EVALUATION OF ACCURACY IN CYTOLOGIC DIAGNOSIS OF ORAL CANCER: AN ORIGINAL RESEARCH

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ABSTRACT

Introduction: Oral exfoliative cytology (OEC) is a non-invasive method and useful in screening large populations. Hence in this study we aim to evaluate the accuracy in cytologic diagnosis of oral cancer.

Material and methods: We conducted a hospital-based case-control study, cytological smear from buccal mucosa were obtained from 100 subjects, whom we divided as cases and controls equally. All cases with oral lesions were subjected to oral biopsy and histological examination.

Results: In cytology, a specificity of 100%, sensitivity of 93% and accuracy of 92% were obtained for OSCC. Leukoplakia gave a specificity of 100%, a sensitivity of 87.5%, and an accuracy of 95%.

Conclusion: We conclude that OEC is a valuable method for detecting oral premalignant and malignant lesions. OEC can detect a number of pathological conditions that require management.

Keywords: Oral Lesions; Exfoliative Cytology; Diagnosis.

I. INTRODUCTION

Vast number of the oral cancers has a premalignant lesion [1-5] Microscopically, they lesions may show oral epithelial dysplasia, a histopathologic diagnosis. Early detection of a premalignant or cancerous oral lesion promises to improve the survival and the morbidity of patients suffering from these conditions. With respect to cytological diagnosis, the classification of cervicovaginal smears into five classes was initially proposed by Papanicolaou, who formulated a series of guidelines for smear interpretation. This system was generally well received, although the significance of the classes was often modified to meet the requirements of laboratories in consultation with clinicians [1,2] Oral Exfoliative Cytology (OEC) is a non-invasive technique that is well accepted by the patient. [6-10]. Despite the improvements in the methods used for collecting oral cytological material this methodology still presents problems in diagnosing oral cancer. Problems are chiefly due to the
existence of false negatives obtained as a result of a non representative sample as well as the subjectivity of the cytological evaluation. Hence in this study we aim to evaluate the accuracy in cytologic diagnosis of oral cancer.

II. MATERIAL AND METHODS

We conducted a hospital-based case-control study. After taking consent we collected the cytological scrapes of buccal mucosa were from 100 subjects, whom we divided as cases and controls equally. All patients with oral lesions were also subjected to oral biopsy and histological examination. Both biopsy and cytological smear were obtained from each case, and cytological specimen was taken from each control.

A biopsy was taken from each patient with oral lesion after the surgical operation, then placed in 10% buffered formalin and sent to the laboratory for histopathology.

Using a flat wooden tongue spatula, cytological smears were collected from all patients without apparent oral lesions. The surface epithelium was scraped and cells were collected, immediately smeared on a cleaned frosted end glass slide, fixed in 95% ethanol for 15 minutes and then transferred to the laboratory. Smears were further treated according to Papanicolaou method.

III. RESULTS

We observed that the mean age of 43±3 years. The male to female ratio was 1.3:1. All smears of the controls were normal by cytology. Of the 50 cases, OSCC (n = 28), Leukoplakia (n = 8), dysplasia (n = 3) and Normal change (n = 11) were diagnosed by histopathology. In cytologically and histopathologically positive cases, cytology confirmed the histopathological diagnosis of OSCC in 27/28; all negative cases by histopathology were found negative in cytology. Of the 8 patients diagnosed as having leukoplakia by histopathology, seven were confirmed as leukoplakia by cytology. The three cases of dysplasia in histopathology were detected with dyskaryosis in cytology. Of the 50 patients, 32 (64%) were males and 18 (36%) were females. Out of 39 (100%) neoplastic conditions, 27 (69%) were diagnosed in males.

<table>
<thead>
<tr>
<th>Anatomic site</th>
<th>Normal</th>
<th>OSCC</th>
<th>Leukoplakia</th>
<th>Dyskaryosis</th>
<th>Total</th>
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<td>10</td>
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<tr>
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<td>4</td>
<td>0</td>
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<td>4</td>
<td>2</td>
<td>2</td>
<td>63</td>
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<td>0</td>
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<tr>
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<td>2</td>
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<tr>
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<td>28</td>
<td>8</td>
<td>3</td>
<td>100</td>
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</table>

IV. DISCUSSION

Oral cancer is the most common cancer and constitutes a major health problem in developing countries, representing the leading cause of death [11]. Accordingly, in this study, the frequency of oral cancer among patients with oral lesions is very high. All of the cases of oral cancer in this study were defined as OSCC. Accordingly, the majority of OSCC lesions were found in lips and tongue, but variable intraoral site for OSCC have been extensively reported [12,13]. Males represent the great majority of patients with oral lesions in the current study. Detection of high-risk oral premalignant lesions and intervention at premalignant stages might represent a success towards reducing the mortality and morbidity associated with OSCC.[14] Consequently, exfoliative cytology has gained importance as a rapid and simple method. It is well known that diagnostic oral exfoliative cytology, despite being a useful, cost-effective and convenient tool in the diagnosis of oral precancerous and cancerous lesions, is not yet applied as widely as cervical cytology. Despite the small number of cases in this study, we think that, oral exfoliative cytology has a reliable accuracy, and may be a valuable
screening tool for the diagnosis of oral premalignant and malignant lesions. Cytological scrapes from the clinically healthy volunteers were taken and labeled with those taken from the cases, in such a way that the investigator was not able to know the related link of the smear under examination. This was done to add reliability measures to the study. The most challenging lesions of the oral cavity are the dysplastic lesions which are clinically often diagnosed as leukoplakias.[15] However, the highest specificity and sensitivity measures in this study suggest that, OEC can be the preferred method for screening of oral mucosal lesions. It was found that, 4.5% of clinically benign-appearing lesions have dysplastic or carcinomatous features [14-15]. Thus, cytological screening of the patients, at high risk of oral neoplastic lesions and without any macroscopically apparent oral lesion, can be of tremendous importance.

V. CONCLUSION

We conclude that an early detection of the cancerous lesions through implementation of the OEC is recommended. This is a simple, rapid, non-invasive and comparatively painless method, and is hence, well accepted by patients, suitable for population screening programs and for early diagnosis of suspect oral lesions.

REFERENCES