



Original Research Article

Spectrum of lesions of head and neck in a medical college of North India

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ARTICLE INFO

Article history:

Received 15-07-2020

Accepted 24-12-2020

Available online 20-02-2021

Keywords:

Head and neck lesions

Benign

Malignant

Dysplasia

Cystic

Buccal mucosa

ABSTRACT

Background: Head and neck lesions especially oral cancers and pre-cancerous lesions have a high prevalence in India, especially in states like Uttar Pradesh pertaining to use of Pan masala, smokeless tobacco and zarda in the population. The lesions are common in patients of all age groups.

Aim: This histopathology based study was conducted for the assessment of neoplastic and non-neoplastic lesions of head and neck in the region around North Indian city of Lucknow.

Materials and Methods: This is a retrospective study conducted in the Department of Pathology, T S Misra Medical college and Hospital, Amausi, Lucknow. The head and neck cases for time period of two years and eight months were retrieved from the histopathologic section of department. Thorough analysis of these specimens was done and data was compiled based on histomorphological diagnosis and other parameters like site of lesion, sex and age group.

Results: Study was done for 189 biopsies from head and neck region. Peak incidence of case was seen in 21-50 years age group, in the overall age range 3 to 86 years of our study. Male outnumbered female by ratio of 1.77:1. 63 cases of the study were inflammatory, 40 cystic, 46 benign, 14 dysplastic and rest 26 cases were malignant. Commonest malignant lesion was Squamous cell carcinoma of the oral cavity.

Conclusion: It was noteworthy that precancerous and malignant lesions of oral cavity constitute a high percentage of head and neck lesions for the present cohort of referral patients.

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1. Introduction

Head and neck lesions are common among all age group of patients.¹ These lesions include a variety of inflammatory, cystic, benign, dysplastic and malignant conditions. The malignancies of head and neck region are more common in Indian males which are attributed to tobacco use, alcohol, poor oral hygiene, viral infections and low socio-economic status.²

Anatomical site of origin of these lesions are forehead, scalp, face, neck, larynx, oral cavity, nose, salivary glands, otologic, thyroid and tonsil.³

The spectrum of head and neck neoplasias may vary from one place to another within the country depending on the etiological factors.⁴ There are numerous methods

available for diagnosing these lesions but histopathological examination of the tissue biopsy is the gold standard.⁵ Benign lesion may progress to severe dysplasia, carcinoma in situ and/or squamous cell carcinoma. Therefore, early diagnosis is very important and can be life saving especially in oral lesions.⁶

2. Materials and Methods

This retrospective study was performed in the department of Pathology at T. S. Misra Medical college and Hospital, Amausi, Lucknow. We evaluated head and neck specimens received in our department from January 2016 to August 2018.

A total of 189 blocks and stained histopathological slides (H & E stained) were retrieved from histopathology section and re-examined. New H&E stained sections were made

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whenever required. Intracranial biopsies were included in the study. Details of clinical history, age, sex and location of lesion of patient were obtained from filled requisition forms.

3. Results

A total of 189 cases were analyzed during the study period. The age range varied from 3 yrs to 86 yrs. Youngest was a 3 years female diagnosed with Anaplastic Ependymoma (WHO Grade III). Two patients were 86 yrs old, one presented with growth lateral side right eye and diagnosed as Well differentiated squamous cell carcinoma and the other came with mass in temporal region also diagnosed as Well differentiated squamous cell carcinoma. Maximum patients with head and neck lesions belonged to 21-30 years age group (29.6%) followed by 31-40 years age group (23.2%).

Table 1: Age distribution

Age	Number of cases	Percentage
0-10	07	3.7
11-20	31	16.4
21-30	56	29.6
31-40	44	23.2
41-50	25	13.2
51-60	17	8.9
61-70	04	2.1
71-80	02	1.0
81-90	03	1.5

In our study, 121 patients were males (64%) and 68 patients were females (36%). The male to female ratio was 1.77.

Oral cavity accounted for majority of lesions (63 patients- 33%). Out of total of 63 of these biopsies, 22 were inflammatory, 8 cystic, 5 benign, 13 dysplastic and 15 malignant. These lesions were from tongue, gingival, buccal mucosa, upper and lower lip and palate.

