Original Research Article

HISTOPATHOLOGICAL SPECTRUM OF HEAD AND NECK LESIONS IN PEDIATRIC POPULATION IN A TERTIARY CARE CENTRE IN M.P. A RETROSPECTIVE STUDY OF 1 YEAR

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Abstract

BACKGROUND-Head and neck masses contributes to a large proportion of tumors in pediatric age group. We present a spectrum of such lesions we most commonly stumbled upon in our department in last one year.

AIM-To evaluate and study the frequency, distribution and histopathological spectrum of head and neck masses presented at a tertiary care centre in M.P.

METHODS-It is a retrospective study where all the specimen and biopsies of head and neck lesions of pediatric age group received in the Department of Pathology in M.G.M medical and M.Y hospital were analyzed for their age, gender, site and diagnosis and then were further categorized accordingly. Clinical ,radiological, Cytologically (wherever possible) and histopathological data was retrieved from the medical records.

RESULT- A total of 200 cases were studied, including 120 males and 80 females. Out of which 40 cases were benign, 15 malignant, 100 inflammatory, 25 vascular and 20 congenital cases which were further subdivided on the basis of site. Most common histopathological type being inflammatory lesions of neck.(reactive hyperplasia of lymph nodes preceding bacterial or viral infection) at the age of 7 to 12years.

CONCLUSION-The lesions of head and neck in Pediatric age group includes a wide spectrum of lesions. A comprehensive knowledge of borders and contents of fascial spaces of neck combined with thorough histopathological assessment backed by a detailed radiological report helps in ensuring a proper diagnosis and choosing the right modality of treatment.

KEYWORDS- histopathological, spectrum, head, neck, lesions & pediatric.

1. INTRODUCTION

Indeed, the head and neck region presents a diverse array of lesions, spanning various anatomical structures from scalp to salivary glands, the differential diagnosis encompasses a range of conditions including cyst, neoplasia and inflammatory conditions[1-3]. Head and neck neoplasm rank among the most common malignancies globally, with factors like tobacco, alcohol and socioeconomic conditions contributing to their prevalence. Its important to note that whole head and neck neoplasia is less common in pediatric population compared to adults certain tumors like neuroblastoma, epulis, teratoma, lymphoma, retinoblastoma,

plexiform neurofibroma, pilomatricoma can affect this age group. Timely preventive measures and screening programs play a crucial role in early detection and prevention[4-7]. In cases of mases involving nodal or glandular structures, open surgical biopsy with histopathological examination remains the gold standard for accurate diagnosis[8].

AIM

To investigate and analyze the histopathological subtypes, frequency, distribution of head and neck lesions in pediatric age group in a tertiary care centre in M.P. This information can contribute to better understanding of the prevalence and characteristic of such lesions aiding in diagnosis and treatment strategies.

2. MATERIAL AND METHOD

SOURCE OF DATA
Study was carried out in post graduate pathology department at Mahatma Gandhi Memorial Medical College and M.Y Hospital a tertiary care centre in Indore, M.P.

INCLUSION CRITERIA
A diverse demographic encompassing various age group and gender from birth till 15 years of age are used specially on lesions within the head and neck.

EXCLUSION CRITERIA
1) Age group more than 15 years of age.
2) Intracranial lesions
3) Lesions lacking specific pathology.

STUDY DESIGN
Cross sectional analytical study

METHOD OF COLLECTING DATA
The data collection strategy adopted in this retrospective study, conducted over a period of 1year in Indore a tertiary care centre where it was categorized by meticulousness. To ensure a comprehensive analysis, the demographic particulars of the subject where retrieved from departmental database. The histopathological assessment was undertaken by two proficient pathologist. In instances where additional diagnostic confirmation was required IHC and or histopathological staining were judiciously employed. A stringent protocol for resolution of discrepancies was in place. Per slide reviews were primary mechanism with consensus achieved through mutual discussion.

STATISTICAL ANALYSIS
In this cross sectional analysis, data was gathered , tabulated and systematically examined using relevant statistical methods. The findings were then compared to those of previous studied, leading to the formulations of distinct conclusions based on the observed patterns and treads.

3. RESULTS
A total of 200 cases were studied, including 120males and 80 females. Out of which 40 cases were benign, 15 malignant, 100 inflammatory, 25 vascular and 20 congenital cases which were further subdivided on the basis of site. Most common histopathological type being inflammatory lesions of neck.(reactive hyperplasia of lymph nodes preceding bacterial or viral infection) at the age of 7 to 12years.

