CXCL4 Chemokine as Novel Diagnostic Biomarker in Early Stage Non-small Cell Lung Cancer (NSCLC)

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Introduction. Combination of commonly employed tumour markers can be used in the evaluation of non-small cell lung cancer (NSCLC), but has a limited clinical value in the assessment of early stage NSCLC patients. Discovery of more sensitive and reliable NSCLC biomarkers is still of paramount importance. Our previous studies revealed potential biomarker properties of CXCL4 chemokine, which should be studied and evaluated.

Aim. The aim of the study is to compare diagnostic value of standard biomarker panel including carcinoembryonic antigen (CEA), cytokeratin 19-fragment (CYFRA 21-1) and cancer antigen 125 (CA 125) with diagnostic value of CXCL4 chemokine in early stage NSCLC patients (stage IA to IIB) undergoing surgery with curative intent.

Material and methods. Biomarker levels were determined by electrochemiluminiscence assay (CEA, CYFRA 21-1 and CA 125) and enzyme-linked immunosorbent assay (CXCL4) in serum of 28 patients with early stage NSCLC. The reference range for CXCL4 in healthy individuals was determined in our previous studies. To assess the effect of tumour burden on biomarker levels total tumour volume (TTV) was calculated on CT scan.

Results. Sensitivity of standard biomarkers measured separately was 46% (CEA), 21% (CYFRA 21-1) and 25% (CA 125). In contrast to standard biomarkers, sensitivity of CXCL4 alone was 82%. The combination of CXCL4 with CEA increased sensitivity to 93% ($p < 0.05$). All four biomarkers were negative in two patients with IA stage of the disease, but there was no significant correlation between the calculated tumour burden and biomarker levels except for CYFRA 21-1 ($r = 0.5$, $p < 0.05$).

Conclusions. The study indicated high diagnostic value of CXCL4 in early stage NSCLC. Detection of CXCL4 may become a useful diagnostic tool in the near future.

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