ORIGINAL ARTICLE

Cytologic and Histopathologic Correlation in Cancer Diagnosis

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ABSTRACT: Oral cancer is the major health hazard prevailing in the South Asia particularly in Indian subcontinent. About 95 percent of all oral cancers are found to be oral squamous cell carcinoma and globally it is the sixth most common cancer affecting the human race. Exfoliative cytology refers to microscopic examination of cells scraped from the surface of lesions. Oral exfoliative cytology is a simple non invasive technique which can be used in cancer diagnosis. The present study was carried out to find the sensitivity and specificity of oral exfoliative cytology in cancer diagnosis and to correlate the cytologic and histopathologic interpretation in cancer diagnosis.

Key words: Squamous cell carcinoma, Oral exfoliative cytology.

Oral cavity is the sixth most common site for cancer. Overall 90% of all cancers within the oral cavity are squamous cell carcinoma. The prevalence rate of oral cancer is more in sub continents like India due to overwhelming usage of tobacco related products, lack of self examination by patients, patients fear about the disease, late presentation to clinician and misdiagnosis by clinicians.

Oral cancer can arise as denovo or from region that previously had premalignant lesion or condition. The most common premalignant lesion is leukoplakia and premalignant condition is erosive lichen planus. Early diagnosis and appropriate treatment is the only way to improve the survival rate of oral cancer. The average survival rate still remains as 5 years and has not really improved over the last 30 years.

Histopathological diagnosis is an accurate method and considered as gold standard in cancer diagnosis .When compared to biopsy, oral exfoliative cytology is a simple, non invasive procedure and can be used when biopsy is contraindicated.^[1,2] Even though oral exfoliative cytology has its own advantages it has not replaced biopsy due to its false positive and false negative results.

The present study was carried out to analysis the efficacy of oral exfoliative cytology in cancer diagnosis.

Fig 1: Oral squamous cell carcinoma of tongue.

Fig 2: Normal squamous cell in exfoliative cytology.

Fig 3: Dysplastic malignant cells.

Received : 8.8.11

Accepted : 23.8.11

AIM OF THE STUDY

1. To analyse the diagnostic accuracy of oral exfoliative cytology in cancer diagnosis
2. Correlating cytologic and histopathology interpretation.

METHOD

The patients who reported to the department of oral medicine with the suspicious clinical presentation of oral cancer constituted the study group. The study was conducted over a period of 1 year. The patients were examined by experienced oral medicine specialists and clinical diagnosis of oral cancer was made for 14 patients and 3 patients were diagnosed as suspicious cases of squamous cell carcinoma.

Cytological smear were taken for all the patients from the suspicious areas and the smears were fixed in 95% alcohol and stained with papanicolaou (PAP) technique. In the same area, biopsy were taken and fixed in 10% formalin and routinely processed and stained with hematoxylin-eosin stain. Cytological interpretation was based on papanicolaou's classification of cytological smear^[3] [Fig- 1-3].

RESULT

Smears were taken from clinically suspicious cases of squamous cell carcinoma and further subjected to histopathological examination. All the 17 cases were diagnosed as squamous cell carcinoma on histopathological examination.

On cytological examination, 15 cases were diagnosed as frank squamous cell carcinoma and two cases were diagnosed as mild dysplasia with no evidence of malignancy.

The present study reveals that cytological examination of oral cancer has 88% sensitivity and 87% specificity [Table 1].

Table 1: Table showing the number of patients diagnosed positively/ negatively with both the methods.

	Positive	Negative	Total
Cytology	15	2	17
Histopathology	17	0	17

DISCUSSION

The squamous cell carcinoma is the most common oral cancer and comprises about 90-95 % of all oral malignancies. In India, cancer of oral cavity is the most common cancer comprising 35% of all cancers in men and 18% of all cancers in women. The most important risk factors for oral cancer are the tobacco and alcohol.

Exfoliative cytology refers to microscopic examination of cells scraped from the surface of lesions.^[4,5] The nuclear and cytoplasmic changes reflect the biological status of the cell. Umiker W.O. et al in their study concluded that the cytodiagnosis of clinically suspected oral cancer was 96.3% accurate.^[6] Ramesh et al on quantitative exfoliative cytology achieved a sensitivity of 89%, specificity of 89.7%, and positive predictive value of 80% and negative predictive value of 94.4%.^[7]

The present study reveals that cytological interpretation has 88% sensitivity and 87% specificity. All the clinical suspicious cases of malignancy were confirmed as squamous cell carcinoma on histopathological examination.

The possible reason for false negative cytological interpretation could be that the smears would have been taken from hyperkerotic areas or highly inflamed necrotic areas. Ramesh et al also suggested that smears of the hyperkeratotic lesion would give only anucleated squames and this hyperkerotic superficial cell will mask the underlying dysplastic cells. To overcome this, the smears can be made with cytobrush.

Ogden et al compared cytobrush and wooden spatula for collection of smears in hyperkeratotic lesions and concluded that cytobrush was found to be significantly better than the wooden spatula.^[8] Most of the authors conclude that for keratotic lesions, cytological examination is not fruitful and the suspicious case has to be subjected to histopathological examination.

CONCLUSION

The present study concluded that oral exfoliative cytology is simple non invasive procedure with minimal discomfort to the patients and it has the sensitivity of 88% and specificity of 87%.

On cancer diagnosis there is no role for any procedure which is not 100% sensitive and specific, which confirms that oral exfoliative cytology can only be used

as an adjuvant with histopathological examination.

Computer aided image analysis and quantitative analysis has increased the accuracy rate of exfoliative cytology. Oral exfoliative cytology has significant role in cases where biopsy is contraindicated and in post operative follow-up examination and mass screening.

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How to cite this article:

Vezhavendhan N, Shanthi V, Sathish Kumar, Balaji N, Sumathi MK. Cytologic and histopathologic correlation in cancer diagnosis. Journal of Scientific Dentistry 2011;1(2):13-15

Source of Support: Nil, **Conflict of Interest:** None declared