The impact of neural invasion severity in gastrointestinal malignancies: a clinicopathological study.

Abstract:
Because neural invasion (NI) is still inconsistently reported and not well characterized within gastrointestinal malignancies (GIMs), our aim was to determine the exact prevalence and severity of NI and to elucidate the true impact of NI on patient's prognosis. The Union Internationale Contre le Cancer (UICC) recently added NI as a novel parameter in the current TNM classification. However, there are only a few existing studies with specific focus on NI, so that the distinct role of NI in GIMs is still uncertain. NI was characterized in approximately 16,000 hematoxylin and eosin tissue sections from 2050 patients with adenocarcinoma of the esophagogastric junction (AEG)-I-III, squamous cell carcinoma (SCC) of the esophagus, gastric cancer (GC), colon cancer (CC), rectal cancer (RC), cholangiocellular cancer (CCC), hepatocellular cancer (HCC), and pancreatic cancer (PC). NI prevalence and severity was determined and related to patient's prognosis and survival. NI prevalence largely varied between HCC/6%, CC/28%, RC/34%, AEG-I/36% and AEG-II/36%, SCC/37%, GC/38%, CCC/58%, and AEG-III/65% to PC/100%. NI severity score was uppermost in PC (24.9 ± 1.9) and lowest in AEG-I (0.8 ± 0.3). Multivariable analyses including age,
sex, TNM stage, and grading revealed that the prevalence of NI was significantly associated with diminished survival in AEG-II/III, GC, and RC. However, increasing NI severity impaired survival in AEG-II/III and PC only. NI prevalence and NI severity strongly vary within GI Ms. Determination of NI severity in GI Ms is a more precise tool than solely recording the presence of NI and revealed dismal prognostic impact on patients with AEG-II/III and PC. Evidently, NI is not a concomitant side feature in GI Ms and, therefore, deserves special attention for improved patient stratification and individualized therapy after surgery.