ORIGINAL RESEARCH PAPER
Volume - 9 | Issue - 10 | October - 2020 | PRINT ISSN No. 2277 - 8179 | DOI : 10.36106/ijsr
INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

HISTOPATHOLOGICAL SPECTRUM OF HEAD AND NECK LESIONS: A ONE YEAR RETROSPECTIVE STUDY

Pathology

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ABSTRACT

Background: Head and neck lesions including skin, soft tissue, thyroid, lymph node, salivary gland, eye, nose, oral, otologic, etc, encompass a multitude of disorders which can be broadly classified into non neoplastic, benign and malignant. Knowledge about topographical and histopathological distribution of these lesions is helpful in evaluating patterns of head and neck lesions. **Material and methods:** A one year retrospective study extending from 1st Feb 2019 to 31st Jan 2020 was conducted on the patient's registered at Dr. Bhardwaj's Diagnostic Laboratory, Jammu, India. All histopathological data of head and neck lesions along with pertinent patient details were retrieved and reviewed. **Results:** A total of 235 cases from the head and neck region were analysed during this one-year retrospective period. The patient's age ranged from 5 months to 93 years. The Male: Female ratio was 1.35:1. Out of the total 235 lesions, 31.9% were non neoplastic, 29.8% were benign and 38.3% were malignant. Skin and soft tissue lesions (22.6%) were the most frequent. Squamous cell carcinoma was the most common malignancy observed. **Conclusion:** Topographical and histopathological data records is helpful in assessing the frequency and evaluating patterns of head and neck lesions among different age groups and help augment the base line data of the region.

KEYWORDS

INTRODUCTION:

Head and neck cancers (HNC), including oral cavity, oropharynx and larynx are among the most common types of cancer representing a major health problem [1] There are approximately 5,40,000 new cases and 2,71,000 deaths annually worldwide accounting for a mortality of approximately 50% [2]. Head and neck region encompass a multitude of congenital, inflammatory or neoplastic lesions originating from different organs and tissues with varying histology and biological behaviour [3]. Common pathologies encountered in the neck are lymphadenopathies (specific and non-specific, acute and chronic), lymphoma, metastatic carcinoma, thyroid swellings (goitre, nodules and cysts) as well as salivary gland swellings (sialadenitis, cysts, adenomas and carcinomas). The less common pathologies presenting as swelling in the neck are carotid body tumor, bronchial cyst, pharyngeal pouch and lumps of skin appendages [4]. Malignant lesions can present as primary as well as secondaries from other organs. Development of HNC is a multifactorial process associated with a variety of risk factors. Tobacco and alcohol consumption being established risk factors (synergistic in persons who both smoke tobacco and drink alcohol), even though other factors may affect risk [5,6]. The present study is aimed to analyze the histological patterns, types, and frequency of pathological lesions of biopsied head and neck lesions since site-specific data from different parts of the country can provide information regarding various trends and give clues to the etiological factors responsible for this significant variation.

MATERIALS AND METHODS:

The present study was implemented on the patients registered at Dr. Bhardwaj's Diagnostic Laboratory, Jammu, India. Dr. Bhardwaj's Diagnostic Laboratory received abundant biopsies for histopathologic al examination. A retrospective data of one year from 1st Feb 2019 to 31st Jan 2020 consisting of all histopathological data of head and neck lesions, maintained in the laboratory 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. The pertinent patient details regarding the age, clinical details, site of lesion and past history of similar lesions were also studied. Records of all lesions involving oral cavity, upper aero digestive tract (nasal, paranasal sinus, oropharynx, nasopharynx, larynx and upper esophagus), ophthalmic, otologic, salivary gland, lymph node, thyroid and intracranial biopsies and skin and soft tissues were included in the study.

STATISTICALANALYSIS:

Data analysis was done by Statistical Package for the Social Sciences (SPSS) Version 19. The data were expressed as frequency and percentage.

