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Case Report

Scrap Cytology: A Screening Shepherd

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Abstract

Scrap cytology is emerging technique for diagnosing oral lesion. Oral cancer results from various viral infections, oral leukoplakia, and submucosal fibrosis. Scrap cytology assist in identifying these malignant and premalignant lesions. Herein, we present a case of a 70 years old male with complaint of pain and multiple ulceration in right oral mucosa. After proper intraoral examination & scrap cytology smears and microbiological investigations diagnosis of HSV cytopathic effect was given. This case report expands the morphologic spectrum of premalignant oral lesions and emphasizes the need to consider scrap cytology as a useful tool for oral lesions.

Keywords: Exfoliative cytology, Scrap Cytology, Oral ulcers, HSV.

INTRODUCTION

Exfoliative cytology is a simple, inexpensive, reliable test that can be utilised to diagnose oral ulcerative lesions, viral infections or vesiculobullous lesions [1]. Scrap cytology not only assists in identifying a suspicious oral lesion when the surgeon is unwilling to perform a biopsy, but it also helps determine carcinoma in situ and other premalignant lesions [2]. Less frequently, when the patient declines to have a biopsy, cytology may be used to confirm a lesion that is very indicative of malignancy on a clinical basis [3]. Cytology is still a crucial diagnostic tool for mucosal lesions even though it isn't always conclusive [4, 5]. Oral scrap cytology is frequently utilised for determining an oral cancer diagnosis. The association among various viruses, oral cancer, and precancer is quite favourable. Oral cancer may result from the presence of various viruses, such as HSV, HPV, and EBV, as well as other premalignant and carcinogenic conditions [6].

The objective of the present case study was to make awareness about the importance of HSV detection in oral lesions that will improve prognosis and leads to early diagnosis. Here, We will examine the more innovative features of the use of scraped or exfoliative cytology in oral lesions, emphasizing particularly on serological studies and their implications for diagnosis and prognosis [1].

CASE REPORT

A 70-year-old male, having complaint of pain and ulcers in right site of mouth since 15 days.

Pain was localized, gradual in onset, dull aching, continuous and was associated with difficulty in eating. There was no history of aggravating or reliving factors. Patient had history of tobacco chewing.

Intraoral examination revealed multiple ulcers and single blister on right buccal mucosa. Base of ulcers were covered by slough and was surrounded by erythematous halo, ulcers measures 1x1 cm, irregular, tender and having soft edges. No palpable lymph nodes. Routine blood investigations are within normal limits. Provisional clinical diagnosis was suspected malignancy.

Scrap cytology smears were taken by gently scraping the base of the lesion with spatula, allowed air dry as well as alcohol fixed and were stained with H&E and PAP stain.

Microscopic examination of cytology smears revealed multinucleated cells with nuclear molding and nuclei were glassy with pink viral inclusions (Figure 1 & 2).

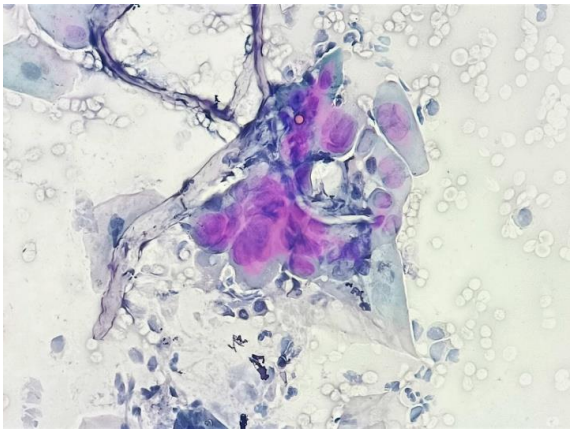

Figure 1: Muti-nucleated Cells with Glassy Nuclei and Pink Viral Inclusion

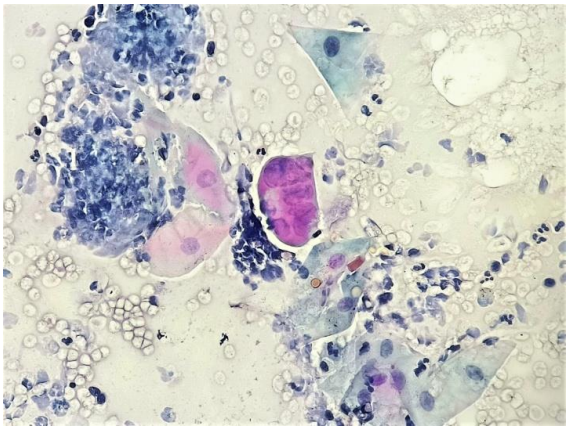

Figure 2: Muti-nucleated Cells with Nuclear Molding

After thorough cytological study, diagnosis of Viral (HSV) Cytopathic effects was given.