Commonest inflammatory oral lesion was keratosis without dysplasia (buccal mucosa). The most common cystic oral lesion was mucocele (lower lip). Commonest benign oral lesion was Pyogenic granuloma, whereas lichenoid dysplasia the most common dysplastic lesion. The most common malignant oral lesion was Well differentiated squamous cell carcinoma (tongue) followed by moderately differentiated squamous cell carcinoma and verrucous carcinoma. Figure 13 displays well differentiated squamous cell carcinoma over left lateral border of tongue and shows a deep infiltrating tumor invading the skeletal muscle fibres and displaying keratin pearls.

The next most frequent lesions were found in scalp/head region (43 patients/23%). Among these lesions 3 were inflammatory, 22 cystic, 12 benign and 6 were malignant. The most common cystic lesion of scalp was sebaceous cyst. Benign lesions included hemangiomas, lipoma, seborrheic

keratosis, Trichoepithelioma (Figure 7), Nevus sebaceous, Trichilemmoma, Syringocystadenoma papilliferum and schwannoma. Figure 7 shows a peri occipital region desmoplastic trichoepithelioma of scalp revealing keratotic area with pseudo-horn cysts and deeper soiled basaloid region separated by marked fibrocollagenous stroma. Basal cell carcinoma and Well differentiated squamous cell carcinoma (both in temporal region) were the extracranial malignant tumors.

The intracranial tumors included one case each of, Diffuse fibrillary astrocytoma (WHO Grade I) and Pleomorphic xanthomatous astrocytoma (WHO Grade II), Anaplastic ependymoma (WHO Grade III), Glioblastoma multiforme (WHO Grade IV). In Figure 9 - Diffuse fibrillary Astrocytoma- sections from frontal lobe biopsy show diffuse fibrillary background, microcystic changes, astrocytic proliferation with cells showing hyperchromatic nuclei and anisonucleosis. Figure 10 Pleomorphic xanthomatous astrocytoma shows a glial tumor composed of nests of large plump xanthomatous cells, few cells with pink glassy cytoplasm, thin fascicles of plump spindle cells at periphery and proliferating blood vessels. Figure 11 Anaplastic ependymoma shows fibrillary areas of variable cellularity with prominent pseudo vascular rosetting as well as true ependymal rosettes. Figure 12 from temporal lobe space occupying lesion showed a highly cellular tumor composed of malignant astrocytes, geographical necrosis with palisading of tumor cells along with vascular proliferation forming glomeruloid bodies, features consistent with Glioblastoma multiforme.

Otologic and neck lesions were the next most common lesions, 17 cases each (9%).

The otologic lesions were most commonly inflammatory, mostly cholesteatoma. Single malignant lesion presenting as left ear mass was diagnosed as Well differentiated squamous cell carcinoma.

Inflammatory neck lesions included granulomatous lesions, tubercular lymphadenitis and reactive lymph node. Cystic lesions comprised most commonly of sebaceous cyst and thyroglossal cyst. Benign neck lesions included lipoma, haemangioma, spindle cell hemangioma and Schwannoma. Figure 6 shows spindle cell hemangioma with solid areas composed of bland spindle cells with pale eosinophilic cytoplasm, elongated/plump nuclei, slit like vascular spaces and cavernous vascular spaces lined by monolayered endothelial cells.

Lesions in the tonsil and face included 11 cases each (6%). All the lesions from tonsil were chronic tonsillitis, three cases with actinomycosis. Figure 3 shows foci of actinomycosis within crypts of tonsillar tissue. Lesions from face included cyst of Moll from a patient who presented with supra-orbital cystic swelling. The benign lesions on face were Nevus sebaceous, Seborrheic keratosis, Cavernous hemangioma, Desmoplastic Trichoepithelioma and Keloid.

One case of well differentiated squamous cell carcinoma was diagnosed from growth lateral side of eye. Figure 8 Shows Nevus Sebaceous of Jadassohn which presented as papilloma near eye. The microsections show hyperplastic and irregular acanthotic epidermis with underlying dermis exhibiting conglomeration of large sebaceous glands. Lesions from nose were 9 in number (5%). Inflammatory lesions included inflammatory polyp, Allergic nasal polyp and Rhinoscleroma. Benign lesions were lobular capillary hemangioma, Sino nasal papilloma and Angiofibroma. Single nasal mass was diagnosed as Adenoid cystic carcinoma (Grade III)- Figure 2 . This is an infiltrating tumor exhibiting cribriform, trabecular and cylindromatous patterns. The cystic spaces are filled with basophilic mucoid material. Figure 4 – Rhinoscleroma presented as nasal mass and shows a polypoidal lesion with large number of foamy histiocytes and lymphoplasmacytic cells in subepithelial stroma. Figure 5 –Sino nasal papilloma, shows fragments of tissue with connective tissue stalk and delicate fibrovascular core displaying a serpiginous configuration and lined by hyperplastic respiratory epithelium.

