

## **Impact on survival of the number of lymph nodes resected in patients with esophageal cancer following neo-adjuvant therapy**

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**Background:** Esophagectomy with lymph node dissection following neoadjuvant therapy is the standard of care for resectable esophageal cancer. We explore whether a relationship exists between the examined lymph node (ELN) count and overall survival in those esophageal cancer patients receiving NAT in this study.

**Materials and Methods:** In this IRB-approved retrospective study of 1200 patients with esophageal cancer treated between 1996-2019, we identified 786 patients consecutively treated with NAT followed by esophagectomy and had available ELN data. The data were analyzed to determine if there was a relationship between ELNs and survival. Overall survival (OS) was estimated using Kaplan-Meier method, and impact of ELN groups (by median and quartiles) were assessed using Cox proportional hazards regression and compared using log-rank test.

**Results:** The cohort was predominantly male (83.6%) and the median age at diagnosis was 64.7 years (range 28.2-86.3). Median ELN was 15 nodes (inter-quartile range 8-22). Median OS for the entire cohort was 42 months [95% confidence interval (95%CI) 35.8-48.3 months]. 5-year and 10-year actuarial OS was 47.2 and 33.7%, respectively. Patients with  $\geq 16$  nodes had significantly improved OS compared with  $\leq 15$  node group [median OS 49.8 (95%CI 42.3-57.3) vs 33.4 months (95% CI 25.4-41.3), respectively,  $p=0.03$ ]. 5-year OS were 45.2% vs 49.2% for  $\leq 15$  and  $\geq 16$  LN groups, respectively. The upper quartile nodal group ( $\geq 22$  ELNs, median OS 47.9 months, CI 35.8-59.9) had longer median OS than the lower quartile LN group ( $\leq 8$  ELNs, median OS 36.1 months, 95%CI 23.5-48.7). In multivariate analysis, nodal group remained significant ( $p=0.005$ ) when compared with other established prognostic factors such as age at diagnosis, clinical and pathological stage and tumor regression grade.

**Conclusion:** The number of lymph nodes removed in patients with esophageal cancer following neoadjuvant therapy is an independent prognostic factor for OS. Although there is no established minimum number of nodes removed after neoadjuvant chemoradiation, our results suggest the threshold should be set at 15 ELNs to most accurately stage EC post NAT and improve overall survival.