RESULTS:

The study included 235 cases of head & neck lesions. The patient's age ranged from 5 months to 93 years. More than half of the lesions (62.1%) were noted in the age group of 21-60 years (Table 1). There were 135 (57.4%) males and 100 (42.6%) females. The Male: Female ratio was 1.35:1 (Figure 1). The topographical distribution showed that skin and soft tissue lesions were the most frequent, accounting for 22.6% cases followed by lesions of oral cavity constituting 21.3% cases which included lesions of lip, tongue, tonsil and buccal mucosa. Laryngeal lesions comprised of 9.8% cases. Nasal and paranasal lesions comprised of 9.4%. Thyroid and lymph node accounted for 7.2% lesions each. Salivary gland lesions comprised of 6%. Intracranial lesions comprised of 5.1%. Less common sites included otologic (4.7%), eye (1.7%) and maxillofacial skeleton (1.3%). The lesions were histologically categorized into non neoplastic, benign and malignant. Out of the total 235 patients, 31.9% were non neoplastic, 29.8% were benign and 38.3% were malignant (Table 2). All three categories i.e. non neoplastic, benign and malignant showed a male preponderance comprising of 52%, 58.6% and 61.1% cases, respectively. Malignant lesions were noted to be highest (25 cases) in the age group of 61-70 years followed by 18 cases in the age group of 51-60 years. Only 4 patients in the pediatric and adolescent age group. Maximum number of benign lesions were in the age group of 21-50 years. Benign lesions affected the organs in decreasing frequency as follows: skin and soft tissues (37.1%), oral cavity (12.9%), thyroid (12.9%), salivary gland (10%), intracranial (10%), otologic (1.28%), larynx (4.3%), otologic (2.9%) and eye (2.9%). Pleomorphic adenoma was the commonest tumour among benign lesions of salivary gland. A single case of Warthin tumour was also seen. Benign cases among maxillofacial skeleton lesions comprised of two cases of Giant cell tumour (Figure 11). Meningioma and low grade Oligodendroglioma were the two most common types of intracranial benign tumours observed (Figure). Epidermoid cysts followed by hemangiomas & lipomas were the most common lesions in skin and soft tissue. Two cases of Pilomatricoma and one case of Chondroid syringoma were among the benign skin tumours seen. Schwannoma was the most frequent soft tissue tumour. Squamous papilloma was found to be maximum among benign lesions of oral cavity. Two cases of Hurthle cell adenoma were also seen. Of all non neoplastic lesions, maximum were found in oral cavity (28%), mainly comprising of tonsillitis, adenoiditis and mucocele followed by 18.7% in skin and soft tissues. Tubercular lymphadenitis showed highest frequency among

inflammatory lesions of lymph nodes. Malignant lesions were found to be maximum in oral cavity (22.22%), followed by larynx (15.6%) and 14.4% each in lymph node and skin and soft tissues. 6.7% malignant lesions were seen thyroid gland and 2.2% in salivary glands. Squamous cell carcinoma comprised the maximum number of malignant cases and were seen most commonly in oral cavity followed by in larynx. Glioblastoma and Ependymoma were among the two malignant intracranial lesions seen. Papillary thyroid carcinoma was the most commom thyroid malignancy (Figure 3,4). Basal cell carcinoma was found to be the commonest skin malignancy. Other malignancies like Lymphomas, nasopharyngeal carcinoma and adenoid cystic carcinoma (Figure 8,9,10). were also noted in present study (Table 3).

