Utility of Circulating Tumor DNA for Early Detection of Persistent or Recurrent HPV-positive Oropharyngeal Cancer

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INTRODUCTION

Circulating tumor DNA (ctDNA) is a quantitative biomarker for human papillomavirus (HPV) with a variety of emerging applications in HPV-positive oropharyngeal squamous cell carcinoma (HPV+ OPSCC) including identifying residual or recurrent disease after definitive treatment.[1]

METHODS

ctDNA was measured via NavDx®[2] blood collections for patients with HPV + OPSCC undergoing definitive ctDNA was measured at varying time points after definitive treatment, at our single institution. Data was collected retrospectively and included demographics, medical comorbidities, and oncologic treatments with associated outcomes.

PATIENT POPULATION

- Between January 2021-June 2025, 236 patients with HPV+ OPSCC were treated at our institution.
- 193/236 (82%) patients had at least one ctDNA, 138 (58%) with >1, collected after definitive treatment (Table 1) for evaluation of residual disease and/or surveillance.

RESULTS

- 17 (8.8%) patients had positive levels (i.e. non-zero ctDNA levels) after definitive treatment (Table 1), with mean follow-up of 19.9 months (range 2 – 96 months).
- Of the nine recurrences, **four were initially detected by positive ctDNA levels without other concerning clinical findings and immediate subsequent work-up revealed recurrence**; in the remaining five, ctDNA levels were elevated in the setting of suspicious clinical or radiologic findings.
- There were no cases of proven residual or recurrent disease with a concurrent negative ctDNA.
- Eight patients are showing no evidence of disease as of their most recent clinical evaluation, six are on active treatment, and three are deceased.

Table 1:

Primary Treatment Modality	At least one surveillance ctDNA (n=193)	Positive ctDNA after definitive treatment (n=17)	Residual disease	Recurrence (median months to recurrence)
Surgery alone	64	5	2	3 (8.2)
Surgery with adjuvant RT	45	1	1	0
Surgery with adjuvant CRT	10	1	0	1 (13.5)
Definitive CRT	64	6	4	2 (10.6)
Definitive RT	10	4	1	3 (9.2)

CONCLUSIONS

Though further investigation is needed to assess the feasibility of ctDNA in monitoring HPV+ OPSCC, our early experience with ctDNA has demonstrated utility in the setting of surveillance for residual or recurrent disease.

References:

1. Chera BS, Kumar S, Shen C, et al. Plasma Circulating Tumor HPV DNA for the Surveillance of Cancer Recurrence in HPV-Associated Oropharyngeal Cancer. J Clin Oncol. 2020 Apr 1;38(10):1050-1058. 2020 Feb 4.
2. Naveris, Inc, Waltham, MA, USA