

## Original Research Article

# Clinicopathological evaluation of the lesions of oral cavity, oropharynx, larynx and hypopharynx

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## ABSTRACT

**Background:** Early detection of malignancy substantially improves the survival in most head and neck cancers. A simpler and reliable screening method is something that is sought after by every clinician. Hence a clinicopathological study was carried out in the local population to study the pattern of various factors associated with the clinically suspicious lesions of the oral cavity, oropharynx, larynx and the hypopharynx. The role of exfoliative cytology was also evaluated.

**Methods:** Our study, comprised of a total of 50 cases clinically suspicious of being either premalignant or malignant lesions of the oral cavity, oropharynx, larynx and the hypopharynx. All the patients were examined thoroughly and diagnosed clinically. Thereafter they were subjected to both exfoliative cytology and histopathology.

**Results:** A malignant laryngeal lesion was the commonest. clinical diagnosis seen in 68% of the cases. On exfoliative cytology, the commonest finding was squamous cell carcinoma, seen in 34 (68%) cases. On histopathological examination, squamous cell carcinoma was found to be the commonest with 39 (78%) cases. The sensitivity and specificity of exfoliative cytology were observed as 84.6% and 90.90% respectively. The methods of diagnosis applied and their results were found to be significantly associated with a p value of 0.0119 which was <0.05.

**Conclusions:** The commonest cause for the suspicious lesions of the oral cavity, oropharynx, larynx and hypopharynx was squamous cell carcinoma seen in 78% of the cases. Rapid assessment tools like exfoliative cytology can aid in early detection of malignant lesions.

**Keywords:** Exfoliative cytology, Clinically suspicious, Malignant, Histopathology

## INTRODUCTION

The increasing rate of tobacco usage is associated with rising incidence of malignancies of the upper aerodigestive tract in South Asian countries.<sup>1</sup> Head and neck cancer constitutes the third most common type of cancer in India.<sup>2</sup> The tendency for premalignant and malignant lesions is further enhanced by the poor general health and nutrition of the population in addition to life style habits such as tobacco chewing and alcohol usage.<sup>3,4</sup> Besides these human papilloma virus infection status

(HPV) infection has also been seen as an important causative factor in head and neck squamous cell carcinoma.<sup>5</sup> Early detection of malignancy substantially improves the survival in most head and neck cancers. Though it's difficult to dodge the eyes of a good clinician yet simpler and reliable screening method is something that is sought after by every clinician. Hence it was appropriate to carry out a clinicopathological study in the local population and to study the pattern of various associated factors with the clinically suspicious lesions of

the oral cavity, oropharynx, larynx and the hypopharynx and evaluate the role of exfoliative cytology.

## METHODS

The present study, comprised of a total of 50 cases clinically suspicious for premalignant/malignant lesions of the oral cavity, oropharynx, larynx and the hypopharynx. It was a cross-sectional observational type of study undertaken in the departments of Otolaryngology-Head & Neck Surgery and Pathology of Indira Gandhi Medical College, Shimla, Himachal Pradesh, India from 2006 to 2007.

### Selection criteria

All patients with a clinical suspicion of being either a premalignant or a malignant lesion in the region of oral cavity, oropharynx, larynx and hypopharynx were included in the study. These included patients presenting with either a non-healing ulcer, a new growth, a white patch or a red patch at the concerned sites. Previously histologically proven cases, post-irradiated cases and congenital lesions were excluded from the study.

### Procedure

A detailed clinical history was recorded from each patient with a special emphasis on the life style, dietary habits and the environmental exposure of the patient. The patients were then examined thoroughly including general physical, systemic and complete ENT examination. The laboratory investigations included the routine haematological and biochemical tests, sputum for AFB (if required). Radiological investigations were done wherever indicated. Thereafter exfoliative cytology was done in each patient. Specimens for exfoliative cytology were obtained using cytobrush sampling. Wet mounts of 95% ethanol were used in our study for exfoliative cytology. This was followed by biopsy. Appropriate biopsy technique i.e. incisional biopsy, excisional biopsy or punch biopsy was applied in each patient as per the clinical diagnosis. The procedure was done under local anaesthesia or general anaesthesia. The biopsy specimens obtained were then duly labelled and preserved in 10% formalin vials for histopathological examination. A proper written informed consent was obtained in each case.

### Statistical analysis

The results were tabulated and expressed as percentages. Chi-square test was applied to test the significance of association between the variables.

