

Original Research Article

Histopathological patterns of head and neck lesions - a two year retrospective hospital based study

Mahima Sharma¹, Anuja Sharma^{1*}, Shivani Gandhi², Arvind Khajuria², K. C. Goswami²

¹Department of Pathology, Acharya Sri Chander College of Medical Sciences and Hospital, Sidhra, Jammu, Jammu and Kashmir, India

²Department of Pathology, ASCOMS and Hospital, Sidhra, Jammu, Jammu and Kashmir, India

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*Correspondence:

Dr. Anuja Sharma,

E-mail: anujshrm@rediff.com

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ABSTRACT

Background: Head and neck lesions include a spectrum of pathological lesions ranging from simple benign to highly malignant entities. These lesions contribute significantly to morbidity and mortality of patients. The aim of this study was to determine the histological patterns of head and neck lesions, both non-neoplastic and neoplastic and to analyse the data in relation to age, gender, topography.

Methods: A two year retrospective study was conducted in the Post Graduate Department of Pathology, ASCOMS and Hospital and histopathological data pertaining to all head and neck lesions was reviewed. Each case was analysed with respect to age, gender, site and histological type.

Results: One hundred and forty-five cases from the head and neck region were analysed during this two-year period. Age range was from 3 months to 85 years with maximum cases in the age group of 21-50 years (51.03%). The Male: Female ratio was 1.37:1. In our study, 53.79% benign, 24.13% inflammatory and 22.06% malignant cases were recorded. Maximum number of benign lesions was in the age group of 21-50 years. Malignancies were noted to be higher in ages 51 years and above. Squamous cell carcinoma was the most common malignancy observed.

Conclusions: We conclude that site specific data like this is helpful in evaluating patterns of head and neck lesions and augment the base line data of institute and the region.

Keywords: Benign, Head and neck lesions, Inflammatory, Malignant

INTRODUCTION

Head and neck lesions are commonly encountered in patients across all age groups.¹ This region encompasses a multitude of congenital, inflammatory or neoplastic lesions. These pathological lesions arise at several anatomical sites in the head and neck region and originate from different organs and tissues with varying histology and biological behaviour.^{2,3} Various anatomic sites include oral, upper aero-digestive tract, otologic, thyroid, salivary glands, lymph nodes, skin and soft tissues.^{4,5} Common benign and inflammatory lesions of head and neck region include various cysts and swellings of skin

and subcutaneous tissues, Koch's and other inflammations, goiter, salivary gland swellings, lymphadenitis and oral lesions.^{5,6} Malignancies in head and neck region are the tenth most common cancers in the world and are an important cause of morbidity and mortality in affected patients.^{3,7} Malignant lesions can present as primary as well as secondaries from other organs.

The present study is aimed to review the histological patterns of biopsied head and neck lesions as information regarding the types and the frequencies of head and neck lesions is helpful in management of the patients. Only a

few studies have been reported so far focusing overall histopathological spectrum including inflammatory, benign and malignant lesions of this region.

METHODS

The study was conducted in the Post Graduate Department of Pathology, ASCOMS and Hospital, after obtaining due clearance from Institutional Ethics Committee. The study consisted of retrospective analysis of two years w.e.f. 1st July 2014 to 30th June 2016. All histopathological data, pertaining to head and neck lesions, maintained in the histopathology section of the department of pathology were retrieved and reviewed. Haematoxylin and Eosin (H&E) stained microscopic sections were re-examined. New H&E stained paraffin sections were made wherever required such as in case of faded slides. All relevant clinical details were obtained from the respective requisition forms submitted in the pathology department. Each case was analysed with respect to age, gender, clinical presentation, site and histological type. Records of all lesions involving oral cavity, upper aero digestive tract (nasal, paranasal sinus, oropharynx, nasopharynx, larynx and upper esophagus), otologic, salivary gland, lymph node, thyroid and skin and soft tissues were included. Intra orbital and intracranial biopsies were excluded from the study.

RESULTS

A total of 145 cases from the head and neck region were analysed per age, gender, topography and histology.

