Angiotensin-I converting enzyme inhibitors suppress angiogenesis and growth of esophageal carcinoma xenografts.


Source

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Abstract

It has recently been suggested that angiotensin-I converting enzyme (ACE) inhibitors decrease the risk of cancer. However, studies to date have not investigated esophageal carcinoma. Therefore, we investigated the inhibitory effect of ACE inhibitors on growth of esophageal carcinoma xenografts. We used the EC9706 cell line, which expresses the highest vascular endothelial growth factor (VEGF) mRNA level, to establish xenografts in 21 BALB/c nude mice. The mice were then randomly allocated to receive normal saline, perindopril (4 mg/kg), or benazepril (6 mg/kg). Five weeks later, the nude mice were sacrificed and all tumors were dissected and weighed. The number of microvessels was counted by immunostaining endothelial cells for CD31 and the microvessel density was assessed. The EC9706 cell line showed the highest expression of VEGF mRNA of four esophageal squamous cell carcinoma lines. After treatment, the average tumor inhibitory rate in the benazepril group was 45.4%, which was significantly higher than that of the control group (P < 0.05). Similar findings were observed when we used tumor weight as an index for tumor growth inhibition (P < 0.05). By contrast, there was no significant difference between the perindopril group and the control group (P > 0.05). The benazepril group appeared to show less vascularization than the control group (P < 0.05), but we did not find a significant difference between the perindopril group and the control group (P > 0.05). The EC9706 cell line showed the highest expression of VEGF mRNA level of the four esophageal squamous cell carcinoma cell lines examined. Benazepril inhibited the growth of esophageal carcinoma in vivo. The potential mechanism of benazepril seems to involve suppression of new vessel formation. Therefore, benazepril could be used as an effective agent for the treatment of esophageal carcinoma.
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