## RESULTS

The suspicious lesions of the upper aerodigestive tract (excluding nasopharynx) are less likely to be seen in the younger age group (less than 30 years of age). Maximum

cases were seen in the age group of 41-70 years with a peak incidence in the sixth decade (38%) (Table 1).

**Table 1: Demographic data (n=50).**

Variable	Value
<b>Age (in years)</b>	<b>N (%)</b>
Mean age	56.5
31-40	02 (04)
41-50	12 (24)
51-60	19 (38)
61-70	11 (22)
71-80	05 (10)
>80	01 (02)
<b>Sex</b>	
Male	42 (84)
Female	08 (16)

Males were involved more frequently than females in the ratio of 5.25:1. Majority of the patients presented within six months of appearance of symptoms. Hoarseness was the commonest symptom seen in 28 (56%) patients followed by pain throat (36% patients) and dysphagia (20% patients). The duration of symptoms in most patients was less than 6 months in 36 cases (72%). Nine cases had duration of 6 months to 1 year, one case had duration of 1.5 year and 2 cases each had symptoms for 1.5-2 years and more than 2 years respectively (Table 2).

**Table 2: Duration of symptoms.**

Duration	No. of cases	Percentage
<b>0-6 months</b>	36	72
<b>6 months-1 year</b>	09	18
<b>1-1.5 year</b>	01	02
<b>1.5-2 years</b>	02	04
<b>&gt;2 years</b>	02	04
<b>Total</b>	50	100

**Table 3: Clinical diagnosis.**

Clinical diagnosis	No. of cases	Percentage
<b>Laryngeal malignancy</b>	34	68
<b>Hypopharyngeal malignancy</b>	04	08
<b>Oropharyngeal malignancy</b>	04	08
<b>Oral malignancy</b>	04	08
<b>Oral leucoplakia</b>	03	06
<b>Laryngeal leucoplakia</b>	01	02
<b>Total</b>	50	100.00

Amongst the patients included in the study, maximum cases (68%) were found to be those with a clinical diagnosis of a laryngeal malignancy. These were followed by hypopharyngeal and oropharyngeal malignancies with 04 cases (08%) each. Three cases (06%) were diagnosed clinically as malignant oral ulcer

and 3 cases (06%) as oral leucoplakia. One case (02%) each were those of laryngeal leucoplakia and malignant oral growth (Table 3). The commonest clinically suspicious lesion was an ulcerative lesion of the larynx seen in 64% of cases. On exfoliative cytology, the most common finding was squamous cell carcinoma, seen in 34 (68%) cases while 28% cases were observed as benign (Figure 1).

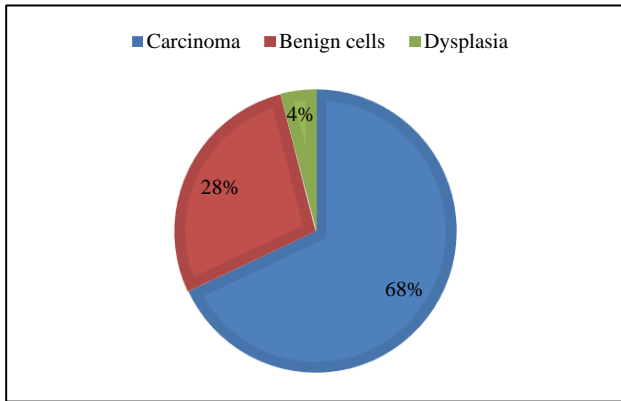


Figure 1: Findings on exfoliative cytology.

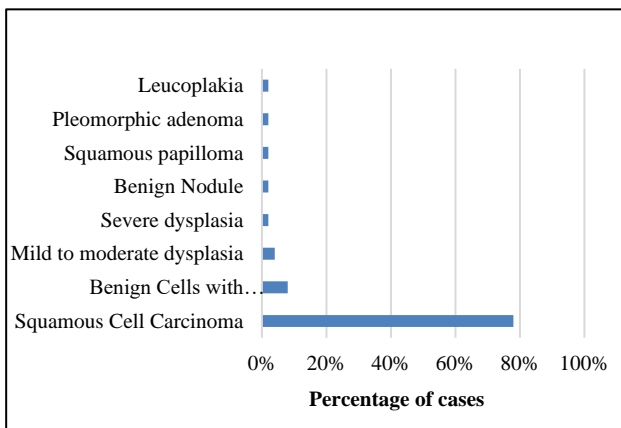


Figure 2: Histopathological diagnosis.