The patient's ages ranged from 3 months to 85 years. More than half of the lesions (51.03%) were noted in the age group of 21-50 years. 25.52% cases were noted in pediatric and adolescent age group and age group 51 and above was 23.45% (Table 1). There were 84 (57.93%) males and 61 (42.07%) females. The Male: Female ratio was 1.37:1 (Table 1).

Table 1: Basic demographics.

	Category	Number of cases	Percentage (%)
Gender	Male	84	57.93
	Female	61	42.07
Age (years)	0-10	16	11.72
	11-20	20	13.79
	21-30	21	14.48
	31-40	23	15.86
	41-50	31	20.69
	51-60	10	6.89
	61-70	16	11.03
	>71	08	5.52

The topographical distribution showed that skin and soft tissue lesions were the most frequent, accounting for 29.65% cases. Lesions of oral cavity constituted 20.69% cases. Aero-digestive tract comprised of 17.24% cases which included lesions of the nose, nasopharynx, oropharynx, hypopharynx and larynx. Thyroid lesions accounted for 11.03% cases and lymphnode lesions were seen in 10.34% cases. Less common sites included salivary glands (6.89%) and otologic (4.13%) (Table 2).

Table 2: Distribution of lesions according to topography and histological type.

Site of Lesion	Benign		Inflammatory		Malignant		Total	
	No. of cases	%	No. of cases	%	No. of cases	%	No. of cases	%
Skin and soft tissues	32	41.02	05	14.28	06	18.75	43	29.65
Oral cavity	19	24.35	02	5.7	09	28.12	30	20.69
Aero-digestive tract	05	6.4	12	34.28	08	25	25	17.24
Thyroid	14	17.94	00	00	02	6.25	16	11.03
Lymphnode	00	00	09	25.71	06	18.75	15	10.34
Salivary gland	07	8.97	02	5.71	01	3.12	10	6.89
Otologic	01	1.28	05	14.28	00	00	06	4.13
Total	78	53.79	35	24.13	32	22.06	145	100

The lesions were histologically categorized into benign, inflammatory, malignant. Out of the total 145 patients, 53.79% were benign, 24.13% were inflammatory and 22.06% were malignant (Table 2). All three categories i.e. benign, inflammatory, malignant showed a male preponderance comprising of 53.84%, 65.71% and 59.37% cases, respectively. 46.15% of benign, 34.28% of inflammatory and 40.62% of malignant cases were noted

in females (Table 3). Maximum number of benign lesions was in the age group of 21-50 years constituting 61.53% followed by 23.07% cases below 20 years and 15.38% cases in age group 51 years and above. Among the inflammatory cases maximum were seen below 20 years constituting 48.57%. Malignancies were noted to be higher in ages 51 years and above accounting for 56.25% followed by 43.75% in the age group 21-50 years. No

malignancy was noted in the pediatric age group in our study (Table 4).

Table 3: Sex-wise distribution of lesions.

Type of Lesion	Males	Females	Total
Benign	42	36	78
Inflammatory	23	12	35
Malignant	19	13	32
Total	84	61	145

Table 4: Age-wise distribution of lesions.

Age-group (in years)	Benign	Inflammatory	Malignant
0-10	05	11	00
11-20	13	06	00
21-30	10	07	04
31-40	20	02	02
41-50	18	05	08
51-60	06	01	03
61-70	05	03	08
>71	01	00	07
Total	78	35	32

Benign lesions affected the organs in decreasing frequency as follows: skin and soft tissues (41.02%), oral cavity (24.35%), thyroid (17.94%), salivary gland (8.97%), aero-digestive tract (6.4%), otologic (1.28%). The most common lesions in skin and soft tissues were epidermoid cysts followed by hemangiomas and lipomas. Squamous papillomas were found to be maximum among benign lesions of oral cavity. Goitre constituted the highest number of benign lesions in thyroid gland with predominance in females. Pleomorphic adenoma was the commonest tumor among benign lesions of salivary glands (Figure 1).

