A user-friendly nomogram to predict relapse-free survival (RFS) in western patients with resected gastric cancer (GC)

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Background: Despite multimodality treatment, in the Western world, > 50% of GC patients relapse following curative-intent surgery and succumb to their disease. The absolute survival benefit of perioperative or adjuvant chemotherapy ranges from 6 to 15% at 5 years and must be balanced against treatment-related toxicities. Reliable tools to risk-stratify patients are lacking. The aim of this study was to build a practical tool to guide daily decision-making and clinical trial design.

Methods: Data of patients undergoing curative-intent surgery for T2-4 and N-positive GC between 2008 and 2018 at the Modena Cancer Centre were retrieved. Clinico-pathologic and biochemical parameters deemed of potential interest were collected. The cut-off value for continuous variables was assessed at 75th percentile. Univariate and multivariate Cox proportional-hazard models were used to assess the prognostic value of covariates. Based on the multivariate model, a nomogram to predict 2- and 3-year RFS was developed with a corresponding number of points assigned to a given magnitude of the variable.

Results: A total of 157 patients were eligible for the analysis. 51% (n = 80) were female and 88% (n = 139) had an ECOG PS of 0-1. Only 6% of cases were gastroesophageal junction cancers. 13% (n = 20), 25% (n = 40), 62% (n = 97) presented at diagnosis with stage I, II and III, respectively. Adjuvant chemotherapy was administered to 49% of patients. Out of 15 covariates tested, the following were independent predictors of outcome in the multivariate analysis and therefore included in the nomogram: ECOG PS (HR 2.51; p = 0.006), nodal status (HR 3.04; p = 0.078), angioinvasion (HR 2.62; p = 0.005) and log(Neutrophil/Lymphocyte ratio) (HR 3.50; p < 0.001).

Conclusions: We built an easy-to-use nomogram to estimate 2- and 3-year individual RFS probability in resected GC. Interestingly, this tool incorporates variables reflecting patients characteristics (ECOG PS), tumour aggressiveness (nodal status and angioinvasion) and immune-inflammation status (NLR). This nomogram could assist clinicians in discussing with patients prognosis and the risk-to-benefit ratio of systemic treatment as well as the design of future trials.

Legal entity responsible for the study: Massimiliano Salati.

Funding: Has not received any funding.

Disclosure: All authors have declared no conflicts of interest.