

**STUDY OF DISTRIBUTION OF TUMOURS IN HEAD AND NECK REGION**

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**ABSTRACT**

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**BACKGROUND**

"Head and neck tumours" form highly specific group, mainly arising in the peripheral nerves, salivary glands, paranasal sinuses, connective tissue, epithelium and skin. Fine needle aspiration cytology (FNAC) is well accepted as a useful diagnostic technique in the management of adult patients with head and neck lumps. Objective was to study the incidence of various "Head and Neck Tumours" in patients attending medical college Hospital Jabalpur and also to correlate histo-cyto pathological findings with clinical findings.

**MATERIALS AND METHODS**

The present study comprises of 379 patients who attended the outpatient department or were admitted in the wards of associated hospital of N.S.C.B. Medical College, Jabalpur during the period from July 2003 to July 2005 with the presenting complaint of Tumour. The study was carried out for two years. Permission from Institutional Ethics Committee was obtained. From each and every patient included in the study, initially informed individual consent was taken.

**RESULTS**

Benign tumours constitute 107 (28.2 percent) and malignant tumours constitute 272 (71.80 percent) benign and malignant tumour were more common in males constitutes (56.1 percent) and (66.2 percent) respectively. Male to Female ratio for all head and neck tumours was (1.72:1) for malignant tumours were (2:1) and for benign tumours was (1.27: 1). Cytology was also done in 51 cases out of which 26 were lymph node showing metastatic squamous cell carcinoma 13 FNA were from primary lesions shows squamous cell carcinoma. In four cases, FNA was negative for malignancy but positive histopathologically. 2 benign tumours were incorrectly diagnosed remaining 6 tumours were diagnosed correctly, which were benign.

**CONCLUSION**

Incidence, patterns and trends of head and neck tumours were analysed in all age group patients. Incidence of head and neck tumours in relation to all tumours was 23.56 percent. Total 379 cases were studied, out which 272 (71.8 percent), were malignant while 107 (28.2 percent) were benign. 213 tumours were found in oral cavity out of them 187(87.8 percent) were malignant and 26 (13.2 percent) were benign.

**KEYWORDS**

Head and Neck tumours, Fine needle aspiration cytology (FNAC), Cytology and Histopathology of Tumours.

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**BACKGROUND**

"Head and neck tumours" form highly specific group, mainly arising in the peripheral nerves, salivary glands, paranasal sinuses, connective tissue, epithelium and skin.

Fine needle aspiration cytology (FNAC) is well accepted as a useful diagnostic technique in the management of adult patients with head and neck lumps. Until recently the application of FNAC to the paediatric population was largely

in Indian and American, paediatric literature, previous reports have studied its utility in only small series of paediatric patient. The current study evaluates the role of FNAC as a diagnostic tool in investigation of head and neck lesion in children. Fine needle aspiration (FNA) biopsy has become an accepted screening tool to help select patients for surgery.<sup>1</sup>

Fine needle biopsy of the major salivary glands was performed on 160 patients. In 146 patients with satisfactory samples, the cytologic diagnosis was correlated with clinical follow – up and histopathology findings. There were 24 malignant lesions. 10 of which were primary and 14 metastatic. The overall accuracy was 98 percent. The sensitivity of the technique was 87.5 percent. There was no false positive diagnosis. There were three false - negative diagnosed due to sampling errors and inexperience during the initial period of the study. This study documents that

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needle aspiration biopsy cytology of the; salivary glands was accurate, simple, rapid, inexpensive, well tolerated and harmless to the patient.<sup>2</sup>

The cytology and histopathology in thyroid tumours, observed two cases of thyroid carcinoma containing clear cells. In one of them the bulk of the tumour was composed of clear cells. The second was a follicular carcinoma with a prominent clear cell component comprising about one third of the tumour cell population. Cytologic smears prepared from needle aspirates of thyroid in both cases provided the initial diagnosis, which was proven by subsequent thyroidectomy and histopathology examination.<sup>3</sup>