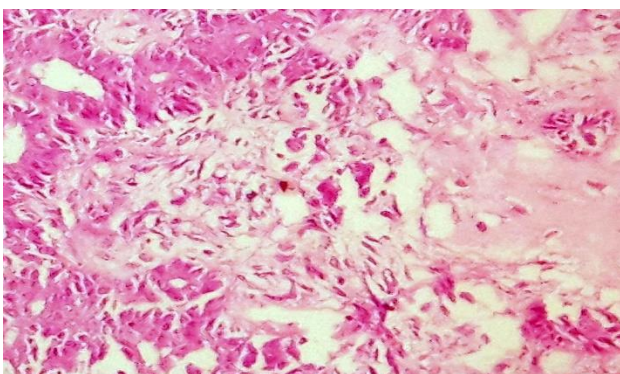


Figure 1: Pleomorphic adenoma, Parotid gland (H&E stain, x400).

Of all inflammatory lesions, maximum was found in aero-digestive tract (34.28%) followed by 25.71% in lymphnodes, 14.28% each in skin and soft tissues and otologic and 5.7% each in salivary glands and oral cavity. Nasal polyps, tonsillitis and adenoiditis were common

inflammatory lesions in aero-digestive tract. Koch's lesion (Figure 2) and reactive lymphadenitis showed highest frequency among inflammatory lesions of lymph nodes. Malignant lesions were found maximum in oral cavity (28.12%), followed by aerodigestive tract (25%) and 18.75% each in lymphnodes and skin and soft tissues. 6.25% malignant lesions were seen thyroid gland and 3.12% in salivary glands. Squamous cell carcinoma comprised the maximum number of malignant cases (53.12%) and were seen most commonly in oral cavity followed by in aero-digestive tract and skin soft tissues (Figure 3).

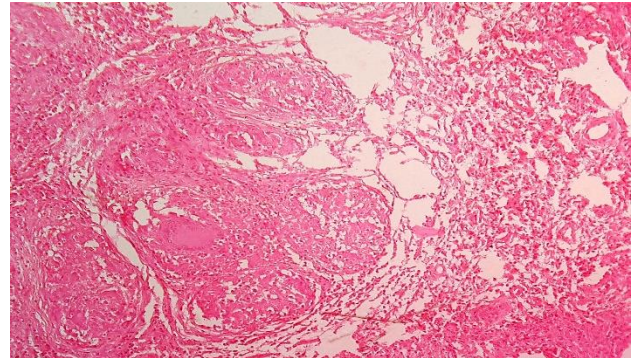


Figure 2: Tubercular lymph node (H&E stain, x100).

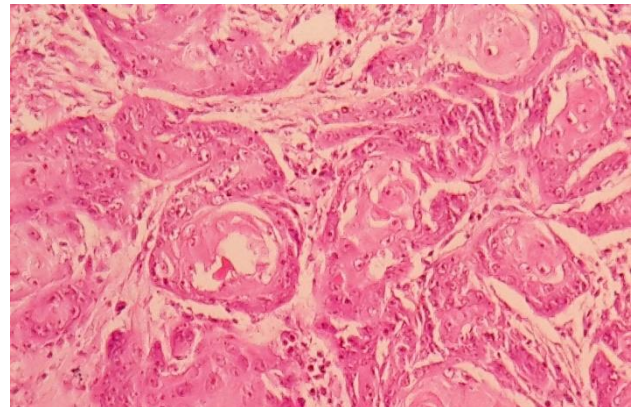


Figure 3: Well differentiated squamous cell carcinoma, oral cavity (H&E stain, x400).

Other malignancies like nasopharyngeal lymphoma, papillary and follicular carcinoma of thyroid, undifferentiated carcinoma (osteoclastic variant) of thyroid, lymphomas and metastatic lesions of lymphnode, basal cell carcinoma, mucoepidermoid carcinoma were also noted in present study.

DISCUSSION

Lesions arising from head and neck region are both diversified and challenging with each disease having its own distinct epidemiologic, anatomic and pathologic features, natural history and treatment considerations.^{8,9} The whole spectrum of biopsied head and neck lesions include a variety of differential diagnosis ranging from

inflammatory to neoplastic.¹⁰ In the present study, a total of 145 cases were analysed.

