Expression and modulation of Na(+) /H(+) exchanger 1 gene in hepatocellular carcinoma: A potential therapeutic target.


Source

Department of Hepatobiliary Surgery, Xijing Hospital, The Fourth Military Medical University, Xi'an, Shannxi, China.

Abstract

BACKGROUND AND AIM:

Na(+) /H(+) exchanger 1 (NHE1), a regulator of intracellular pH (pHi), plays a significant role in regulating tumor cell growth and apoptosis. In the present study, we determined its role in hepatocellular carcinoma (HCC).

METHODS:

Immunohistochemistry was carried out to detect NHE1 expression in HCC tissue for the correlation of NHE1 with clinicopathological data from patients. NHE1-siRNA and 5-(N-ethyl-N-isopropyl) amiloride (EIPA, highly specific inhibitor of NHE1) were used to assess the function of NHE1 in HCC cells by using gene transfection, methyl thiazolyl tetrazolium (MTT), flow cytometry, and nude mouse xenograft assays as well as fluorescence spectroscopy.

RESULTS:

We found that NHE1 expression was increased in HCC tissues and cells in which its expression was associated with the increased tumor size, venous invasion and advanced tumor stages. However, suppression of NHE1 expression by using NHE1-siRNA and EIPA reduced growth, but induced apoptosis of HCC cells. EIPA also inhibited tumor growth in nude mouse xenografts of HCC cells.

CONCLUSIONS:

The data from our current study demonstrates that NHE1 was overexpressed in HCC and that inhibition of NHE1 could be a potential therapeutic target for HCC.