Analysis of global factors associated with survival in esophageal squamous cell carcinoma: Our experience at Ramon y Cajal Hospital

A Barquín García1, J Sansano Domingo4, C. Saavedra Serrano1, V Albarrán Arathona1, M Villamayor Delgado1, O Martínez Saez1, J Molina Cerrillo2, R Martín Huertas1, E Corral de la Fuente3, R Ferreiro Monteagudo5, M Rodríguez Garrate6, V Pachón Olmos7, M Vaiz5, P Reguera Puertas5, C Guillén-Ponce5, A Carata2, F Longo Muñoz2

1Ramón y Cajal Hospital, Madrid, Spain.
2Ramón y Cajal University Hospital, Madrid, Spain.
3Hospital Universitario Ramón y Cajal, Madrid, Spain.
4Hospital Universitario Ramón y Cajal, Madrid, Spain.
5IRYCOS, Madrid, Spain.

Introduction: Rates for esophageal squamous carcinomas (ESCC) have been steadily decreasing because of long-term reductions in tobacco use and alcohol consumption. However, ESCC is still a highly lethal malignancy and distant metastases to the liver, bone, and lung are seen in nearly 30% of patients. Moreover, the prognosis is poor, with a 5-year overall survival (OS) of 10 - 20%. In patients treated with curative intent, the cure rate currently approaches 40%, with the majority of recurrences develop within one year. Nevertheless, it seems that there are no clear prognostic factors or biomarkers established to date.

Methods: We conducted an observational retrospective study. Patients with ESCC between 2000 and 2017 were identified, and data was collected for exploratory pre-defined variables including patient (age, weight, height, BMI, ECOG, tobacco and alcohol consumption, analytic parameters) and tumor characteristics (location, stage, grade), treatment procedures (chemotherapy, chemoradiotherapy (CRT) and surgery) and oncological outcomes. We analysed OS and relapse free survival (RFS) rates according
to the presence of these factors. Univariate Cox regression analysis was performed and those variables which obtained a $p<0.05$ were incorporated in a multivariate model. Stata 13.1 was used to analyze the data.

**Results:** 138 ESCC patients were identified: median age of 66 years; 87% were male; 62% located in the mid-esophagus; the majority were grade 2 (31%); 43% stage III and 35% stage IV; most patients were tobacco (91%) and alcohol consumers (62%). Treatments received: 51% chemoradiotherapy (CRT), 9% CRT + surgery, 10% chemotherapy (CT) and 12% radiotherapy (RT). Median follow up was 9.7 months and median OS was 11 months. In the univariate analysis for OS: ECOG, weight, height, platelets, leukocytes, neutrophils, grade, stage and treatment modality were prognostic. In the multivariate model: ECOG 0 (HR 0.44, $p=0.039$), stage IV (HR 4.28, $p=0.05$), treatment with RT (HR 0.21, $p=0.001$) and neutrophil count (HR 1.03, $p=0.021$) were seen as independent prognostic factors. Moreover, 89 patients (65%) presented as localized ESCC. Median RFS and OS were 16 and 21 months, respectively. In the univariate analysis for OS: ECOG, T, N and surgery were prognostic. In the multivariate model: ECOG 0 (HR 0.44, $p=0.039$), stage IV (HR 4.28, $p=0.05$), treatment with RT (HR 0.21, $p=0.001$) and neutrophil count (HR 1.03, $p=0.021$) were seen as independent prognostic factors.

**Conclusion:** The multivariate analysis did show some independent risk factors for OS in ESCC according to patient and tumor characteristics, treatment procedures and oncological outcomes.