Table 1-Classification of Head and Neck lesions as per age and sex

AGE	CONGENITAL		INFLAMMATORY		BENIGN		MALIGNANT		VASCULAR		TOTAL	
	M	F	M	F	M	F	M	F	M	F	M	F
0-4	15	05	05	10	02	02	02	03	12	08	36	28
5-8	-	-	10	05	10	06	06	02	03	02	29	15
9-12	-	--	30	25	08	04	01	01	-	-	39	30
13-15	-	-	12	03	04	04	-	-	-	-	16	07

As per the second table the inflammatory lesions were subdivided as reactive hyperplasia with a total number of 38 cases preceding bacterial or viral infections, epidermal inclusion cyst with a number of 06 cases , dermoid cyst with a number of 07 cases, chronic tonsillitis with a number of 14 cases, tubercular lymphadenitis with a number of 19 cases, moluscum contagiosum with a number of 04 cases and cholesteatoma with a number of 12 cases , retrobulbar hydatis cyst 01 case as per the age criteria with a maximum number cases beign of reactive hyperplasia preceding bacterial and viral infection between the age of 9-12 years of age.
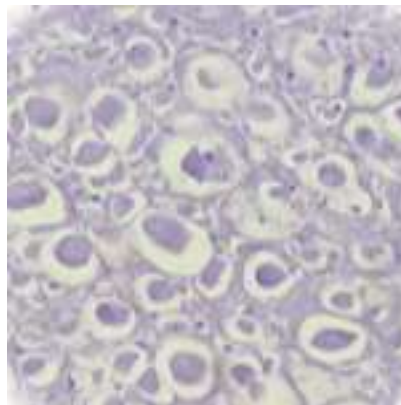

Fig. 1: Showing microscopic view: Molluscum contagiosum (40x)

Table 2-Classification of Head and Neck lesions as per age and sex and Inflammatory lesion.

AGE	REACTIVE HYPERPLASIA	EPIDERMAL INCLUSION CYST	DERMOID CYST	TUBERCULAR LYMPHADENITIS	CHRONIC TONSILITIS	MOLUSCUM CONTAGIOSUM	CHOLESTEATOMA	RETROBULBUR HYDATID CYST
0-4	3	-	02	-	-	-	-	01
5-8	10	04	03	08	02	03	-	-
9-12	20	02	-	05	08	01	10	-
13-15	05	-	02	05	04	-	02	-

As per the third table the benign lesions were further subdivided as sebaceous adenoma with a number of 06 cases, parathyroid adenoma with a number of 02 cases, pleomorphic adenoma with a number of 01 case, pilomatricoma with a number of 06 cases, lipoma wit a number of 04 cases, ranula with a number of 08 a cases, mucocele with a number of 07 a cases, epulis wit a number of 04 cases and dermolipoma with a number of 02 cases. The maximum number of cases beign of mucocele between the age group of 9-12 years of age.

Table 3- Classification of Head and Neck lesions as per age and sex and Benign lesion.

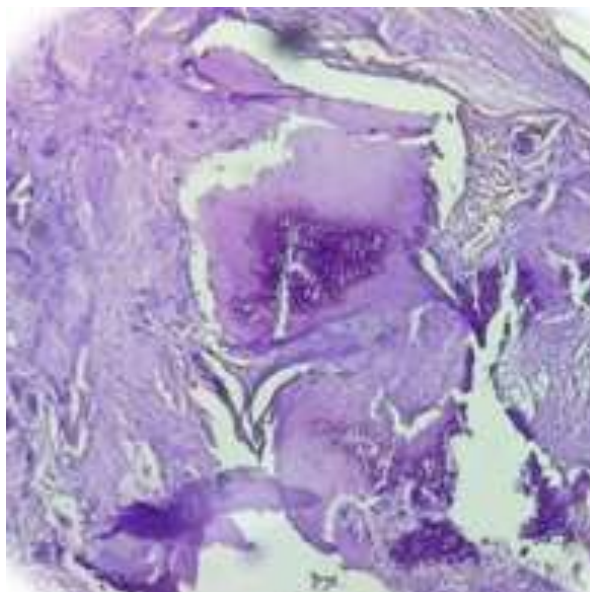| AGE	SEBACEOUS ADENOMA	PARATHYROID ADENOMA	PLEOMORHIC ADENOMA	PILOMATRICOMA	LIPOMA	RANULA	MUCOCELE	EPULIS	DERMOLIPOMA	KELOID
0-4	-	-		-	-		-	-	-	-
5-8	04	-		-	-	04	02	04	-	04
9-12	-	-		05	-	-	04	-	02	-
13-15	02	02	01	01	04	-	01	-	-	-