The present study analyses our experience with management of 58 cases of cervical metastatic with occult primary. A total of 1127 biopsy proven head and neck cancer patients were seen and managed during February, 1982 to February 1985 indicating a prevalence of 5.2 percent. A majority (60 percent) of these patients had no disease, indicating late presentation of these cases in our country. A protocol for the management of these cases has been presented and the controversies highlighted.<sup>4</sup>

## MATERIALS AND METHODS

The present study comprises of 379 patients who attended the outpatient department or were admitted in the wards of associated hospital of N.S.C.B. Medical College, Jabalpur during the period from July 2003 to July 2005 with the presenting complaint of Tumour. Fine needle aspiration cytology was done in 51 cases and tissue biopsy for histopathological examination was done in all cases. All cases included in present series were taken up for study, irrespective of their age and sex. A detailed clinical examination was done.

*The History was Elucidated with Special References to the following*

1. Tumour– site, size, and shape, consistency, increasing or decreasing.
2. Pain and tenderness
3. Duration of tumour
4. Fixity to deeper structure
5. Lymph node involvement
6. Operation done (Previously)
7. Other treatment e.g. chemotherapy, radiation
8. Special investigations.

Clinical diagnosis was made on the basis of history and clinical findings. The cytological findings and the diagnosis made accordingly were compared with histopathological examination of tissue obtained. The study was carried out for a period of 2 years and permission from Institutional Ethics Committee was obtained. From each and every patient included in the study, initially informed individual consent was taken.

## RESULTS

Sex	Benign	Malignant
Male	60(56.1%)	180(66.2%)
Female	47( 53.9)	92(33.8%)
Total	107 (28.2%)	272(71.8%)

**Table 1. Sex Distribution of Benign and Malignant Tumours of Head and Neck**

Table No. 1 shows incidence of benign and malignant tumours and sex distribution of tumour of head and neck.

Benign tumours constitute 107 (28.2 percent) and malignant tumours constitute 272 (71.80 percent) benign and malignant tumour were more common in males constitutes (56.1 percent) and (66.2 percent) respectively.

Male to Female ratio for all head and neck tumours was (1. 72:1) for malignant tumours were (2:1) and for benign tumours was (1.27: 1).

Age Group	No. of Head and Neck Tumours			
	Male		Female	
	No.	Percent	No.	Percent
0 – 4	5	2.0	6	4.3
5 – 9	3	1.25	5	3.6
10 – 14	10	4.2	7	5.0
15 – 24	13	5.4	5	3.6
25 – 34	15	6.2	12	8.6
35 – 44	45	18.7	29	21.0
45 – 54	55	22.9	29	21.0
55 – 64	57	23.7	33	23.7
65+	37	15.4	13	9.3
<b>Total</b>	<b>240</b>	<b>100.00</b>	<b>139</b>	<b>100.00</b>

**Table 2. Age and Sex Distribution of Head and Neck Tumours**

Table No 2 shows age and sex distribution of head and neck tumours. Youngest patient was 8-month-old and Eldest was 84 years. Maximum number of cases in our study was between 55 – 64 years of age group (23. 7 percent). Followed by age group 45 – 54 years (22.2 percent). This shows that head and neck tumours were more common in between 45-64-year, minimum number of cases were between 5-9 years. Males were more affected in all age group.

The Mean age of benign tumours was 31.9 years, malignant tumours were 50.5 years and all tumours of head and neck region was 45.2 years.

