Completion of Definitive Treatment after Induction Chemotherapy for OPSCC at a Safety Net Hospital

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Introduction

Despite improvement in oncologic outcomes in oropharyngeal squamous cell carcinoma (OPSCC) due to the HPV epidemic, there remains a cohort of patients with locally advanced disease with a more guarded prognosis. The addition of induction chemotherapy (IC) to standard of care chemoradiotherapy (CRT) has been investigated in this disease with unclear benefit in disease control and increased toxicity.

Objective

This study aims to examine the impact of IC on patients' ability to complete definitive CRT in a safety-net hospital system.

Methods

This retrospective cohort study evaluated all patients treated at a tertiary care, safety-net county hospital in Houston, Texas from 2016-2024 with OPSCC who received IC prior to definitive CRT. Demographic, disease, and treatment related variables were analyzed as well as toxicity data including hospitalization, rate of grade III-IV adverse events, and gastrostomy tube use. The primary outcome is the completion of definitive CRT, with locoregional disease free survival (LDFS) and overall survival (OS) as secondary outcomes.

Results

Patient	Sex	Age at Dx	Race	ADI	Insured at Dx	Insurance During Tx	Tobacco (Py)	Primary Tumor Site	p16	T	N	M
1	M	62	H	90	N	Gold Card	No	L tonsil	Positive	1	3	0
2	M	41	B	48	N	Gold Card	Yes (9.5)	GP sulcus	Positive	3	2b	0
3	M	47	W	47	Y	Gold Card	Yes (30)	R tonsil	Negative	4	3b	0
4	M	48	B	67	N	Private	Yes (30)	L tonsil	Negative	4	2b	0
5	M	52	W	68	N	Gold Card	Yes (30)	L tonsil	Positive	3	3b	0
6	M	52	H	78	Y	Gold Card	No	L tonsil	Positive	3	3	0

Patient	Primary XRT	Treatment Intent	Total Radiation Dose	Concurrent Chemotherapy	Total Chemo Dose	Completed XRT	Reason for Incompletion
1	Yes	Curative	6.36 Gy	Yes (cisplatin)	40	No	Patient discontinued therapy believing he was cured
2	Yes	Curative	70 Gy	Yes (cisplatin)	80	Yes - but didn't get 200mg/m2 cis	Discontinued cisplatin due to neutropenia, thrombocytopenia, recurrent infections
3	Yes	Curative	70 Gy	Yes (cisplatin)	200	Yes	N/A
4	Yes	Curative	70 Gy	Yes (cisplatin)	240	Yes	N/A
5	Yes	Palliative[a]	29.6 Gy	Yes (pembrolizumab and erdafitinib)	80	No	Palliative regimen due to disease progression
6	Yes	Curative	70 Gy	Yes (cisplatin)	200	Yes	N/A

a QUADSHOTS

Patient	Induction Agents	Dose Received	# of Cycles	Completed (3-cycle standard)	Reason for Incompletion	Hospitalized During IC	Complications	Regimen Changes	Reason for Change
1	TPF		3	Yes	None	No	None	No	N/a
2	Paclitaxel, cetuximab, carboplatin		3	Yes[a]	None	Yes	Grade 3 Rash, Non-neutropenic fever, neutropenia, facial swelling	No cetuximab for cycle 3	Intolerance
3	TPF		2	No	Progression during induction	No	Hand dermatitis	No	N/a
4	TPF		2	No	None[b]	No	New dysphagia	No	N/a
5	TPF		1	No	Progression during induction[c]	Yes	Neutropenia fever, pseudomonal tracheitis, aspiration PNA	Switch to pembrolizumab	Disease progression
6	TPF		2	No	Neutropenic fever	Yes	Neutropenic fever	Reduced dose	Neutropenic fever

[a] Initial plan for 6 cycles abandoned after 3 due to neutropenia, facial swelling.
[b] No documented plan for more than 2 cycles; cycle 2 was delayed due to financial reasons, but there is never a discussion about a third; prep for CRT was initiated after cycle 2.
[c] No response to single cycle of TPF; discussion at MDTB recommended palliative QUADSHOTS based on rapid progression and ECOG 3.

Patient	Salvage Surgery (results)	Disease-Free Interval	Recurrence (site)	Additional Treatment	Overall Survival	Last Known Disease Status
1	No	Yes	Yes (locoregional)	Definitive XRT	Living	Disease-free
2	No	Yes	No	None	Living	Disease-free
3	Yes (pathology negative)	Yes	No	None	Living	Disease-free
4	No	Yes	No	None	Living	Disease-free
5	No	No	Yes (persistent locoregional)	Pembrolizumab + erdafitinib	Unknown (lost to follow-up)	Persistent disease, metastasis to lungs and soft tissue of back and axilla
6	Yes (pathology negative)	Yes	No	None	Living	Disease-free

Results

5 of 6 patients presented with advanced primary tumors (T3: n=3; T4: n=2), all with high nodal burden (N2b: n=2; N3: n=4). Tracheostomy was performed in 2 patients; 4 required gastrostomy tube placement.

Standard IC (3 cycles) was completed by 2 patients. During IC, 4 grade I–II and 2 grade III–IV adverse events occurred, each resulting in hospitalization. Definitive CRT was completed by 4 patients; one received <200 mg/m² cisplatin due to cytopenias. One patient had progressive disease during induction, and another declined CRT, believing he was cured. At data collection, 4 patients remained disease-free without evidence of recurrence.

Discussion

IC is associated with significant toxicity, limiting its adoption as a standard-of-care therapy. For lower income patients, for whom disease presentation is often more severe and supportive resources are scarce, the literature suggests more IC complications and reduced initiate completion of definitive therapy. In our cohort, 4/6 patients completed CRT despite only 2/6 patients being able to complete standard IC, demonstrating the potential merits of IC in select situations.

New data suggests altering the IC agents may reduce the toxicity burden for OPSCC patients. In particular, the recent FDA approval of pembrolizumab has opened an avenue for alternative induction regimens centered on immunotherapy. However, it remains to be seen how immediately applicable these advancements will be to underserved and underinsured health systems.

Conclusion

IC utilization in an underserved, indigent population carries considerable toxicities with many patients requiring hospitalization during their treatment course. While the majority of the patients included were able to complete their definitive treatment course, IC should be used sparingly in this setting while focusing more resources on definitive treatment delivery.

References

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