Tumor Regression Scores are Limited Predictors of Outcomes in Esophageal Adenocarcinoma

Objective
The prognostic value of tumor regression grade (TRG) among patients with esophageal adenocarcinoma who underwent neoadjuvant chemoradiation remains unclear. We sought to describe long-term oncologic outcomes across TRG values, and to identify predictors of treatment response and survival at diagnosis.

Methods
Patients who underwent esophagectomy for esophageal adenocarcinoma after neoadjuvant CROSS protocol 2016-2020 were evaluated. TRG was grouped per modified Ryan score, metabolic response per PERCIST criteria. Variables from endoscopic ultrasound, endoscopic biopsies, and positron-emitting tomography (primary and regional lymph node SUVs) were collected.

Results
The study population consisted of 277 patients. TRG=0 (complete response) was identified in 66 (23.8%) patients, TRG=1 (partial response) in 78 (28.1%), TRG=2 (poor response) in 97 (35%), and TRG=3 (no response) in 36 (13%). On survival analysis for OS, patients with TRG=0 had improved survival compared to TRG=1, 2, and 3 patients (p=0.010, p<0.001, and p=0.005, respectively). On multivariable logistic regression, presence of signet ring cell features on endoscopic biopsy (OR 7.54, p=0.018) and higher SUV uptake at regional lymph nodes (OR=1.42, p=0.007) were significantly associated with residual tumor at pathology (TRG=1,2,3). On multivariable Cox model, presence of signet ring cell features (HR=2.30, p=0.005) and higher SUV uptake at regional lymph nodes (HR=1.07, p=0.010) were associated with shorter OS. Degree of metabolic response per PERCIST criteria at primary or regional lymph nodes was not associated with TRG (p=0.999, p=0.218, respectively) through Fisher's exact test or OS (p=0.121, p=0.179, respectively).

Conclusions
Patients with pathologic complete response had prolonged OS, while no difference in survival was detected among other TRG categories. At initial staging, presence of signet ring cells and higher SUV uptake at regional lymph nodes predicted residual disease at pathology and shorter OS, suggesting the need for new treatment strategies for these patients.

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Additional Resources
- https://files.aievolution.com/prd/aat2101/abstracts/abs_5383/abstract_Fig1.pdf