Site	Total No. of Tumours		Benign		Malignant	
	No. of Cases	%	No. of Cases	%	No. of Cases	%
Oral cavity	214	56.2	26	24.2	187	68.7
Skin	35	9.2	28	26.1	07	2.6
Hypopharynx	32	8.4	0	0	32	11.7
Salivary gland	22	5.8	18	16.8	04	1.5
Soft tissue	18	4.7	16	15.0	0	0
Maxillary Sinus	14	3.7	01	0.9	13	4.8
Oropharynx	12	3.2	0	0	12	4.4

Orbit	9	2.4	04	3.7	07	2.5
Nasal Cavity	6	1.6	03	2.8	03	1.1
Bone	5	1.3	04	3.7	01	0.4
Larynx	4	1.1	01	0.9	03	1.1
Nasopharynx	4	1.1	04	3.7	0	0
Thyroid gland	3	0.8	02	1.9	01	04
Lymph node	2	0.5	0	-	02	0.7

**Table 3. Site Distribution of Head and Neck Tumours**

Table 3 shows site distribution of head and neck tumours, maximum number of cases were in oral cavity 213 (56.2 percent), followed by skin 35 (9.2 percent), hypopharynx 32 (8.4 percent), Salivary gland 22 (5.2 percent), soft tissue 18 (4.7 percent). Maxillary sinus 14 (3.7 percent), Oropharynx 12 (3.7 percent), orbit 9 (2.4 percent), nasal cavity 6 (1.6 percent), bone 5 (1.3 percent), nasopharynx, and larynx (1.1 percent) in each, thyroid 3 (0.8 percent) and lowest was in lymph nodes (0.5 percent).

Sex	Benign	Malignant
Male	12 (46.2%)	114 (61%)
Female	14 (53.8%)	73 (39%)
Total	26 (12.2%)	187(87.8%)

**Table 4. Age and Sex Distribution of Benign and Malignant Tumours of Oral Cavity**

Table No 4 Shows age and sex distribution of benign and malignant tumours of oral cavity, maximum number of cases were recorded in oral cavity 213 Cases (56.2 percent), out of 213 cases 187 (87.8 percent) Were malignant and only 26 (12.2 percent) were benign.

Maximum number of cases were in oral cavity, they constitute (68.7 percent) of all malignant tumours of head and neck. Benign tumours (53.8 percent) were common in females while malignant tumours were common in males (61 percent)

Cytological Diagnosis	Histopathological Diagnosis	No
Metastatic Squamous Cell Carcinoma	Squamous Cell Carcinoma	25
Squamous Cell Carcinoma	Squamous Cell Carcinoma	13
Malignancy not seen	Squamous Cell Carcinoma	03
Adenomatous goiter	Sebaceous cyst	01
Ameloblastoma	Ameloblastoma	01
Epidermal Cyst	Epidermal Cyst	01
Angiofibroma	Anaplastic carcinoma minor salivary gland	01
Lipoma	Haemangioma	01
Pleomorphic Adenoma	Pleomorphic Adenoma	02
Suspicious for malignancy	Diffuse lymphocytic lymphoma	01
Suspicious for malignancy	Adeno carcinoma	01

Malignant cells seen, typing not possible (Metastatic)	Retinoblastoma	01
<b>Total</b>		<b>51</b>

**Table 5. Showing Comparison between Cytologically and Histopathologically Diagnosed Tumours in 51 Cases**

Table 5 shows cytological diagnosed cases.

Cytology was also done in 51 cases out of which 26 were lymph node showing metastatic squamous cell carcinoma 13 FNA were from primary lesions shows squamous cell carcinoma. In four cases, FNA was negative for malignancy but positive histopathologically. 2 benign tumours were incorrectly diagnosed remaining 6 tumours were diagnosed correctly, which were benign.

*Sensitivity and specificity of cytology for malignant tumours.*

	Number of Cases
True positive	41
True negative	6
False negative	4
False positive	0
<b>Total</b>	<b>51</b>

#### *True Positive*

Histopathologically diagnosed malignant, cytologically also diagnosed malignant.

#### *True Negative*

Histopathologically diagnosed negative for malignancy, cytologically also negative for malignancy.

#### *False Negative*

Histopathologically diagnosed malignant but cytologically malignancy not seen.