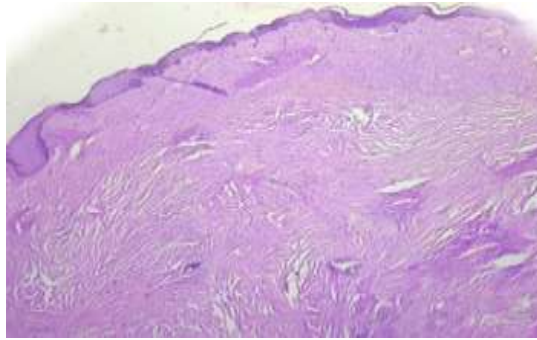Fig. 2: Showing microscopic view: Pilomatricoma (40x)

Fig. 3: Showing microscopic view: Keloid (40x)

As per the fourth table malignant lesions were subdivided into lymphoma with a number of 04 cases, hemangioblast with a number of 01 case, retinoblastoma with a number of 02 cases, plexiform neurofibroma 01 case as per the age criteria with a maximum number of cases beign of lymphoma and small round blue cell tumour.
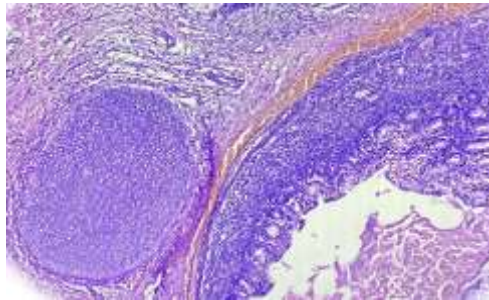

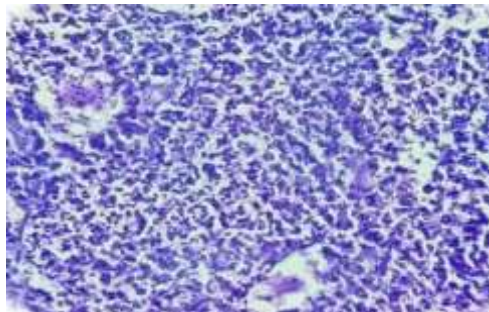Fig. 4: Showing microscopic view: Mature Teratoma(40x)

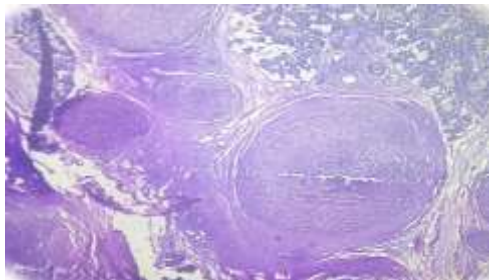Fig. 5: Showing microscopic view: Retinoblastoma (40x)

Fig. 6: Showing microscopic view: Neuroblastoma (40x)

Table 4-Classification of Head and Neck lesions as per age and sex and Malignant lesion.

AGE	LYMPHOMA	HEMANGIOBLAST	RETINOBLASTOMA	PLEXIFORM NEUROFIBROMA	IMMATURE TERATOMA	SMALL ROUND BLUE CELL TUMOUR	NEUROFIBROMA
0-4	-	01	01	-	02	02	-
5-8	-	-	01	-	-	-	-
9-12	02	-	-	01	-	02	01
13-15	02	-	-	-	-	-	-