The most common cause for the suspicious lesions of the oral cavity, oropharynx, larynx and hypopharynx on histopathology was squamous cell carcinoma seen in 78% of the cases (Figure 2). Laryngeal carcinoma accounted for the majority of the malignancies (74.35%). Other common causes were laryngeal dysplasia in 3 cases (6%), pleomorphic adenoma (2%), leucoplakia in 1 case (2%), squamous papilloma in one case (2%) and laryngeal nodule in 1 case (2%). Tobacco smoking was the most common associated factor seen in 40 patients (80%) of total and 82% of the malignant cases, mainly in the form of beedi and cigarette smoking. Other associated habits seen were alcohol, tobacco chewing. Exfoliative cytology was significantly associated with the final histopathological diagnosis (Figure 3). It was observed to have a sensitivity of 84.6%, specificity of 90.90%, overall accuracy of 86% and a positive predictive value of 97.05%. On applying the Chi square test it was inferred

that the methods of diagnosis applied (clinical, exfoliative cytology and histopathology) and their results observed were significantly associated and p value was calculated as 0.0119 which was <0.05.

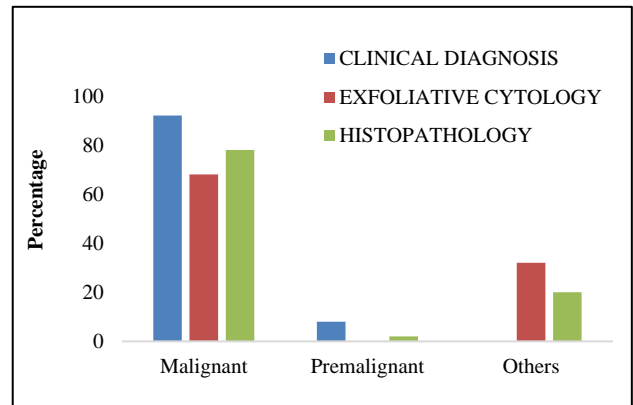


Figure 3: Clinicopathological comparative evaluation.

## DISCUSSION

This was a pilot study undertaken at a tertiary health care centre. It serves a large proportion of population residing in geographically tough areas of a hilly state. Their proper and timely evaluation assumes great significance keeping in view the already high incidence of malignancies of these regions. The age of patients in our study ranged from 31-82 years with a mean age of 56.5 years. The maximum patients (84%) were found to fall in the age group of 41-70 years at the time of presentation with a peak incidence in sixth decade. Our observations were in accordance with Wolfensberger et al who reported majority (90%) of the patients between 40-80 years.<sup>6</sup> Roy et al reported a maximum incidence in the age group of 41 to 70 years.<sup>7</sup> Agrawal et al reported the maximum number of cases (83%) in the age group of 41-70 years with a peak incidence in the sixth decade.<sup>8</sup> The pattern of age distribution can be attributed to the ongoing increased prevalence of habits such as smoking and drinking for long duration which are likely to result in premalignant and malignant lesions in later years of life. In our study a male predominance was seen with 84% males and 16% females. This again could be explained by the significantly higher prevalence of lifestyle habits such as tobacco smoking, tobacco chewing and alcohol consumption amongst males as compared to their female counterparts. Our observations were in accordance with the studies of Roy et al (males 87.5% and females 12.5%, male to female ratio 7:1), Wolfensberger et al (males 87% and females 13%), Busquets et al (males 84.5% and females 15.5%) and Verma et al (male to female ratio 7:1).<sup>6,7,9,10</sup> Though no specific regional distribution has been mentioned in the available literature, in our study, 84% cases belonged to the rural area whereas 16% of the cases were from urban areas. This regional distribution can be explained by the fact that ours is a rural based tertiary care centre catering mostly to the village population of the region. As regards

