association between nodular skin lesions and the ethnic tribal population groups of Northeast region of India. Although the sample size was small, a significant percentage of the skin nodules have been found in the population of interest. No definite association with occupation/ working conditions were identified. Tumours with follicular differentiation were found to be the highest amongst the lesions studied and a larger study sample is warranted to study the association with demographic details.

Limitations

The study was conducted in a single institute with a small sample size. Also, being a retrospective study, the clinical and demographic details were restricted to the data that could be extracted from the records.

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Competing Interests

No conflict of interest declared by any of the authors.

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