Clinical utility of serum type III collagen in patients with pancreatic carcinoma

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Background: Collagen is highly expressed in pancreatic cancer (PC) stroma. Collagen accumulation compromises penetration of macromolecules into tumor tissues and is associated with poorer outcome and increased tumor invasion. The aim of this biomarker study was to investigate the clinical utility of serum pro-peptide of type III collagen (PRO-C3) in patients (pts) with PC.

Methods: A cohort from the Danish BIOPAC study (ClinicalTrials.gov ID: NCT03311776) including 851 consecutive subjects with histologically confirmed PC, ampullary carcinoma (n = 45), distal biliary tract cancer (n = 32) and benign lesions (n = 88) were enrolled. Serum PRO-C3 was determined by ELISA (Nordic Bioscience, PRO-C3 protocol). The main outcome was survival among pts with PC (male/female: 458/393; age <50 vs. 50-69 vs. ≥70: 41/477/333; ECOG Performance Status (PS) of 0/1/2: 315/340/110; stage 1 + 2/3/4: 234/142/456; diabetes yes/no: 207/629; smoking yes/no: 508/265; alcohol yes/no: 183/588; body mass index: low/normal/overweight: 62/426/254; Charlson Age-Comorbidity index (CACI) 0/1-2/3+: 34/296/304) in relation to PRO-C3 levels. Serum CA19-9, hyaluronic acid (HA), C-reactive protein (CRP), interleukin-6 (IL-6) and YKL-40 were measured. Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated by Cox proportional hazards regression.

Results: HA, CRP, IL-6, YKL-40, higher PS and stage were all risk factors for poor outcome in univariate analyses, as was log2-transformed PRO-C3 (HR = 1.15, 95% CI 1.09–1.22, P < 0.001). No statistically significant difference for serum PRO-C3 was observed in multivariate model, while CA19-9, CRP, YKL-40 along with higher PS and stage remained independently significant. PRO-C3 was positively correlated with higher stage (P = 0.012) and was significantly higher in pts with PC compared to subjects with benign lesions (P < 0.001).

Conclusions: Compared with subjects with benign lesions serum PRO-C3 was higher in pts with PC, and increased with greater stage. Higher levels were associated with shorter OS. Serum PRO C3 did not provide independent prognostic value compared to other markers. Further investigations are warranted based on these initial results.

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