Expression of cyclo-oxygenase 1 and 2, prostaglandin E synthase and transforming growth factor beta1, and their relationship with vascular endothelial growth factors A and C, in primary adenocarcinoma of the small intestine.

BACKGROUND: Primary adenocarcinomas of the small intestine are rare. The prostaglandin biosynthetic pathway plays a major role in carcinogenesis and is linked with angiogenesis in various tumours. Promotion of tumour growth by transforming growth factor (TGF) beta may be mediated through the prostaglandin pathway. METHODS: Expression of cyclo-oxygenase (COX) 1 and 2, prostaglandin E synthase (PGES), TGF-beta1 and vascular endothelial growth factor (VEGF) A and C genes was analysed in 54 primary adenocarcinomas of the small intestine and corresponding normal intestinal mucosa. All patients had undergone surgical resection without previous antineoplastic therapy. Target gene expression was analysed at the mRNA level by reverse transcriptase-polymerase chain reaction and correlated with clinicopathological parameters as well as survival. COX-2 protein expression was examined by immunohistochemistry. RESULTS: Expression of COX-2 protein was detected immunohistochemically in 98 per cent of the carcinomas. COX-1, COX-2, VEGF-A, VEGF-C, PGES and TGF-beta1 mRNA expression varied markedly in different tumours, but all were overexpressed compared with levels in normal intestinal mucosa.
There were significant associations between levels of COX-1, COX-2, TGF-beta1 and PGES mRNAs and those of VEGF-A and VEGF-C. CONCLUSION: Correlations between levels of mRNA for COX-1, COX-2, TGF-beta1 and PGES and those for proangiogenic factors VEGF-A and VEGF-C suggest a role for these factors in the propagation of primary adenocarcinomas of the small intestine.