6 lesions were from forehead region (3%). The lesions were mostly benign and included Lipoma, Seborrhoeic keratosis and Arterio-Venous fistula.

Lesions from thyroid were 5 in number (2.6%) and included colloid nodular goitre with one case of follicular adenoma.

Laryngeal lesions were 4 in number (2.1%) and included laryngeal nodule and two cases of Moderately differentiated squamous cell carcinoma.

Three salivary gland lesions were noted (1.58%). One was chronic non-specific sialoadenitis and two cases of submandibular gland Pleomorphic adenomas. Figure 1. Shows microsections from pleomorphic adenoma revealing myoepithelial mantles submerging in dense chondromyxoid stroma.

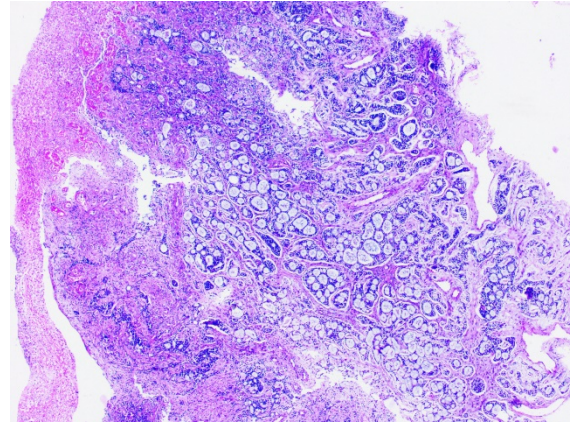


Fig. 2: Adenoid cystic carcinoma [5x, H&E]

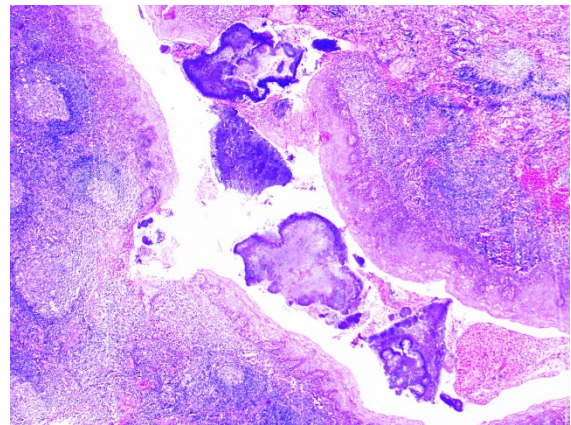


Fig. 3: Chronic tonsillitis with Actinomycosis [5x, H&E]

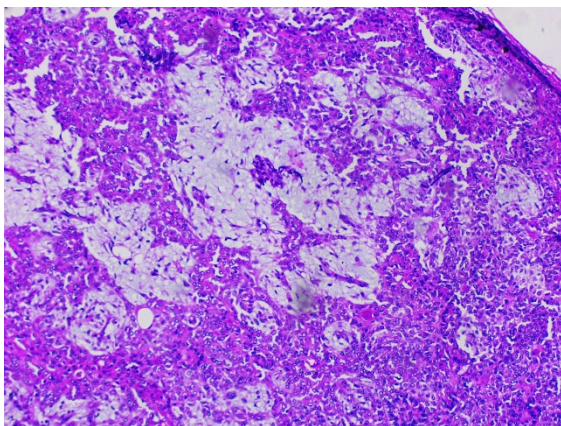


Fig. 1: Pleomorphic adenoma [10x, H&E]