The head and neck lesions are routinely encountered across all ages. In our study, the age ranged from 3 months to 85 years. The maximum number of cases was present in the age range of 21 to 50 years contributing to 51.03%, with the highest percentage being between 41 to 50 years. Least number of cases were seen in age 71 years and above (5.52%). In a study by Lei F et al, most lesions were distributed in a slightly higher age range of 50 to 59 years, followed by 40 to 49 years, and 30 to 39 years, all of which together comprised of 70.0% of all head and neck lesions.¹¹ In another study conducted by Urooj A et al, the age ranged between 1.5 to 80 years, which varied only slightly from present study. In their study, the most affected age group was <30 years (41.40%) which was lower than what was observed in our study and least number of cases were reported in age group of 61 years and above, which was almost similar to the observation made by us.¹² Kanu OO et al in their study, noted head and neck lesions to be present in ages ranging from 2 to 76 years which was lesser as compared to our study.³ The variations observed in the age range between our study and other studies can be attributed to demographic differences of the regions.

In the present study, the number of male patients was higher (57.93%) as compared to female patients (42.07%) with a male to female ratio of 1.37:1. Similar observation was noted in the study done by Urooj et al who reported 54% male and 46% female patients.¹² Kanu OO et al also in their study reported a higher number of male cases (54.6%) than female cases (45.4%) with a male to female ratio of 1.2:1.³ Similarly, Ravi M et al reported male predominance in their study with male: female ratio of 1.43:1.¹³ This was in concordance with our study. However, Lei F et al, in their research, noted a male to female ratio of 3.4:1, which was much higher than what was observed in our data analysis.¹¹ This could probably be because of a very large sample size of their study as compared to ours and because of different demographics of our regions.

In the current study, the topographic distribution of head and neck lesions was categorized into seven main sites which in the decreasing order of frequency of involvement were skin and soft tissues, oral cavity, aero-digestive tract, thyroid, lymphnodes, salivary gland and otologic. Histopathologically, the lesions were further broadly grouped into benign, inflammatory and malignant accounting for 53.79%, 24.13% and 22.06% respectively. No premalignant or potentially malignant lesions were in our study. In a study by Kanu OO et al, more number of benign cases (63.3%) were reported which was compatible with our study.³ However, least number of benign lesions were noted in the study by Lei F et al.¹¹ The benign lesions were more frequent in the age group of 20 to 50 years while higher percentage of malignant lesions belonged to age group of 51 years and

above in our research work. These observations were in agreement with the findings of Popat V et al.⁵ Inflammatory lesions were maximum in the younger age of 20 years and below in our analysis. In this age group, no malignant lesion was observed by us. Literature also shows that head and neck malignancies are uncommon in children and adolescents, constituting only 5% of all childhood malignant neoplasms. Supporting these findings was the retrospective study done by Al Yamani AO et al, who noted more benign lesions than malignant in their series.¹⁴ Similar observation was made by Popat V et al.⁵ However, retrospective analysis of Lei F et al, reported all categories of lesions to be more common in 50-59 years of age.¹¹ Our research study showed a preponderance of males in all three histopathological categories which was in accord with the findings of Siddiqui M S et al.¹⁵

A wide variety of lesions spanned across the seven topographic sites we analyzed. Lesions arising from the skin and the soft tissues were found to be maximum (29.65%) in present study. Of these, most number of cases was benign which was found to be in concordance with the study done by Popat V et al.⁵ Epidermoid cyst was the most common benign histopathological diagnosis followed by hemangiomas, in our retrospective data. Lei F et al, however, reported fibromas as the commonest benign skin and soft tissue lesion followed by hemangiomas while epidermoid cyst was observed to be the most frequent entity among the non-odontogenic cystic lesions.¹¹ In present study, the malignant lesions predominantly seen in skin and soft tissues was basal cell carcinoma followed by cutaneous squamous cell carcinoma. This was in accord with observation of Hsieh CY et al.¹⁶

Oral cavity lesions constituted 20.69% of present study and were found to be more common in males. The most common site of involvement was buccal mucosa followed by lip and tongue. Kosam and Kujur also noted similar findings.¹⁷ Modi et al, however, reported an overall higher number of female patients with oral lesions than males.¹⁸ Benign lesions in the present study were squamous papilloma, mucocele and pyogenic granulomas as was also observed in other studies.^{11,17,18} Other uncommon benign lesions noted in this region were ameloblastoma, palatal neurofibroma and odontomas. These lesions were also seen by Al Yamani AO et al and Lei F et al in their respective researches.^{11,14} Oral squamous cell carcinoma was the commonest malignancy reported in our work which was also seen in studies done by other authors.^{15,17,18}