Table 1. Showing age distribution of various head & neck lesions

	Frequency	Percent
0-10	11	4.7
11-20	12	5.1
21-30	40	17.0
31-40	40	17.0
41-50	38	16.2
51-60	35	14.9
61-70	41	17.4
71-80	14	6.0
81-90	3	1.3
91-100	1	.4
Total	235	100.0

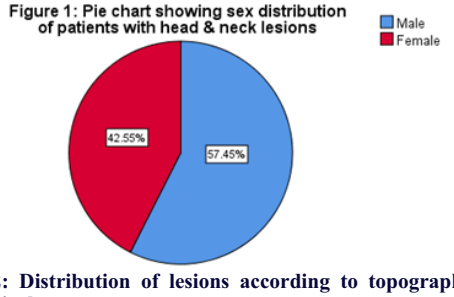

Table 2: Distribution of lesions according to topography and histological type

	Benign	Malignant	Non neoplastic	Total
Larynx	3	14	6	23
Salivary gland	7	2	5	14
Nasopharynx& Oropharynx	0	7	2	9
Maxillofacial skeleton	2	1	0	3
Intracranial	7	5	0	12
Oral cavity	9	20	21	50
Skin and soft tissue	26	13	14	53
Lymph node	0	13	4	17
Thyroid	3	6	8	17
Nasal & Paranasal sinus	9	6	7	22
Eye	2	2	0	4
Otologic	2	1	8	11
Total	70	90	75	235

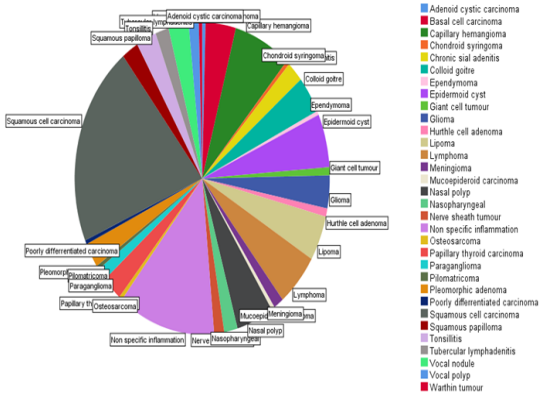

Table 3: Showing histopathological distribution of various head and neck lesions

	Frequency	Percent
Vocal polyp	3	1.3
Non specific inflammation	29	12.3
Giant cell tumour	2	.9
Osteosarcoma	1	.4
Meningioma	3	1.3
Glioma	8	3.4
Ependymoma	1	.4
Squamous papilloma	5	2.1
Capillary hemangioma	17	7.2
Epidermoid cyst	13	5.5
Tonsillitis	6	2.6
Squamous cell carcinoma	49	20.9
Lipoma	11	4.7
Paraganglioma	3	1.3
Nerve sheath tumour	3	1.3
Pilomatricoma	1	.4
Basal cell carcinoma	9	3.8
Lymphoma	13	5.5
Tubercular lymphadenitis	4	1.7
Hurthle cell adenoma	2	.9
Papillary thyroid carcinoma	6	2.6
Colloid goitre	9	3.8
Vocal nodule	6	2.6
Nasal polyp	11	4.7
Chondroid syringoma	1	.4
Warthin tumour	1	.4
Pleomorphic adenoma	6	2.6
Mucoepideroid carcinoma	1	.4
Adenoid cystic carcinoma	1	.4
Chronic sialadenitis	5	2.1
Nasopharyngeal carcinoma	4	1.7
Poorly differentiated carcinoma	1	.4
Total	235	100.0

DISCUSSION:

A spectrum of biopsied head and neck lesions include a variety of differential diagnosis ranging from inflammatory to neoplastic [7]. Head and neck lesions include pathologies from anatomic sites such as oral cavity, nasal and paranasal sinuses, upper airway (including nose, pharynx and larynx), eye, ear, salivary glands, thyroid and neck. Among many pathologies of head and neck only most frequent are discussed. In the present study, a total of 235 cases were studied. In our study, the age ranged from 5months to 93 years. Capillary hemangioma was the histopathological lesion seen in the youngest patient included in the study. Poorly differentiated squamous cell carcinoma was seen in the patient aged 93 years. The maximum number of cases was present in the age range of 21 to 60 years contributing to 62.1%, with the highest percentage being between 51 to 60 years. 9.8% cases were seen in pediatric and adolescent age group. In a study by Lei F et al, most lesions were distributed in a similar 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 [8]. Kanu OO et al in their study, noted age range from 2 to 76 years in patients with head and neck lesions [9]. In the present study, the number of male patients were higher (57.4%) as compared to female patients (42.6%) with a male to female ratio of 1.35:1. Similar observations were noted in the study by Ravi M et al who reported male predominance in their study with male: female ratio of 1.43:1.13 [10]. Urooj et al al reported 54% male and 46% female patients in their study [11]. 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 [9]. 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 [8].