As per the fifth table congenital and vascular lesions were subdivided as thyroglossal cyst with 05 cases, branchial cyst with 06 cases, cystic hygroma with 04 cases, encephalocele with 02 cases, menigomyelocele with 03 cases, hemangioma with 20 cases and lymphangioma with 05 cases summing it up maximum number of congenital cases being that of branchial cyst and hemangioma of vascular cases as per the age criteria.
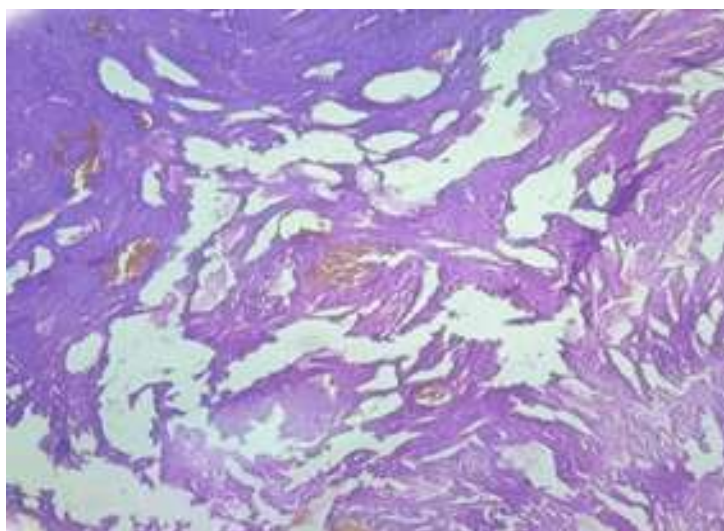

Fig. 7: Showing microscopic view: Lymphangioma(40x)

Table 5 -Classification of Head and Neck lesions as per age and sex Congenital lesion and Vascular lesion.

AGE	THROGLOSSAL CYST	BRANCHIAL CYST	CYSTIC HYGROMA	ENCEPHALOCELE	MENIGOMYELOCELE	HEMANGIOMA	LYMPHAGIOMA
0-4	03	04	04	02	03	06	03
5-8	02	02	-	-	-	05	-
9-12	-	-	-	-	-	04	02
13-15	-	-	-	-	-	05	-

According to the sixth table the cases were subdivided as per the site involved and maximum

cases beign that of neck totaling it to 105 cases.

Table 6-Classification of Head and Neck lesions as per Sites involved

SITE	BENIGN	MALIGNANT	INFLAMMATORY	CONGENITAL	VASCULAR	TOTAL
EYE	06	02	01	-	-	09
EAR	04	-	12	-	-	12
NOSE	-	-	-	-	-	-
FACE AND SCALP	07	03	11	-	25	46
ORAL CAVITY	11	-	14	-	-	29
NECK	12	10	62	20	-	105

4. DISCUSSION

1)**PREVALENCE AND AGE DISTRIBUTION-** Studied by Sharma .et.al found that the highest number of cases in the pediatric age group were in the 11-20 years range on the contrary in the present study highest no. of cases in pediatric age group were 7-12 years of age suggesting in significant presence of head and neck lesions in the demographic[9-13].

2)**TYPES OF LESIONS-**Inflammatory lesions are more common in the pediatric age group with a majority of cases falling into this category. Contradictory to the findings of other studies such as by Jones and Franklin and Sharma et.al which reported a higher prevalence of benign lesions.

3)**CLINICAL PRESENTATION-**Pediatric head and neck lesions often presents with symptoms like non healing ulcers, difficulty in breathing, swallowing, issues or voice changes[14-18]. The heightened concern of parents for their children health leads to early medical attention and diagnosis as noted by Manjari M.et.al and supported by Mehrotra R.et al.

4)**DIAGNOSIS AND MANAGEMENT-**Multidisciplinary approaches involving pediatricians, otolaryngologist and other specialist are crucial for accurate diagnosis and management as higlightened by various studies. Diagnostic modalities such as imaging studies and histopathological assessments aid in characterizing the nature of the lesion ensuring appropriate treatment strategies[19].

5)**PROGNOSIS AND LONG TERM OUTCOMES-**Timely detection and management are essential for favourable outcomes in pediatric patients. Long term follow up may be necessary to monitor for recurrence or any adverse affects on growth and development as emphasized by

Mehrotra R.et.al. and other authors.

By incorporating findings from multiple studies, including those of Sharm.et. al, Lei F.et.al, Urooj A .et.al, Mehrotra R.et.al and others a more comprehensive understanding of head and neck lesions in pediatric age group emerges, enabling better informed clinical decision making and patient care[20-21].

