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Detection of human papillomavirus in oropharyngeal squamous cell carcinoma

Key words: Human papillomavirus, Molecular detection, OPSCC

Research Summary

This review summarizes the current knowledge of molecular methods for detecting human papillomavirus (HPV) in oropharyngeal squamous cell carcinoma (OPSCC).

Innovation points

- **Introduction** of the current molecular methods for detecting HPV in OPSCC including HPV DNA/RNA polymerase chain reaction (PCR), loop-mediated isothermal amplification (LAMP), DNA/RNA in situ hybridization (ISH) and p16 immunohistochemistry (IHC) assays.

- **Summary** of the mechanism, strengths, limitations, sensitivity and specificity of each method.

- **Emphasis** of the diagnostic algorithms to facilitate the selection of a suitable method for detecting HPV infection, especially when considering de-escalation treatment approaches for HPV-positive OPSCC patients.

Innovation points

A series of comprehensive tables were generated to summarize the current molecular methods for detecting HPV in OPSCC.

Table 1 | Summary of HPV detection methods for OPSCC.

Fig. 1 | A schematic diagram of PCR-based amplification assays for detection of HPV.

Fig. 2 | A schematic diagram of the LAMP process for detection of HPV in OPSCC.

Fig. 3 | The mechanisms of HPV E6 and E7 proteins in the development of HPV-associated cancers.

Fig. 4 | HPV diagnostic algorithm for OPSCC.