Acute Toxicity of Chemoradiation in patients with Esophageal Cancer

Esha Khalid, Anas Tehseen, Abdul Subhan, Mutayyab, Tabinda Sadaf.
Shaukat Khanum Memorial Cancer Hospital and Research Centre, Radiation Oncology, Lahore, Pakistan.

INTRODUCTION

Esophagus being in close proximity to dose-limiting critical organs, radiotherapy is a unique challenge. Increased risk of toxicity is a major concern with concurrent chemoradiotherapy with significant hematologic, cardiopulmonary and postoperative complications despite advances in techniques. We conducted this study to get evidence for local population and efficiency of treatment delivered in our setup. This will help us to improve our knowledge and practice for local setting.

OBJECTIVES

- To assess the incidence and severity of acute toxicities of radical Chemoradiation
- To identify clinical and treatment related predictors.

METHODS

- Prospective study conducted from Jan –Dec 2025 at SKM&RC Lahore.
- Patients with histologically confirmed esophageal cancer presenting with T2–T4 disease, nodal involvement, or unresectable tumors were recruited.
- Univariate and multivariate logistic regression analyses were performed to identify independent predictors.

RESULTS

- **Mean weight loss of 3.4 kg ±3.08**
- **Each 1 kg increase in baseline weight reduced the odds of severe esophagitis by 7% (OR 0.93 per kg increase, 95% CI 0.89–0.97, p < 0.001).**

RT	**41.4-54 Gray in 23-27 fractions**
Chemo	**Weekly carboplatin and paclitaxel**

Table 1. Baseline Demographic, Tumor, Treatment and Outcome Characteristics (N = 105)

Variable	n (%) or Value
Age (years)	44.3 (18–64)
Gender	
Male	42 (40.0%)
Female	63 (60.0%)
Baseline Weight (kg)	52.9 (27–88.8)
Weight Loss (kg)	3.43 (0–15)

Distribution of T and N Stage (M0 Patients, n = 104)

T Stage	N0	N1	N2	N3	Total
T2	0	0	1	0	1
T3	16	54	28	2	100
T4	1	2	0	0	3
Total	17	56	29	2	104

One patient had metastatic disease (T3N1M1)

Surgery	
YES	63 (60.0%)
NO	42 (40.0%)

Anemia	
Thrombocytopenia	
ANC Reduction	ion
Esophagitis	ion
Vomiting	ion
Fatigue	ion
Dyspnea	ion
Skin Reaction	ion

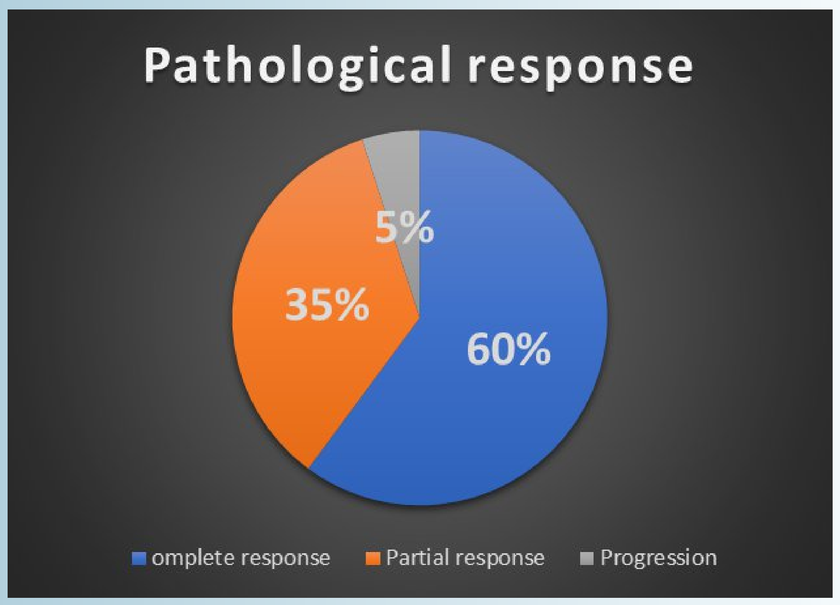
Toxicity (%)	Mild (G0–1)	Moderate (G2)	Severe (G3–4)
Esophagitis	17.1	**44.8**	38.1
Vomiting	**91.5**	8.6	0
Fatigue	**99**	1	0
Dyspnea	**99.1**	0	1
Skin Reaction	**97.1**	2.9	0
Anemia	**56.2**	32.4	11.4
Thrombocytopenia	**84.8**	8.6	6.7
ANC Reduction	**93.3**	3.8	2.9

- **No significant difference in toxicity was found among different dose schedules (p-value 0.95).**
- **Only one patient developed esophageal perforation, one patient died with pneumonitis and one with neutropenic sepsis.**

Table 3. Multivariate analysis for severe esophagitis

Variable	B	Adjusted OR (Exp(B))	95% CI	p-value
Baseline weight (kg)	-0.074	0.93	0.89 – 0.97	0.001
Gender				
Male	Reference	–	–	–
Female	0.427	1.53	0.61 – 3.87	0.366
Tumor site				
Upper	Reference	–	–	–
Middle	-0.253	0.78	0.15 – 4.15	0.767
Lower	**0.709**	**2.03**	**0.46 – 9.04**	**0.352**

- **On follow up, 18.1% patients progressed among which 61% patients were those who did not had surgery and 39% progressed after surgery.**
- **Mean duration of progression was 3 months.**
- **Those who progressed presented with distal metastasis (68%) predominantly followed by nodal metastasis in (18%) and local progression in only 2 patients.**
- **Metastasis sites included pulmonary, hepatic , osseous, brain and skin.**



CONCLUSION

Toxicity with esophageal chemoradiation is predominantly mucosal and hematological. Acute esophagitis remains the principal toxicity with over one-third of patients developing Grade 3 toxicity. Proactive nutritional support before starting radiotherapy, optimization of radiation planning and close monitoring is essential to improve treatment tolerability along with effective outcomes.