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Deep learning-enabled Oropharyngeal Squamous Cell Carcinoma HPV status determination from H&E stains

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Summary:

Oropharyngeal squamous cell carcinoma (OPSCC) is becoming increasingly common due to the cancer promoting effects of human papillomavirus (HPV) infection. It is important to understand if OPSCC is caused by HPV as it informs survival outcomes and treatment options in future clinical trials. Currently, three tests are required to see if a patient with OPSCC has HPV infection. These are the Hematoxylin and eosin (H&E) stain, immunohistochemistry test p16 and HPV specific tests. Performing these three tests is expensive and time-consuming. Pathologists' interpretation of these results is inherently subjective and can results in human errors. We question whether the features of the H&E stain can be detected by a computer algorithm to predict HPV status without the need of further tests.

Keywords

Oropharyngeal squamous cell carcinoma, Human papillomavirus, histology, artificial intelligence