Expression of prostaglandin E synthase in Barrett's cancer.

Abstract:

Expression of prostaglandin E synthase (PGES) - an enzyme of the prostaglandin biosynthetic pathway with suspected impact on carcinogenesis - was studied in Barrett's cancer to determine its pathogenetic role and prognostic impact in this entity. Expression analysis of PGES was performed on mRNA level (quantitative reverse transcription polymerase chain reaction [RT-PCR]) in a large surgical series of 123 primary resected adenocarcinomas of the distal esophagus (Barrett's cancer). Gene expression results were correlated with clinical parameters, overall survival and expression levels of previously analyzed target genes of the cyclooxygenase (COX) pathway (COX-1, COX-2) and mediators of angiogenesis (vascular endothelial growth factor [VEGF]-A) and lymphangiogenesis [VEGF-C]. Expression of PGES was demonstrated in all 123 tumors (100%) on mRNA level (quantitative RT-PCR). Relative mRNA expression levels were highly variable between different cases. Gene expression showed a strong positive correlation with both COX isoforms (COX-1: $r = 0.502$, $P < 0.001$; COX-2: $r = 0.679$, $P < 0.001$), with the angiogenetic VEGF-A ($r = 0.583$, $P < 0.001$) and with the lymphangiogenic VEGF-C ($r = 0.465$, $P < 0.001$). PGES mRNA expression showed no significant correlation with clinicopathologic parameters (i.e. pTNM categories, UICC stage, survival). Variable overexpression of
PGES seems to be potentially implicated in Barrett's carcinogenesis. Gene expression of PGES is strongly correlated with other mediators of the prostaglandin biosynthetic pathway, that is both COX isoforms (COX-1 and COX-2). However, no impact on patients' outcome in relation to PGES expression was found.