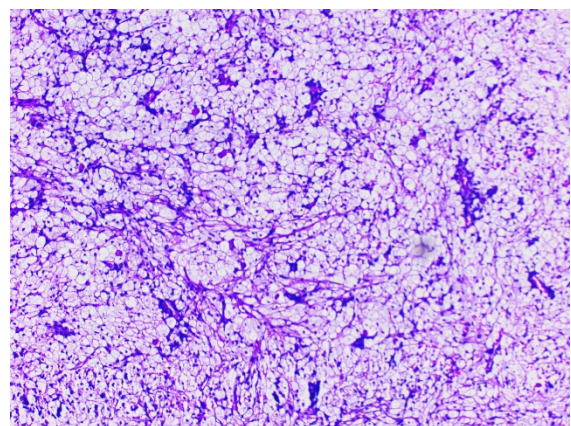
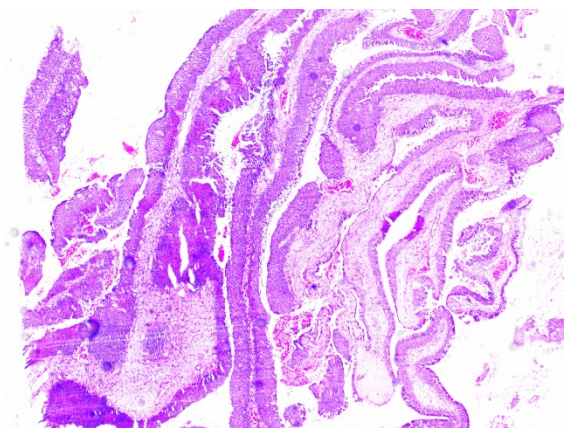
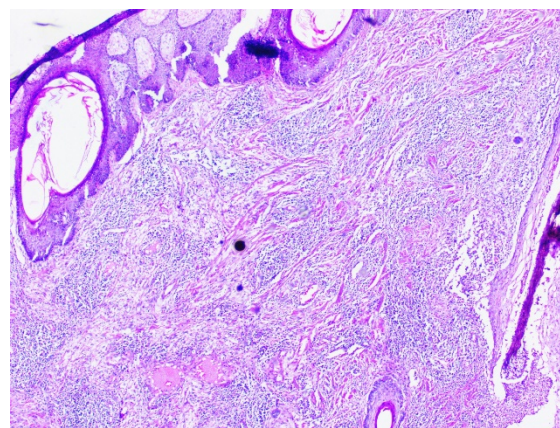
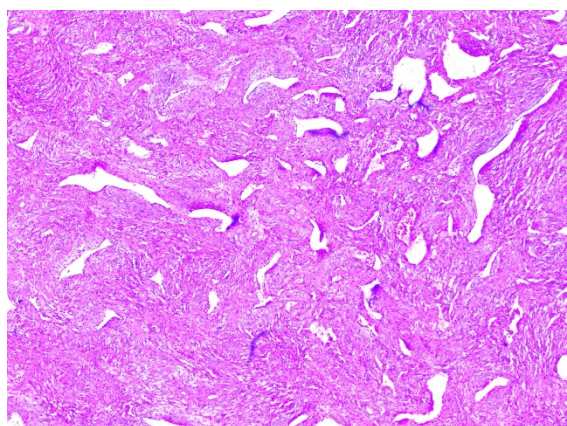
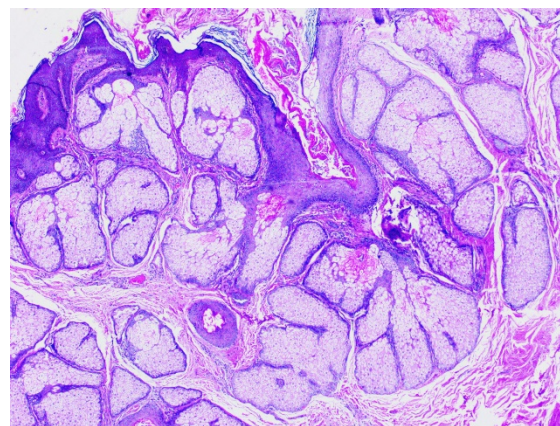


Fig. 4: Rhinoscleroma. [10x, H&E]

Table 2: Distribution of head and neck lesions at various anatomic sites

Site	Inflammatory	Cystic	Benign	Dysplastic	Malignant Verrucous ca	Malignant Squamous cell ca	Malignant others
Oral cavity	22	08	05	13	02	13	00
Scalp/ Head	03	22	12	00	00	01	05
Otologic	14	01	00	01	00	01	00
Neck	04	05	08	00	00	00	00
Tonsil	11	00	00	00	00	00	00
Face	01	03	06	00	00	01	00
Nose	05	00	03	00	00	00	01
Forehead	00	01	05	00	00	00	00
Thyroid	00	00	05	00	00	00	00
Larynx	02	00	00	00	00	02	00
Salivary gland	01	00	02	00	00	00	00

