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The Potential of a Salivary HPV test as a diagnostic marker for disease recurrence in Oropharyngeal Cancer

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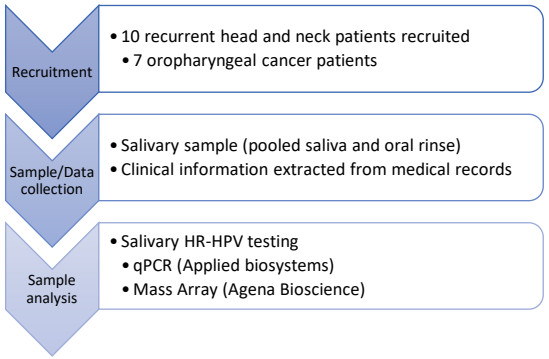
Background

In the last few decades the frequency of oropharyngeal cancer (OPC) has increased considerably in Australia, with cases reported to have doubled from 322 in 1991 to 665 in 2009.[1] This increase has been largely driven by oropharyngeal cancer associated with chronic human papillomavirus (HPV) carriage. Currently, treatment of HPV associated OPC (HPV-OPC) is predominantly reliant upon chemoradiotherapy.[2] The follow-up of patients following treatment is reliant upon clinical surveillance as well as 18F-FDG Positron-emission tomography (PET) re-staging. Unfortunately PET imaging is not readily available, costly and results can often be equivocal requiring further invasive testing or other imaging modalities which can burden the healthcare system.

Objective

This initial pilot study was designed to explore whether disease recurrence was associated with the presence of high risk HPV DNA in saliva. We theorised that in the setting of HPV-OPC, disease recurrence or residual disease would be heralded by re-activation of high risk HPV virus in tumoral cells which in turn would lead to HPV DNA expression within saliva.

Methods



Results

SID	Age	Gender	Previous primary	Recurrence site	High risk strain in saliva
1	76	M	Tonsil	Cervical node	Yes – HPV-16
2	47	M	Tongue base	Supraglottic	Yes – HPV-16
3	55	M	Tongue base	Oral tongue	Yes – HPV-16
4	60	M	Tonsil	Oropharyngeal wall	Yes – HPV-16
6	34	F	Tonsil	Cervical node	Yes – HPV-16
8	78	M	Tongue base	Cervical node	No
10	71	M	Tonsil	Piriform sinus	Yes – HPV-16

7 Patients from our cohort were identified as having recurrent or residual disease in the setting of previous HPV-OPC. Passive pooled saliva and oral rinse were collected and analysed for high-risk HPV strain DNA. Of these, 6 patients had evidence of HPV-16 carriage in their saliva.

Conclusion

This initial pilot study was designed to explore whether disease recurrence was associated with the presence of high risk HPV DNA in saliva. We hope to use our results to power future longitudinal studies with control groups of non-recurrent/residual disease patients (currently progressing at RBWH). This diagnostic marker stands to change the landscape of surveillance for patients with HPV-OPC.

References

[1] Hong A, Lee CS, Jones D, et al. Rising prevalence of human papillomavirus-related oropharyngeal cancer in Australia over the last 2 decades. Head Neck. 2016; 38:743-50.
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