5. CONCLUSION

While head and neck lesions in pediatric population are relatively less common compared to adults, they can still present unique challenges. Timely diagnosis and management are crucial to ensure optimal outcomes, given the potential impact on growth and development. Biopsy remains essential for accurate diagnosis, although considerations such as patient cooperation and anatomical differences must be taken into account. Further research is warranted to better understand the etiology, natural history, and optimal treatment approaches for pediatric head and neck lesions. Additionally, raising awareness among health care providers and caregivers about the signs and symptoms of these lesions can facilitate early detection and intervention, utltimately improving the prognosis for affected children.

6. REFERENCES

1. Flint PW, Harkar LA. (eds); Mc Guirt, Differential diagnosis of neck masses. In Cummings CW, Cummings Otolaryngology Head and Neck Surgery 4th edition Elsevier Mosby 2005;Vol 3:pp 2542.
2. Ahluwalia H, Gupta SC, Singh M, Gupta SC, Mishra V, Singh PA. Spectrum of head and neck cancers at Allahabad.J Otolaryngol Head Neck Surg. 2001;53:16-20.
3. National Cancer Registry Programme-Biennial Report (1988-89) of the National Cancer Registry Programme. New Delhi: Indian Council of Medical Research, 1992;3-42.
4. Gupta PC, Sinor PN, Bhonsle RB, Pawar VS, Mehta HC. Oral submucous fibrosis in India: a new epidemic? Natl Med J India 1998;11:113-6.
5. Sankaranarayanan R, Masuyer E, Swaminathan R, Ferlay J, Whelan S. Head and neck cancer: a global perspective on epidemiology and prognosis. Anticancer Res. 1998;18:4779-86.
6. Mehrotra R, Singh M, Kumar D, Pandey AN, Gupta RK, Sinha US. Age specific incidence rate and pathological spectrum of oral cancer in Allahabad. Indian J Med Sci 2003;57:400-4.
7. Patt BS, Schaefer SD, Vuitch: Role of Fine Needle Aspiration in the evaluation of Neck masses. Med clin North AM 1993;77(3):611-23.
8. Rathod GB, Parmar P. Fine needle aspiration cytology of swellings of head and neck region. Indian J Med Sci 2012;66:49-54.
9. 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 Canc 2005;42:89-93.
10. Sharma M, Sharma A, Gandhi S, Khajuria A, Goswami KC. Histopathological pattern of head and neck lesions-a two year retrospective hospital based study. Int J Res Med Sci 2017;5:1282-7.
11. Lei F, Chen PH, Chen JY, Wang WC, Lin LM, Huang HC.Retrospective study of head and neck lesions in a cohort of referral Taiwanese patients. Head and Face medicine. 2014;10:2
12. Urooj A, Mirza T, Ali A, Agha MA, Rassol S.Frequency of head and neck lesions according to histopatholohical diagnosis.J Dow Univ Health Sciences Karachi. 2011;5:70-3.
13. Manjari M, Popli R, Paul S, Gupta VP, Kaholon SK. Prevalence of oral cavity, pharynx, larynx and nasal cavity malignancies in Amritsar, Punjab. Indian J Otolaryngol Head Neck Surg 1999;48:191-5.
14. Ponder TB, Smith D, Ramzy I. Lympadenopathy in children and adolescent: Role of

fine needle aspiration in management . Cancer Detect Prev.2000;24:228-33.

15. Jones AV, Franklin CD: An analysis of oral and maxillofacial pathology found in adults over a 30- year period. J Oral Pathol Med. 2006;35:392-401.

16. Bhurgri Y, Bhurgri A, Usman A, Pervez S, Kayani N, Bashir I et al. Epidemiological review of head and neck cancers in Karachi. Asian Pac J Cancer Prev. 2006;7(2):195-200.

17. Ramachandra NB. The hierarchy of oral cancer in India. Int J Head Neck Surg. 2012;3:143-6.

18. Maniyar AU, Patel HL, Parmar BH. Study of Cytodiagnosis of Head and Neck Neoplastic Lesions and comparision with histopathology. RRJMHS 2013;2(2):54-9.

19. Scully C, Began J. Oral Squamous Cell Carcinoma overview. Oral Oncol. 2009;45:301-8.

20. Van der Schroeff MP, Baatenburg de, Jong Rj. Staging and Prognosis in head and neck Cancer. Oral Oncol. 2009;45:356-60.

21. Mohamed MH, Hitam S, Brito-Mutunayagam S, Yunus MRM. Role of FNAC in neck masses.