**Fig. 5:** Sinonasal papilloma [5x, H&E]**Fig. 7:** Desmoplastic trichoepithelioma [5x, H&E]**Fig. 6:** Spindle cell hemangioma [10x, H&E]**Fig. 8:** Nevus Sebaceous [5x, H&E]

4. Discussion

The present study a total of 189 cases of head and neck lesions were documented in a cohort of patients referred for histopathological examination during two year eight months period in our department.

Lesions which arise from head and neck region are diverse with each disease having its own history, epidemiology, histomorphology and treatment.⁷ The lesions range from inflammatory and cystic to neoplastic.

The head and neck lesions are frequently seen among all age groups. In our study the age range was between 3yrs to

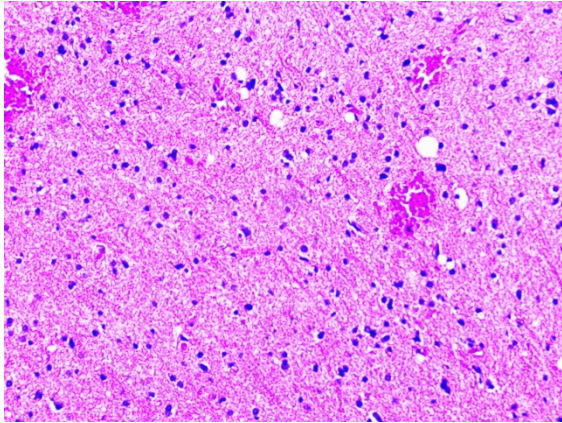


Fig. 9: Diffuse fibrillary astrocytoma [10x H&E]

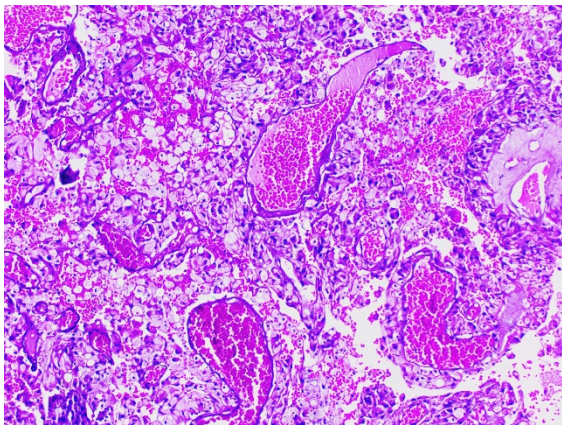


Fig. 10: Pleomorphic xanthomatous astrocytoma [10x, H&E]

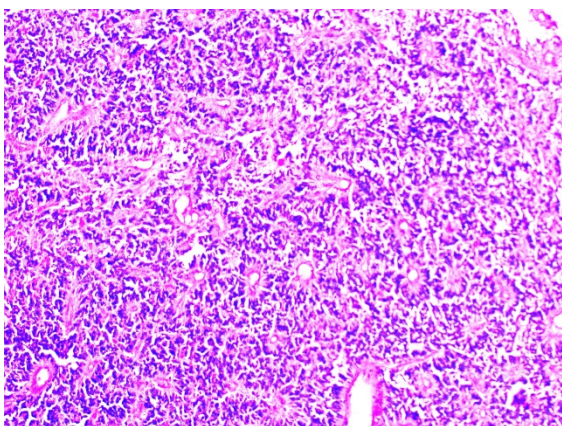


Fig. 11: Ependymoma. [10x, H&E]

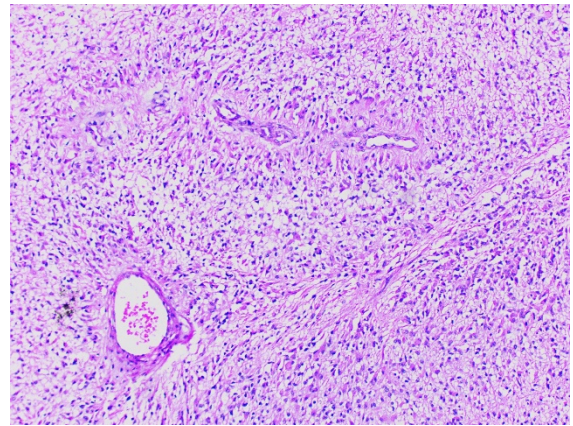


Fig. 12: Glioblastoma multiforme [10x, H&E]

