Validation of A New Scoring System for Molecular Subtyping of Gastric Cancer

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Background

Molecular classification of gastric cancer may potentially provide tailored treatment options by predicting survival outcomes and patients' response to therapy.

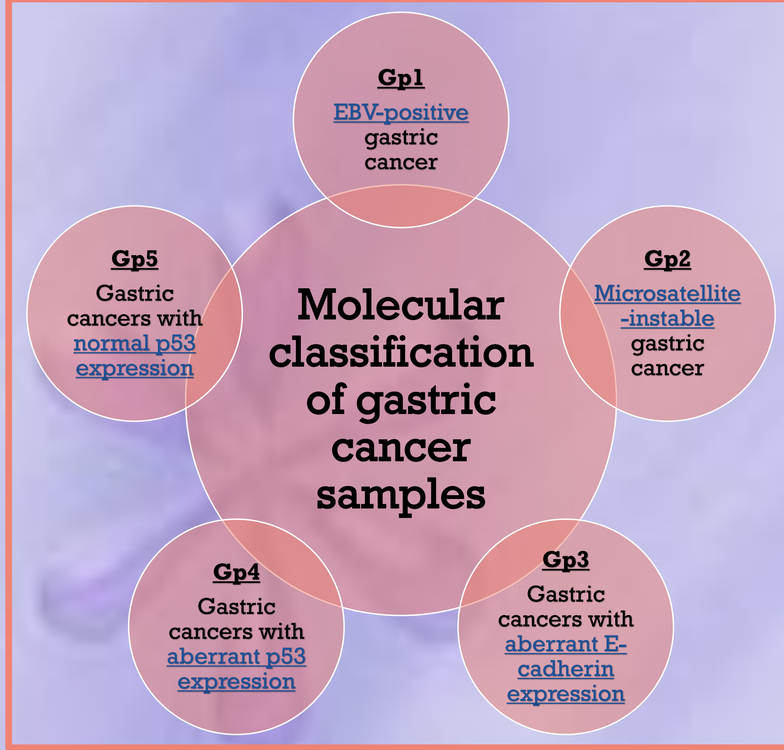
In our prior study by Setia et al.*, we identified five groups of gastric cancers based on Epstein–Barr virus (EBV) positivity, microsatellite instability, aberrant E-cadherin, and p53 expression (normal/aberrant).

The aim of this study was to validate the relationship between these molecular subtypes and prognosis of patients with gastric cancer from Romania.

Methods

The molecular classification was reproduced in a retrospective cohort of 122 resected gastric cancers at Fundeni Clinical Institute, Bucharest.

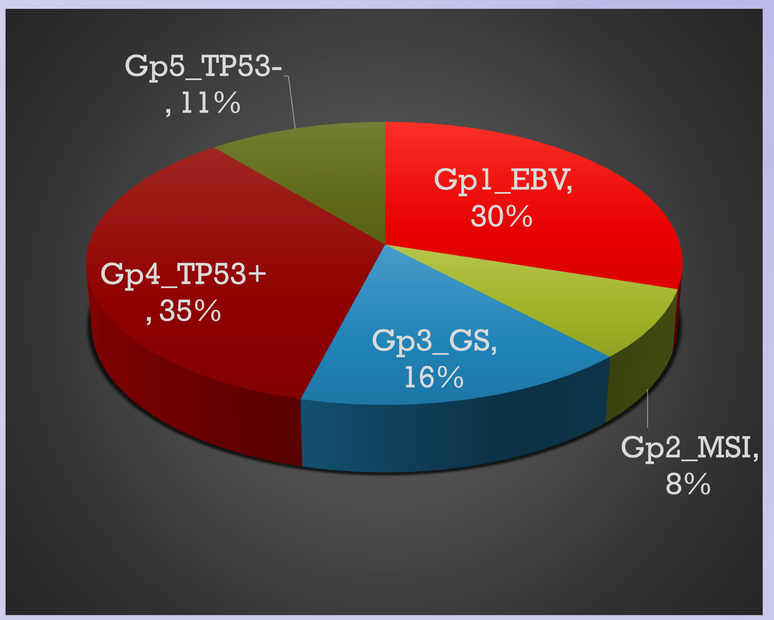
The patients were classified in 5 subtypes based on the expression of 14 different biomarkers: Epstein-Barr encoding region (EBER) in situ hybridization for EBV detection, MSI (microsatellite instability) status (MSI Analysis System, Promega Inc), and immunohistochemistry (IHC) for E-cadherin, p53 and MUC6