This could probably be explained by a very large sample size of their study as compared to ours and different demographics. In the present study, the topographic distribution of head and neck lesions were categorized into twelve main sites which in the decreasing order of frequency of involvement were skin and soft tissues, oral cavity, larynx, nasal and paranasal sinus, thyroid, lymph nodes, salivary gland, intracranial, otologic, nasopharynx and oropharynx, eye and maxillofacial skeleton. Histopathologically, the lesions were broadly grouped into non neoplastic, benign and malignant accounting for 31.9%, 29.8% and 38.3% respectively. Similarly least number of

benign lesions were noted in the study by Lei F et al [8]. However, Kanu OO et al [9] observed highest number of benign cases (63.3%) among head and neck lesions which was different from our results. Malignant lesions were noted to be highest (25 cases) in the age group of 61-70 years followed by 18 cases in the age group of 51-60 years. Also, maximum number of benign lesions were seen in the age group of 21-50 years. These observations were in agreement with the findings of Popat V et al [12]. Our research study showed a preponderance of males in all the three histopathological categories which was in accordance with the findings of Siddiqui M S et al [13]. A wide spectrum of histopathological lesions spanned across the twelve topographic sites studied. Lesions arising from the skin and the soft tissues were found to be maximum (37.1%) in present study. Of these, most number of cases were benign which is in agreement with the study done by Popat V et al [12]. Epidermoid cyst followed by hemangiomas was found to be the most common skin and the soft lesion 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 [8]. In our retrospective data , the malignant lesions were predominantly seen in oral cavity (22.2%). The most common site of involvement was buccal mucosa followed by tongue and lip. Kosam and Kujur also noted similar findings [14]. In the present study, the malignant lesion predominantly seen in skin and soft tissues was basal cell carcinoma followed by cutaneous squamous cell carcinoma. This was in accordance with observation of Hsieh CY et al [15]. Oral squamous cell carcinoma was the commonest malignancy reported in our study which was also seen in studies done by other authors [13,14,16].

Salivary glands constituted only 6% of all the head and neck lesions studied. Inflammatory lesions included mostly chronic sialadenitis. 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. A single case of Warthin tumour was reported. Malignant lesions included only mucoepidermoid and adenoid cystic carcinoma. carcinoma. These finding are comparable with findings of Popat V etal, Lei F et al, Teeda DR et al [11,8,17]. Popat V et al also reported maximum number of squamous cell carcinomas in throat. Out of the 7.2% of the cases of the thyroid gland found in our study, non-neoplastic thyroid lesions mainly colloid goiter was reported to be most frequent. Similar findings were reported by Popat V et al, Urooj A et al and Rahman MA et al in their respective studies [11,12,18]. Predominance of goitre in our study was in accordance with the demographic trends of our region which falls in the goitre belt of Himalayan and sub Himalayan region. Among the neoplastic lesions, Hurthle cell adenoma, papillary carcinoma and follicular carcinoma were reported. Tuberculous lymphadenitis was found to be the commonest non neoplastic lymph node lesion in the present study. Lymphomas were commonest malignant lymph node 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 [11,12]. Intracranial lesions constituted only 5.1% of the head and neck lesions in our retrospective study. Our results showed that gliomas and especially astrocytomas were the most common pathologic categorical entity similar to a global study conducted by Leece et al. [19]. Akmutrafi A et al reported meningioma as the most common single tumour entity in adults [20] similar to the results seen in our present study.