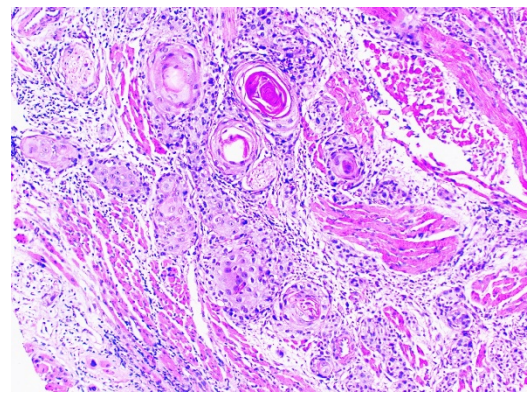


Fig. 13: Well differentiated squamous cell carcinoma [10x, H&E]

86 yrs. Maximum cases were seen in the age range of 21 to 50 years contributing to 66% with the highest percent in the age group 21-30 years followed by 31 to 40 and 41-50 years. This is similar to study by Sharma M et al who also reported patients between age range of 3 and 85 years with maximum cases in 21-50 years age group (51.03%).¹ However this is in contrast to study by Singhal U et al. in which majority of lesions were reported in 41-60 years age group.² In Taiwan study by Lei F et al. showed the lesions distributed in a slightly higher age range of 50-59 years which the author has attributed to due to aging population in Taiwan.⁸ In the study performed by Urooj et al., the age ranged between 1.5 and 80 years which only slightly varied from our study.³

In the present study the number of male patients were 121 (64%) which was significantly higher than the 68(36%) female patients. The male to female ratio was 1.77. This is slight variance from study by Sharma et al who recorded male to female ratio of 1.37 and also from study by Kanu et al with a ratio of 1.2.⁹ Whereas Lei et al reported a male to female ratio of 3.4:1 which was much higher than the data observed in our analysis.⁸

In the current study the lesions of head and neck were topographically distributed into eleven main sites which

in the decreasing order of involvement were oral cavity, scalp/head, otologic, neck, tonsil, face, nose, forehead, thyroid, larynx and salivary gland.

On the basis of histopathology, the lesions were broadly classified as inflammatory (33%), cystic (21%), benign (24%), dysplastic (7.4%) and malignant (13.7%).

The benign lesions were more prevalent in 21-50 years age group while higher number of malignant lesions were seen in age group 51 years and above. These observations are consistent with findings of Sharma et al¹ and Popat et al.¹⁰

Most common site of cases in our study belonged to the oral cavity (33%). These lesions were more common in males. The most common site was buccal mucosa followed by lip and tongue. This was in agreement with findings by Kosam and Kujur⁶ and Sharma et al.¹ A higher number of female patients with oral lesions was reported by Modi et al.⁵ Inflammatory lesions in our study were keratosis without dysplasia, fibroepithelial polyp, periapical abscess etc. Cystic lesion included most commonly mucocele. Pyogenic granuloma was the most common benign lesion and lichenoid dysplasia was the most common dysplastic lesion. The malignant lesions constituted well differentiated squamous cell carcinoma predominantly followed by Moderately differentiated carcinoma and Verrucous carcinoma. Similar lesions were also documented by Kosam and Kujur in their study.⁶ Our study was in agreement with Shah and Patel who also report oral cavity as the most common site of malignant lesions of head and neck.⁷

The second most common lesion site was found in the head/ scalp region (22.7%). The most common lesion was sebaceous cyst of scalp. Benign lesions showed a varied spectrum of hemangioma, nevus sebaceous, seborrheic keratosis, trichilemmoma, trichoepithelioma, desmoplastic trichoepithelioma, lipoma, schwannoma and syringocystadenoma papilliferum. Malignant lesions were extracranial (well differentiated squamous cell carcinoma and basal cell carcinoma) and intracranial (Glioblastoma multiforme, Anaplastic ependymoma, Diffuse fibrillary astrocytoma and pleomorphic xanthomatous astrocytoma). Many authors like Sharma et al have designated the lesions of scalp/ head as skin and soft tissue lesions and have reported a similar variety of lesions.¹

