Pathological significance of Epidermal Growth Factor Receptor (EGFR), Vascular Endothelial Growth Factor (VEGF), Chemokine Receptor 4 (CXCR4) and Vimentin expression by colon carcinoma cells

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Introduction

Colon carcinoma has a worldwide incidence of over one million with a 5 year survival rate of <20% for metastatic disease. Identification of metastasis related biomarkers will enable risk evaluation of metastasis in colon carcinoma.

Objectives

To correlate the expression of EGFR, VEGF, CXCR4 and Vimentin with the pathological tumour and nodal stage (pTN) of colonic carcinoma.

Methods

Ninety one consecutive patients who underwent resection for colon carcinoma are included. Information on (pTN) staging was obtained from the histopathology records. Four biomarkers were evaluated on paraffinized tumour tissue using immunohistochemistry methodology. Biomarker expression was assessed by two reviewers blinded to (pTN) staging. Positive staining was evaluated as high and low expression in VEGF, CXCR4 and Vimentin. EGFR was evaluated as positive/negative. Cross-tabulations were generated between T&N stages and biomarker expression levels. The Chi Square test was used to indicate statistical significance of the association.

Results

T2, T3 and T4 tumours accounted for 21(23)%, 60(66%), 10(11%) and N0, N1 and N2 tumours accounted for 54(61%), 23(26%) and 12(13%) respectively. T4 tumours were associated with positive expression of EGFR(X^2=7.1,p=0.008) and VEGF(X^2=3.9,p=0.048) compared with T2+T3 tumours. T3+T4 tumours showed reduced expression of Vimentin(X^2=4.41,p=0.036) compared to T2 tumours. N2 status was associated with positive EGFR expression(X^2=3.905,p=0.048) compared with N0+N1.

Conclusions

EGFR expression was associated with advanced tumour and nodal stage. High VEGF and reduced Vimentin expression were also associated with advanced tumour stage. Advanced nodal stage was only associated with high EGFR expression. CXCR4 was not associated with pTN stage.