Role of Pregnancy-associated Proteins and other Biomarkers in Diagnostics and Prediction of Prognosis of Renal Cell Carcinoma

Abstract

The work describes the role of pregnancy-associated proteins, pregnancy-associated plasma protein A (PAPP-A) and placental growth factor (PlGF), in relation to renal cell carcinoma (RCC) and their possible use as a biomarkers of this tumour. The theoretical part of the thesis summarizes the essential knowledge of RCC focused on prognostic factors of this malignancy and provides a comprehensive overview of potential biomarkers. In the experimental part serum concentrations of PAPP-A and PlGF in patients operated for clear cell RCC were evaluated and their potential value in diagnostics and prediction of prognosis of subjects with this most frequent histological subtype of RCC was assessed. Furthermore, the thesis evaluates the relation of selected single nucleotide polymorphisms of *PAPP-A* gene [C/G SNP (rs13290387) a Cys327Cys SNP (rs12375498)] to the most common histological subtypes of RCC (clear cell, papillary I and II type, chromophobe) and oncocytoma. Based on our results, PAPP-A does not seem to be a suitable marker for diagnosis or evaluation of prognosis in patients with ccRCC, however, PlGF appears to be a potential diagnostic and prognostic marker of this disease. Genetic analysis showed in patients with papillary RCC type II, compared to controls, a higher occurrence of the mutant G allele C/G SNP of *PAPP-A*, results indicate a possible association between studied polymorphism and the risk of developing this histological subtype of RCC.