The next most common lesions were from ear and neck (9%each). The neck lesions comprised of granulomatous and tuberculous lesions of cervical lymph node, cystic lesions like thyroglossal cyst and benign lesions including lipoma, hemangioma, schwannoma and spindle cell hemangioma. In our study the most common cause of cervical lymphadenopathy was granulomatous/ necrotic/ tubercular lymph node which was similar to the study of neck lesions by Popat et al.¹⁰

The otologic lesions were mostly cholesteatomas, one severe dysplastic lesion and a malignant case of well differentiated squamous cell carcinoma which presented as left ear mass.

The next most common involvement was of tonsil and face (5.8% each)/ 11 cases each. In the tonsils all cases were of chronic tonsillitis except one case of acute tonsillitis. Three of the chronic tonsillitis patients had associated actinomycosis. Singhal et al reported 4 cases of chronic tonsillitis and one tonsillar cancer.²

Lesions from face in our study included keratinous cyst, cyst of moll, nevus sebaceous, seborrheic keratosis, cavernous hemangioma, desmoplastic trichoepithelioma and keloid and single malignant case of well differentiated squamous cell carcinoma.

Lesions of nose included 9 cases (4.7%). The inflammatory lesions were mostly polyps (inflammatory and allergic) and Rhinoscleroma. The benign lesions included lobular capillary hemangioma, sinonasal papilloma and Angiofibroma. Single malignant case of Adenoid cystic carcinoma was also diagnosed. Study by Siddiqui et al. reported that nose and PNS presented most cases of benign lesions (mainly polyps) which was similar to our study.¹¹

The forehead lesions were 6 in number (3.1%) and included lipomas, seborrheic keratosis, AV fistula and infected keratinous cyst.

The thyroid lesions were diagnosed in 5 patients (2.6%) and comprised of three cases of colloid nodular goitre and two of follicular adenoma. Sharma et al. also reported colloid goitre as the most frequent non-neoplastic entity.¹

Laryngeal lesions were 4 in number (2.1%) and included two cases of vocal cord nodule and two cases of moderately differentiated squamous cell carcinoma. Studies implicate an association with asbestos, nitrogen mustard, wood dust, tea, smoking, zinc etc.¹² Popat et al. reported larynx as the most common site of malignancy unlike our study in which oral cavity was the most common site.¹⁰

Only three salivary gland lesions were diagnosed in our study (1.58%), two of which were Pleomorphic adenomas of submandibular gland and one case of chronic non-specific sialadenitis. No malignant lesion was reported in salivary gland. Popat et al also reported pleomorphic adenoma as the commonest salivary gland tumor.¹⁰ Parotid gland was the commonest site of tumor in study by Sharma M et al. unlike our study in which submandibular gland was the most common salivary gland involved.¹

Adisa et al concluded that epithelial lineage malignancies (carcinomas) are more common in the head and neck than lymphomas, sarcomas or neuroendocrine tumors¹³ in our study we found exclusively carcinomas as the most common malignancies.

Rajabhandari M¹⁴ and Amit U¹⁵ et al. studied the efficacy of FNAC in the diagnosis of thyroidal and non-thyroidal head and neck swellings and its histopathological

correlation. In our hospital many head and neck lesions are assessed by FNAC prior to histopathological examination.

Alka Dive et al. emphasized the basis of origin and importance of tumor patterns in oral and maxillofacial tumor diagnosis.¹⁶

5. Conclusion

Our study is first of its kind in the region covering Amausi and adjacent semirural areas and has highlighted the whole spectrum of lesions involving head and neck region which are ranged widely from inflammatory, cystic, dysplastic, benign and malignant. It is concluded that among head and neck lesions, majority of patients have presented with inflammatory, dysplastic and malignant lesions of the oral cavity whereas the cystic lesions were most commonly encountered in the scalp. Benign lesions are most commonly manifested as skin and soft tissue lesions of scalp/head.

6. Source of Funding

None.

7. Conflict of Interest

The authors declare that there is no conflict of interest.

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Cite this article: Sharma HB, Kumar N, Bansal M, Gupta M. Spectrum of lesions of head and neck in a medical college of North India. *Indian J Pathol Oncol* 2021;8(1):87-93.