

## INTISARI

**Latar Belakang:** Karsinoma sel skuamosa orofaring menunjukkan peningkatan insidensi, terutama dipicu oleh infeksi HPV, dan umunya lebih sering pada usia muda dengan riwayat paparan seksual oral. Deteksi HPV paling akurat menggunakan PCR yang mampu menemukan DNA virus pada kadar sangat kecil sekaligus mengidentifikasi subtype. Kepadatan TIL yang tinggi kerap berkaitan dengan prognosis lebih baik pada kasus HPV-positif, penelitian ini bertujuan menilai korelasi kepadatan TIL dengan status HPV pada KSS orofaring.

**Tujuan:** Penelitian ini bertujuan untuk menentukan frekuensi KSS orofaring terkait HPV, menguji hubungan status HPV dengan usia, jenis kelamin, dan tipe histopatologi, serta menilai keterkaitan tingkat TIL stromal dengan status HPV.

**Metode:** Studi observasional-analitik retrospektif potong lintang dilakukan pada spesimen FFPE KSS orofaring (Januari 2018–April 2024). Deteksi DNA HPV dilakukan menggunakan *real-time PCR*; data klinik dan histopatologi diekstraksi dari rekam medis. TIL stromal dinilai pada sediaan HE oleh dua penilai independen. Analisis menggunakan uji Chi-square/Fisher dan regresi logistik, dengan  $p < 0,05$  bermakna.

**Hasil:** Sebanyak 88 kasus KSS orofaring dianalisis, 30 kasus (34,1%) terdeteksi DNA HPV dan 22 kasus (25,0%) di antaranya diklasifikasikan sebagai KSS orofaring terkait HPV melalui *RT-PCR*. Analisis bivariat menunjukkan bahwa TIL tinggi berasosiasi dengan status HPV-positif. Hubungan bermakna ditemukan antara usia serta tipe histopatologi dengan status HPV, sedangkan jenis kelamin tidak memperlihatkan keterkaitan signifikan.

**Kesimpulan:** KSS orofaring terkait HPV ditemukan pada 25% kasus dan berhubungan dengan usia, tipe histopatologi, serta kepadatan TIL. Tingginya TIL berasosiasi dengan status HPV-positif, menegaskan potensi TIL sebagai biomarker prediktif dan prognostik.

**Kata kunci:** karsinoma orofaring, HPV, TIL, pcr

## ABSTRACT

**Background:** Oropharyngeal squamous cell carcinoma (OPSCC) has been rising in incidence, largely driven by human papillomavirus (HPV) infection, and more often affects younger individuals with a history of oral sexual exposure. Polymerase chain reaction (PCR) is the most reliable method for HPV detection because it can identify low-level viral DNA and determine genotypes. Given that higher tumor-infiltrating lymphocyte (TIL) density is frequently linked to better prognosis in HPV-positive disease, this study evaluated the association between stromal TIL levels and HPV status in OPSCC.

**Objective:** This study aimed to determine the frequency of HPV-related OPSCC, evaluate the association of HPV status with age, sex, and histopathological type, and assess the relationship between stromal TIL levels and HPV status.

**Method:** We conducted a retrospective cross-sectional observational study of FFPE OPSCC specimens diagnosed between January 2018 and April 2024. HPV DNA was detected using real-time PCR. Clinical and pathological data were abstracted from medical records. Stromal TILs were scored on H&E slides by two independent observers. Associations were tested with Chi-square/Fisher's exact tests and logistic regression (two-sided  $\alpha=0.05$ ).

**Result:** A total of 88 OPSCC cases were examined. HPV DNA was detected in 30 cases (34.1%), of which 22 cases (25.0%) were classified as HPV-related OPSCC by RT-PCR. Bivariate analysis showed that high stromal TIL density was significantly associated with HPV-positive status. Age and histopathological type were also correlated with HPV status, whereas sex did not show a significant association.

**Conclusion:** HPV-related OPSCC accounted for 25% of cases and was associated with age, histopathological type, and higher TIL density. Elevated stromal TILs correlated with HPV-positive status, supporting their potential as predictive and prognostic biomarkers.

**Keyword:** oropharyngeal squamous cell carcinoma, HPV, TIL, PCR