#### *False Positive*

Histopathologically diagnosed negative for malignancy but cytologically diagnosed positive for malignancy.

Sensitivity and specificity of cytology for diagnosing malignant tumours.

*Sensitivity* - 91.1 percent.

*Specificity* – 100 percent.

*Positive Predictive Value* – 100 percent.

*Diagnosed Accuracy* – 91.1 percent.

## **DISCUSSION**

In department of pathology, NSCB Medical College, Jabalpur. 379 cases of head and neck tumours studied.

Incidence of head and neck malignancies in relation to all malignancies and sex incidence reported by various authors.

Very low incidence (4 percent) and (7.1 percent) was reported by Jaylakshmi et al (1989) at Korea and Kuala Lumpur respectively.<sup>5</sup>

Cho KJ et al (2002) reported 4 percent of head and neck malignancy in Korea.

Cho KJ (2002) also reported head and neck cancers as in the oral cavity – 25 percent, in Oropharynx 13 percent, Nasopharynx 9 percent Hypopharynx 8.4 percent, Nasal cavity 12.4 percent and Salivary gland 6.1 percent.<sup>6</sup>

Caddy and Cathin (1969) studied 606 cases of epidermoid carcinoma of the gum and found that 79 percent of all females and 88 percent of males showed age incidence between 50 to 80 years.<sup>7</sup>

Study of oral cancer in 57,518 industrial workers in Gujarat, reported a marked age-related increase in oral cancer prevalence.<sup>8</sup>

Malignant tumours were more common in males in our series. 65.9 percent (2: 1) Sanghvi et al (1989), 72 percent (2.3:1), Kamal et al (1996) 72 percent (2.9:1) and Kanhere et al 75.5 percent (3.1:1) also reported that maximum number of cases were in males.<sup>9</sup>

Laryngeal malignancies were highest reported by Kamat et al (1996) at Bombay.<sup>10</sup> followed by Louise Davies et al (2005) at USA. It thus shows laryngeal cancers occupy third rank in head and neck malignancy in India and gives a conclusion about prevalence of smoking habits in area. While oral cancers were more common where tobacco chewing, and alcohol consumptions was more prevalent.<sup>11</sup>

## CONCLUSION

Incidence, patterns and trends of head and neck tumours were analysed in all age group patients. Our study includes 379 cases diagnosed in NSCB Medical College and Hospital, Jabalpur during July 2003 to July 2005.

Clinical, cytological and histopathological correlation was done for diagnosis.

Our study revealed the following findings:

Incidence of head and neck tumours in relation to all tumours was 23.56 percent.

Total 379 cases were studied, out which 272 (71.8 percent), were malignant while 107 (28.2 percent) were benign.

Most common age group affected was 55 – 64 years (23.7 percent), followed by 45 -54 years (22.2 percent), suggesting the prolonged interval required for exposure to various etiological agents. The trend showed a decline at the two extreme age groups in the study.

Sex ratio for malignant tumours was (2:1) and for benign tumours was (1.27 percent)

213 tumours were found in oral cavity out of them 187(87.8 percent) were malignant and 26 (13.2 percent) were benign.

All the malignant tumours of oral cavity were squamous cell carcinomas; benign tumours were haemangioma, squamous papilloma retention cyst, Epulis and fibrolipoma.

Most common site of salivary gland tumours was minor salivary gland (45.4 percent) followed by parotid gland (36.4 percent), and submandibular gland (18.2 percent)

Bone tumours were 80 percent benign and 20 percent malignant. Orbital tumours were 77.8 percent malignant and 22.2 percent were benign. There were only three cases of thyroid tumours out of which 2 were benign and one was malignant.

In our study two lymph node biopsy were studied from which one was diffuse lymphocytic lymphoma another one was metastatic squamous cell carcinoma.

The emotions and philosophy behind all such scientific studies is to enlighten better approaches to relieve the ailing and suffering humanity in the form of accurate diagnosis and better treatment, same is true for this study.

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