The gene polymorphism of the angiotensin I-converting enzyme correlates with tumor size and patient survival in colorectal cancer patients.

Abstract:
We studied the putative significance of angiotensin I-converting enzyme (ACE) in colorectal cancer (CRC) biology. Local expression of ACE was investigated by quantitative reverse transcription-polymerase chain reaction and by immunohistochemistry in CRCs and adenomas. ACE insertion (I)/deletion (D) polymorphism was studied in 141 CRC patients and 189 controls. ACE mRNA was upregulated in CRCs compared to corresponding nonlesional tissues (2.5-fold; \( P = .009 \)). ACE protein was more commonly expressed in adenomas [17 (81\%)] and cancer epithelial cells [22 (100\%)] than in corresponding non-neoplastic crypt and surface epithelium [2 (10\%) and 2 (9\%), respectively]. Thirty-seven CRC patients (26\%) carried II genotype, 69 (49\%) carried ID genotype, and 35 (25\%) carried DD genotype. The distribution of the genotypes did not differ from that of controls. Female CRC patients more commonly carried the ID genotype and less frequently the II and DD genotypes compared with male patients (\( P = .033 \)). Men heterozygous or homozygous for the D-allele had larger tumors compared to carriers of the II genotype (\( P < .01 \)). Women homozygous for the D-allele lived longer than carriers of the ID and II genotypes. Our study shows that ACE is differentially expressed in CRCs and that gene polymorphism is associated with gender-specific
differences in primary tumor size and patient survival.

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