Lesions of the aero-digestive tract comprised of 17.24% cases in our data among which inflammatory lesions were the maximum followed by malignant. Inflammatory lesions included tonsillitis, adenoiditis and nasal polyps. Among the malignant lesions, squamous cell carcinoma was the most predominant malignancy. Two cases of nasopharyngeal non-Hodgkins lymphoma were also

reported (Figure 4). Popat V et al also reported maximum number of squamous cell carcinomas in throat.⁵



Figure 4: Non Hodgkins lymphoma, nasopharynx (H&E stain, x400).

In present study, the general topography indicated that oral cavity and aero-digestive tract was most common sites affected by malignancy. Squamous cell carcinoma was the most frequently encountered malignancy in both these sites. These findings are indicative of the fact that head and neck cancers are amongst the commonest malignancies in India with Squamous cell carcinoma being the predominant histological type.^{3,9,13,15} This could be attributed to the major preventable risk factors which are tobacco use, betel quid chewing and alcohol consumption.

Out of the 11.03% of the cases of the thyroid gland found in our study, non-neoplastic lesions were more common. Among these, most frequent entity was colloid goiter including both diffuse and nodular goiter, which were commonly seen in females. Similar findings were reported by Popat V et al, Urooj A et al and Rahman MA et al in their respective studies.^{5,12,19} Predominance of goiter in our study was in accord with the demographic trends of our region which falls in the goiter belt of Himalayan and sub Himalayan region. Two cases of congenital thyroglossal cysts and one case of follicular adenoma was also noted in our study. Among the malignant lesions, one case each of papillary carcinoma, follicular carcinoma and undifferentiated carcinoma (osteoclastic variant) was reported (Figure 5).

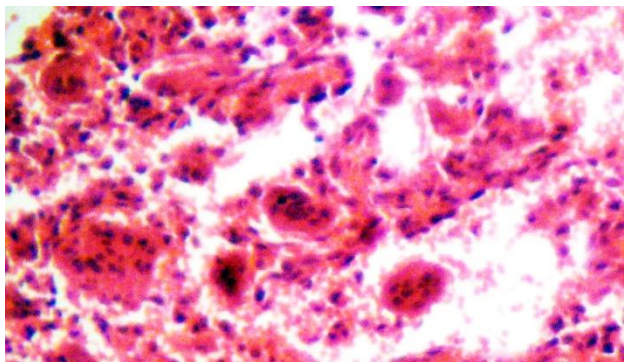


Figure 5: Osteoclastic variant of undifferentiated carcinoma, thyroid gland (H&E stain, x400).

Lymph node biopsy plays an important role in establishing the cause of lymphadenopathy. Among the biopsied lymph nodes, in present study, tuberculous lymphadenitis was the commonest lesion followed by reactive lymphadenopathy. Lymphomas were commonest cause for malignant lesions and included both Hodgkins and non Hodgkins lymphoma. Metastases constituted the remaining nodal malignancies. Popat V et al and Urooj A et al also noted similar spectrum of lymph node lesions in their respective studies.^{5,12}

Salivary glands constituted only 6.89% of all the head and neck lesions studied. Parotid Gland was the commonest site of lesion and women were more frequently affected than men in present series. Benign neoplastic lesions were common of which pleomorphic adenoma was the most frequent histological type. Warthin's tumor, oncocytoma and lymphoepithelial cysts were also reported. Malignant lesions included only mucoepidermoid carcinoma. Inflammatory lesions included chronic sialadenitis. These findings are comparable with findings of Popat V et al, Lei F et al, Teeda DR et al.^{5,11,20}

The spectrum of head and neck lesions vary from region to region. Ours is a single centre based study which reflects specific patient population reporting to our hospital and not community as a whole.

CONCLUSION

The present study highlighted the whole spectrum of lesions ranging from benign to inflammatory to malignant, arising from head and neck region. The data regarding frequency, age, sex distribution of the cases along with the site and histological type of the lesion was evaluated in detail which helped in contributing to the baseline data of the head and neck lesions of the institute. It is helpful to carry out such research work periodically to study and emphasize the changing trends of head and neck lesions.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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