Based on cytologic impression the patient was further advised to do serological investigations for HSV-I&II- IgM & IgG. In this patient HSV-I antibodies were positive serologically. Correlation of cytological impression with serological positivity of HSV-I antibodies was established and further correlated with the status of HSV-I viral infection is more common in oral lesion while HSV-II viral infection is more common in genital lesion.

DISCUSSION

According to its actual validity in oral pathology, scrap cytology has been a disputed technique. However, due to its use in oral precancer and cancer as a diagnostic and preventive method as well as for patient monitoring, it's re- emerged [3].

The most frequent neoplasm of the head and neck is oral cancer. It continues to be the most common cancer associated with the use of cigarettes, alcohol, and other carcinogenic stuff, ranking 12th among all cancers [7]. Histologically, over 95% of oral cancers are squamous cell carcinomas [8]. Precancer lesions can be found in 30% and 80% of cases of oral squamous cell carcinoma [9]. Early-stage malignancies typically have a benign appearance and are asymptomatic. A well-known precancerous disease, oral leucoplakia and submucosal fibrosis have the potential to develop into cancer [10, 11].

A part of head and neck squamous cell carcinomas, which are typically found in the oropharynx, is believed to be caused by high-risk human papillomavirus (HPV) infection. HPV type 16 (HPV-16) is the most common HPV genotype. The epidemiological, clinical, and prognostic characteristics of HPV-related oropharyngeal squamous cell carcinoma (OPSCC) differ from those of HPV-negative OPSCC. The better treatment response and survival of HPV-related tumors compared to HPV-negative tumors are particularly significant [12].

Herpes Simplex Virus (HSV) is a widespread human infection which leads to a wide range of diseases. Studies on the role of HSV in oral cancer have revealed a 30% incidence of the virus in both malignant and possibly malignant lesions of the oral cavity. HSV1 was associated with herpes labialis (90%), and HSV2 was associated with herpes genitals (90%), although in some recent studies, most genital lesions are caused by HSV1. HSV-1 is a Large, double- stranded DNA virus that mostly affects the oral cavity and ends up in oral blisters. It may lie dormant in host neurons for life and reactivate to produce lesions close to or adjacent to the location of the initial infection. HSV-1 has been implicated as a risk factor for the emergence of human cancers when combined with alcohol and tobacco consumption. Oral cancer may advance as a result of the virus' persistence in the oral mucosa and ability to promote host DNA synthesis and repairs after reactivation [9].

The detection of HPV is based on immunohistochemical p16 expression as a surrogate marker for transcriptionally active high-risk HPV, HPV-DNA detection by in situ hybridization (ISH), HPV E6/E7 mRNA by ISH, type-specific polymerase chain reaction (PCR) techniques, and real-time PCR assays to quantify viral load. PCR or immunohistochemistry can be used to confirm an HSV diagnosis. These procedures are typically carried out on surgical or biopsy specimens of tumour samples [12, 13].

The fact that a significant fraction of oral malignancies are still discovered in later stages and receive late-stage treatment is a key contributing reason to this poor prognosis. A premalignant or cancerous oral lesion can be detected early, which can increase the effectiveness of treatment while minimizing complications. With a mean survival rate of 80% and a decent life quality following therapy, the prognosis for

an early identified and treated OSCC is very excellent [1]. Scrap cytology, a screening and diagnostic method, may make it practical. Because cytological sampling is non- invasive, quick, and inexpensive, it is becoming more popular. The reliability and viability of liquid-based brush cytology specimens from oropharyngeal and oral lesions have only been partially established in research [13].

CONCLUSION

The oral cytopathology technique is a simple, non-invasive, quick, and somewhat painless diagnostic approach. For the detection of some malignant and premalignant lesions, scrap cytology of the oral mucosa is also extremely beneficial. It is therefore appropriate for regular use in screening programs, early analysis of concerning lesions, and monitoring of malignant lesions after treatment. Scrap cytology is also useful tool when invasive procedure is either not available or better to be avoided. In case of suspicious lesions, when they turned out as viral infections cytologically, they can be further correlate with serological analysis.

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