infected at either oral or genital sites, results of this study suggest that the site of primary infection is important in driving the overall humoral immune-protective response. Findings of this study will have direct implications for the future development of a glycoprotein-epitope–based HSV-1 vaccine.

DISTRIBUTION OF HUMAN PAPILLOMA VIRUS 16 IN ORAL SITES AFFECTED BY SQUAMOUS CELL CARCINOMA

Wafaa Saleh, Sarah Fitzpatrick, Jilan Youssef, Seunghee Cha, and Joseph Katz, University of Florida, Gainesville, Florida, USA

Objectives: Studies have indicated that cases of HPV-associated squamous cell carcinoma (SCC) in the oropharynx and the oral cavity are on the rise. However, the distribution of human papilloma virus (HPV) in different sites of the oral cavity affected by oral SCC (OSSC) has not been well characterized. The present study was designed to investigate the anatomic sites of HPV-16 infection associated with OSCC in the oral cavity and correlate HPV-16 positivity with tumor suppressor gene expression and clinical/pathologic features of OSCC.

Methods: The archives of oral pathology at the University of Florida College of Dentistry were accessed for demographic, clinical, and histologic data of 97 OSCC cases, and their histologic slides were obtained under the approved institutional review board protocol. Histologic specimens were stained for HPV-16 by immunohistochemistry (IHC), and the positive samples were further analyzed for HPV DNA by in situ hybridization (ISH).

Results: Ninety-seven patients with OSCC comprising 53 (54.63%) males and 44 (45.36%) females with ages ranging from 40 to 95 years were included. Twenty (20.6%) had a history of smoking, and 16 (16.49%) drank alcohol; the information for the rest of the sample was unavailable. The oral sites of OSCC include the following: gingiva 34 (35%), palate 25 (25.77%), tongue 16 (16.49%), buccal mucosa 14 (14.43%), and floor of the mouth 8 (8.24%). The degree of OSCC differentiation showed 34 (35%) for well differentiated, 32 (32.98%) for moderately differentiated, and 31 (31.95%) for poorly differentiated. Of 14 p16-positive cases detected by IHC (14.43%), 12 (85%) were positive for ISH specific for HPV DNA. The tongue and the palate showed the highest prevalence of HPV-related OSCC (4 of 16 [25%] and 6 of 25 [24%], respectively), followed by the gingiva (4 of 34 [12%]). Strong positivity for p16 detected by IHC and HPV DNA by ISH was found in well and moderately differentiated OSSC (7 of 34 [20%] and 5 of 32 [15%], respectively).

Conclusions: Our study identified 14% of cases of OSCC to be associated with HPV, with the tongue and the palate being the most prevalent sites. This finding may indicate that the route of the viral transmission for OSCC may be similar to the one associated with oropharyngeal cancer.

ANTIFUNGAL DRUG SUSCEPTIBILITY OF FUNGAL ISOLATES IN PATIENTS WITH HUMAN IMMUNODEFICIENCY VIRUS RECEIVING HIGHLY ACTIVE ANTIRETROVIRAL THERAPY

Seema Kurup,[a] and Anju P David[b], [a] UConn School of Dental Medicine, Farmington, Connecticut, USA, and [b] Amrita School of Dentistry, Kerala, India

Objectives: Given the evolving drug therapy options and consequent opportunistic infections, antifungal drug resistance is a major concern in patients with human immunodeficiency virus (HIV) undergoing highly active antiretroviral therapy (HAART), prompting the need for clinically relevant antifungal susceptibility testing. The goals of the present study were to determine the asymptomatic oral fungal carriage and species distribution in patients with HIV infection receiving HAART in Kerala State, India, and to evaluate the antifungal susceptibility/resistance profile of these oral fungal isolates. We also sought to identify any correlation between antifungal susceptibility/resistance with respect to the duration of HAART therapy and if there was an association between oral fungal colonization, CD4 counts, and risk factors.

Methods: Thirty HIV-positive patients receiving HAART were divided into 2 groups based on duration of HAART (group 1, <2 years; group 2, >2 years). A detailed history, including demographic characteristics, treatment details, and presence of any risk factors for candidiasis, was taken before saliva sample collection by the oral rinse method. Candidal growth and colonies were evaluated on the Sabouraud slope. Germ tube, sugar assimilation, and fermentation tests were used for identification of species. When conventional methods failed to identify any fungal isolates, they were verified using the automated VITEK-2 YST system (bioMérieux, Marcy l'Etoile, France). The Wilcoxon signed-rank test was used to compare the $CD4^+$ lymphocyte count before and after initiation of HAART. The association of risk factors with candidiasis was analyzed using the chi-square test.

Results: Overall culture positivity was 83.3%. *Candida albicans* was the most prevalent species (57.7%), followed by *Candida tropicalis* (26.9%). All except for 1 patient had a single fungal isolate. In vitro antifungal susceptibility testing of the isolates revealed that all candidal species were sensitive to amphotericin B. *Candida krusei* showed 100% resistance to fluconazole. All candidal species except *Geotrichum klebahnii* showed increased resistance to itraconazole. Comparison between initial and recent $CD4^+$ counts revealed improvement in the $CD4^+$ count after HAART, but no change in fungal population. Of the study sample, 63.3% had risk factors for candidiasis other than being immunocompromised, and colonization was increased in those with risk factors compared with those without risk factors.

Conclusions: The present study showed the distribution of yeast species and the antifungal drug susceptibility of fungal isolates in patients with receiving HAART.

ASSOCIATION OF PSYCHOSOCIAL STRESS AND TEMPOROMANDIBULAR DISORDERS IN THE ADOLESCENT POPULATION

Roopali Kulkarni, Laura Ospina, Scarlet B. Charlemo, Eric T. Stoopler, and Takako I. Tanaka, University of Pennsylvania Health System, Philadelphia, PA, USA

Objectives: Research has shown an increasing number of adolescent patients who present with somatization of pain disorders. The importance of assessing a patient's psychological and behavioral status in diagnosing temporomandibular disorder (TMD) has been explored in adults; however, its application in adolescents is unclear. The objectives of this study are to determine the association between psychosocial stress and TMD