the duration of symptoms at the time of presentation in the present study, 72% patients were found to present within first 6 months of the appearance of symptoms. The observation is comparable to study by Wolfensberger et al (average duration of 4 months), Agarwal et al (duration of 3 months in majority) and Elwood et al.<sup>6,8,11</sup> Majority of patients in our study presented with the symptoms of hoarseness (50%) followed by pain throat (36%) and dysphagia (20%). The observation was comparable with those of Wolfensberger et al who reported pain, dysphagia and hoarseness as the key symptoms. Verma et al too reported hoarseness as the commonest symptom, seen in 73.9% patients followed by dysphagia 30.95% patients.<sup>6,10</sup> Studies have reported smoking in 79.59% patients with majority of them smoking more than 20 beedis/cigarettes a day.<sup>10</sup> Agrawal et al noticed that 83% patients had the habit of either tobacco chewing or smoking or both.<sup>8</sup> Quer et al saw that 91% Of the patients were smokers and 82% consumed alcohol.<sup>12</sup> Wolfensberger et al reported smoking and alcohol abuse in 85% cases.<sup>6</sup> Busquets et al reported that prolonged use of tobacco and alcohol identified in 88.1% and 79.8% of patients respectively.<sup>9</sup> In our series too 80% of the total cases and 82% of the malignant cases were smokers most of whom smoked more than 15 beedis/cigarettes per day. Length of period of smoking varied from 5 years to 40 years. Seventy two percent of the total cases and about 70% of the malignant cases were found to consume alcohol, mostly in the form of whisky. In our study, it was observed that majority of the cases (70%) cases had a primary site of tumour or a clinically suspicious lesion of the larynx (68% malignant and 2% premalignant lesions). This was followed by 14% cases of the oral cavity (8% malignant and 6% premalignant oral lesions). Eight percent cases each had presented with a malignancy of the hypopharynx and oropharynx. The observation was comparable with those of Roy et al who also saw majority of the cases (50%) from the laryngeal region (though they did not include the oral cavity in their study).<sup>7</sup> Kurtulmaz et al too had similar observations with 71.1% cases of localizations of the primary tumour in larynx, 8.8% in the oral cavity.<sup>13</sup> In the present study, sensitivity of 84.6%, specificity of 90.90% accuracy of exfoliative cytology was calculated as 86%. The results of the present study were in accordance with those observed by Scheifele et al who reported sensitivity of 92.3% (95% CI: 74.9-99.1%), and the specificity was 94.3%.<sup>14</sup> Roy et al who reported the sensitivity of exfoliative cytology as 82.5%.<sup>7</sup> They also reported a false negative rate of 12.5%. The false negative results have been reported in various other studies.<sup>15</sup> This has been attributed to various factors such as submucosal growth, inadequate smear and tumour cells getting entrapped in cotton fibres. In contrast to the present study, Aggarwal et al reported a sensitivity of 66.66%.<sup>8</sup> The lower value of sensitivity in their study could be attributed to the fact that the cytologic smears examined by them were simply air dried and wet mounts of 95% ethanol (as used in our study) were not used. In accordance with our study, Lundgren et al used exfoliative cytology in laryngeal

lesions observed that the sensitivity of exfoliative cytology in detecting malignant lesions was 83% and its specificity was 84% and an overall accuracy of 83.14%.<sup>16</sup> Navone et al reported the sensitivity of exfoliative cytology as 86.5% and an accuracy of 89.6% and Ratnatunga et al reported an accuracy of 92% which was in accordance with the present study.<sup>17,18</sup> However in contrast to various earlier studies the percentage of false positives was much lower and was seen only in one case (2%). In our study majority of the cases (78%) were found to be malignant on histopathology. The site wise distribution of malignancies seen in our study was in accordance with the observations made by Kurtulmaz et al who also reported the larynx as the most common location of malignancy (in 71.1% cases).<sup>13</sup> They reported 8.8% cases from the oral cavity region. Verma et al reported 55.96% cases as those with a laryngeal malignancy.<sup>10</sup> Quer et al too reported laryngeal squamous cell carcinomas as being the commonest with more than 50% cases followed by oropharyngeal and oral cavity carcinomas.<sup>12</sup> Eighty four percent of the malignancies seen in our study were those in males and the bulk of them presented with laryngeal carcinomas 84.37%. About 44% lesions diagnosed as squamous cell carcinomas were seen in patients in the age group of 51-60 years majority of which again were laryngeal carcinomas.

## CONCLUSION

The most common cause for the suspicious lesions of the oral cavity, oropharynx, larynx and hypopharynx was squamous cell carcinoma seen in 78% of the cases. Laryngeal carcinoma accounted for the majority of the malignancies (74.35%). Exfoliative cytology is an effective tool in the quick and reliable assessment of the clinically suspicious lesions with a good sensitivity and specificity. Increasing the usage of rapid assessment tools can aid in early detection of malignant lesions.

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