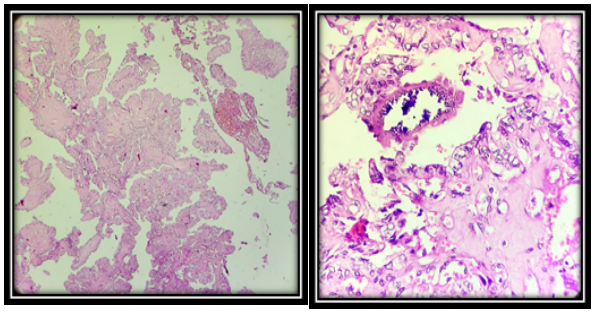

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Figure 3: Papillary thyroid carcinoma (H&E stain, x100), Figure 4: Note optically clear mucleus in PTC (H&E stain, x400)

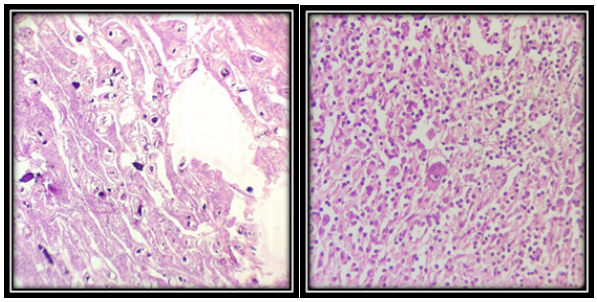

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Figure 5: Psammomatous meningioma (H&E stain, x100), Figure 6: Hodgkin's lymphoma, mixed cellularity (H&E stain, x100).

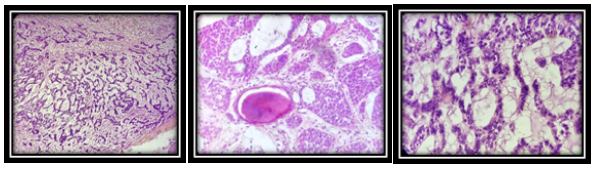

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Figure 8: Adenoid cystic carcinoma (H&E 40x), Figure 9: Adenoid cystic carcinoma (H&E 100x),Figure 10 : Adenoid cystic carcinoma (H&E, 400x)

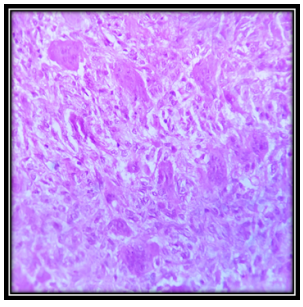

Figure 11: Giant cell tumour (H&E 400x)

CONCLUSION:

Head and neck lesions are commonly encountered in patients of all age group. The present study included a spectrum of lesions ranging from non neoplastic to highly malignant head and neck lesions. The data regarding age, sex distribution, frequency and histological type of lesion was evaluated in detail which helped in contributing to the baseline data of the head and neck lesions. We conclude that skin and soft tissue and oral cavity comprises maximum number of head and neck lesions. Epidermoid cyst was found to be the commonest non neoplastic lesion. and oral squamous cell carcinoma constitutes the highest percentage of all the malignancies. Site-specific data from different parts of the country provide the various trends and give clues to the etiological factors. Biopsy helps in detecting the disease at an early stage and hence contributes in controlling of high burden of head and neck cancer in India.

REFERENCES:

1. Szymańska K, Levi JE, Menezes A, et al. TP53 and EGFR mutations in combination with lifestyle risk factors in tumours of the upper aerodigestive tract from South America. Carcinogenesis. 2010;31:1054–1059
2. Hiyama T, Yoshihara M, Tanaka S, et al. Genetic polymorphisms and head and neck cancer risk (Review) Int J Oncol. 2008;32:945–73
3. Sharma M, Sharma A, Gandhi S, Khajuria A, Goswami KC. Histopathological patterns of head and neck lesions - a two year retrospective hospital based study. Int J Res Med Sci 2017;5:1282-7
4. Gamba PG, Messineo A, Antoniello LM, Boccato P, Blandamura S, Cecchetto G, et al. A simple exam to screen superficial masses, FNAC. Med Pediatr Oncol., 1995; 24: 97–9
5. Hashibe M, Brennan P, Benhamou S, et al. Alcohol drinking in never users of tobacco, cigarette smoking in never drinkers, and the risk of head and neck cancer: pooled analysis in the International Head and Neck Cancer Epidemiology Consortium. J Natl Cancer Inst. 2007;16:777–789. 99
6. Marron M, Boffetta P, Zhang ZF, et al. Cessation of alcohol drinking, tobacco smoking and the reversal of head and neck cancer risk. Int J Epidemiol. 2010;39:182–196
7. Rajbhandari M, Dhakal P, Shrestha S, Sharma S, Shrestha B, Pokharel M, et al. The correlation between fine needle aspiration cytology and histopathology of head and neck lesions in Kathmandu University Hospital. Kathmandu Univ Med J. 2013;44:296-9.
8. Lei F, Chen PH, Chen JY, Wang WC, Lin LM, Huang HC. Retrospective study of biopsied head and neck lesions in a cohort of referral Taiwanese patients. Head & Face Medicine. 2014;10:28
9. Kanu OO, Nnnoli MA, Asoegwu CA. Prevalence of head and neck tumors in Calabar, South Eastern Nigeria. Asian J Med Sciences. 2016;7:123-6.

10. Mehrotra R, Singh M, Gupta RK, Singh M, Kapoor AK. Trends of prevalence and pathological spectrum of head and neck cancers in North India. Ind J Cancer. 2005;42:89-93
11. Urooj A, Mirza T, Ali A, Agha MA, Rasool S. Frequency of head and neck lesions according to histopathologic diagnosis. J Dow Univ Health Sciences Karachi. 2011;5:70-3.
12. Popat V, Vora D, Shah H. Clinico-pathological correlation of neck lesions- A study of 103 cases. Internet J Head Neck Surgery. 2009;4(2)
13. Siddiqui MS, Chandra R, Aziz A, Saurav S. Epidemiology and histopathological spectrum of head and neck cancers in Bihar, a state of Eastern India. APJCP. 2012;13:3949-53.
14. Kosam S, Kujur P. Pattern of oral cavity lesion: A retrospective study of 350 cases. Int J Sci Stud. 2016;4:65-9.
15. Hsieh CY, Tsai HW, Chang CC, Lin TW, Chang KC, Chen YS. Tumors involving skin, soft tissue and skeletal muscle: benign, primary malignant or metastatic? APJCP. 2015;16:6681-4.
16. Modi D, Laishram RS, Sharma LD, Debnath K. Pattern of oral cavity lesions in a tertiary care hospital in Manipur, India. J Med Soc. 2013;27:199- 202.
17. Teeda DR, Akarsh MP, Sindhura P, Swathi V. A histopathological study of salivary gland lesions. IOSR-JDMS. 2016;15:80-6.
18. Rahman MA, Biswas MA, Siddika ST, Sikder AM, Talukder SI, Alamgir MH. Histomorpholgical pattern of thyroid lesions. Dinajpur Med Col J. 2013;6:134-40
19. R. Leece, J. Xu, Q. T. Ostrom, Y. Chen, C. Kruchko, and J. S. Barnholtz-Sloan, "Global incidence of malignant brain and other central nervous system tumors by histology, 2003-2007," Neuro-Oncology, vol. 19, no. 11, pp. 1553–1564, 2017.
20. Amna Almutrafi, Yara Bashawry, Wafaa AlShakweer, Musa Al-Harbi, Abdullah Altwairgi, Sadeq Al-Dandan, "The Epidemiology of Primary Central Nervous System Tumors at the National Neurologic Institute in Saudi Arabia: A Ten-Year Single-Institution Study", Journal of Cancer Epidemiology, vol. 2020, Article ID 1429615, 9 pages, 2020.