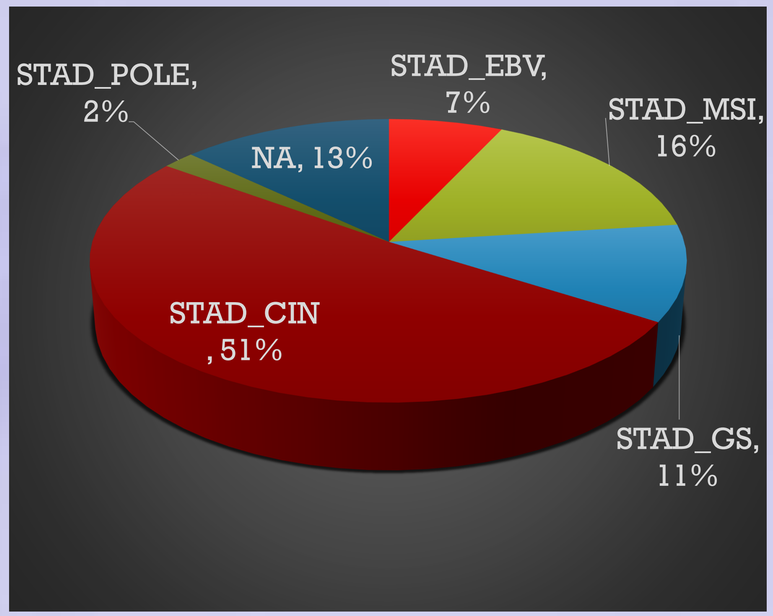
*Setia N et al, Modern Pathology (2016) 29, 772–784.

Results

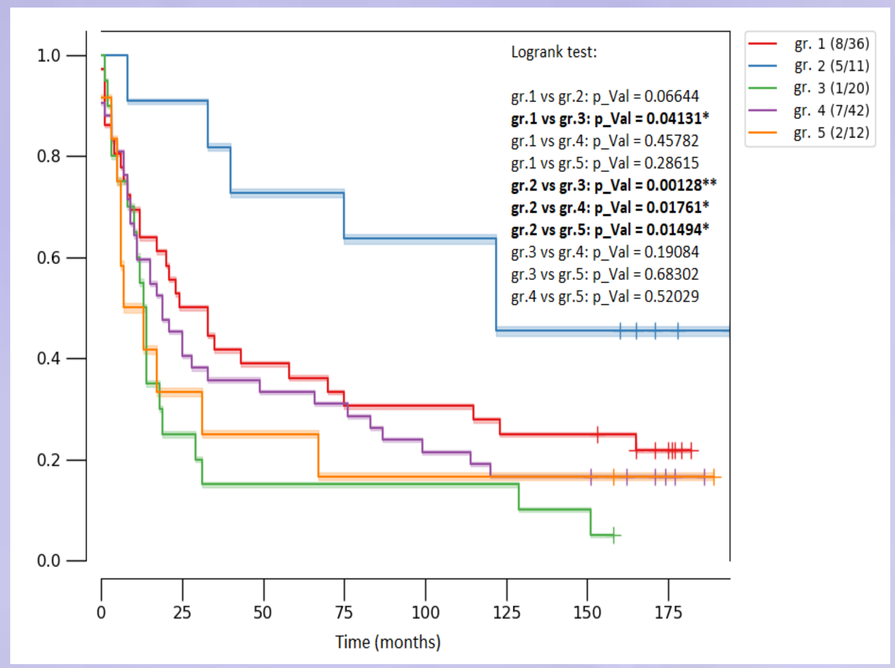
Gastric cancers – Romanian retrospective lot - 122 samples



Stomach Adenocarcinoma (TCGA, PanCancer Atlas) - 440 samples



Molecular subtypes and survival



Data analysis indicated a favourable prognostic role for microsatellite instability high group (MSI-high – Gp2) vs Gp3 (Gastric cancers with aberrant E-cadherin expression), Gp 4 (Gastric cancers with aberrant p53 expression) and Gp 5 (Gastric cancers with normal p53 expression) in resectable gastric cancer

Conclusions

Patient stratification using the proposed molecular classification successfully stratified associated with differential overall survival. Our results demonstrated a trend for superior survival in the microsatellite-instable subtype and EBV positive gastric adenocarcinomas

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