

DIAGNOSTIC AND PROGNOSTIC VALUE OF PLACENTAL GROWTH FACTOR SERUM CONCENTRATION IN CLEAR CELL RENAL CELL CARCINOMA

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Introduction & Aims:

Placental Growth Factor (PIGF), a member of vascular endothelial growth factor (VEGF) family, plays a crucial role in angiogenesis, which is a key factor of carcinogenesis. PIGF was identified as a potential prognostic biomarker in various types of cancer as higher expression is associated with more aggressive disease and unfavourable prognosis. The aim of our study was to evaluate the diagnostic accuracy and prognostic value of PIGF serum concentration in patients with clear cell renal cell carcinoma (ccRCC).

Materials & Methods:

In a prospective study including 49 patients subjected to partial or radical nephrectomy for ccRCC [localized without relapse (lccRCC; n=31), localized with later relapse (rccRCC; n=8), primary metastatic cancer (mccRCC; n=10); median of follow-up 4.4 years] PIGF serum concentration was assessed prior to surgery and 3 months postoperatively. Our control group consisted of 38 healthy subjects.

Results:

PIGF serum concentration was significantly higher in ccRCC compared to controls ($p=0.002$). The cut-off value of PIGF concentration for the risk of ccRCC was determined at 12.71 pg/mL (AUC=0.729; $p=0.0001$). Prior to surgery, among ccRCC subgroups, significantly higher PIGF concentration was detected in mccRCC compared to lccRCC ($p=0.002$). Postoperatively, we observed a tendency to higher PIGF serum concentration in rccRCC compared to lccRCC subgroup, however not reaching the statistical significance ($p=0.17$). The cut-off value for the risk of relapse was 11.41 pg/mL (AUC=0.792; $p=0.0003$). In subjects with localized ccRCC with PIGF concentration below 11.41 pg/mL 3-years cancer specific survival was 93% compared to 61% in subject with concentration above the cut-off value ($p=0.018$).

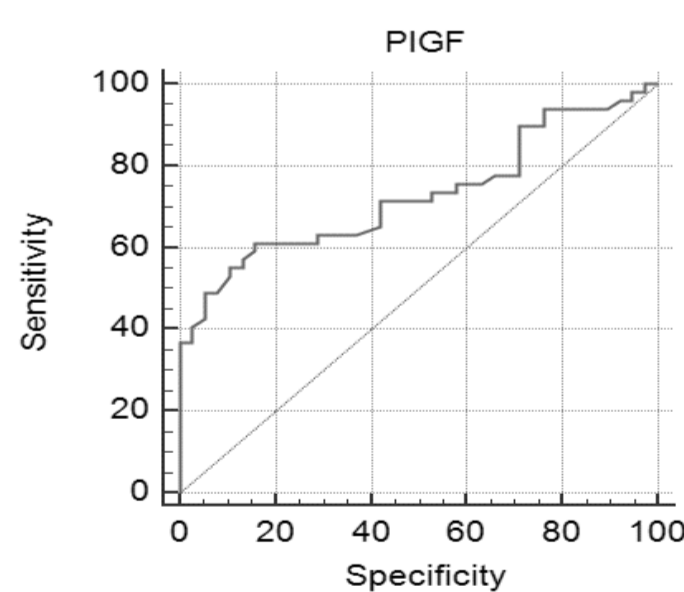


Fig 1. Cut-off value of PIGF serum concentration for the risk of ccRCC.

Cut-off value of PIGF serum concentration for the risk of ccRCC >12.71 pg/mL (AUC 0.729, specificity 84.21%, sensitivity 61.22%, $p=0.0001$).

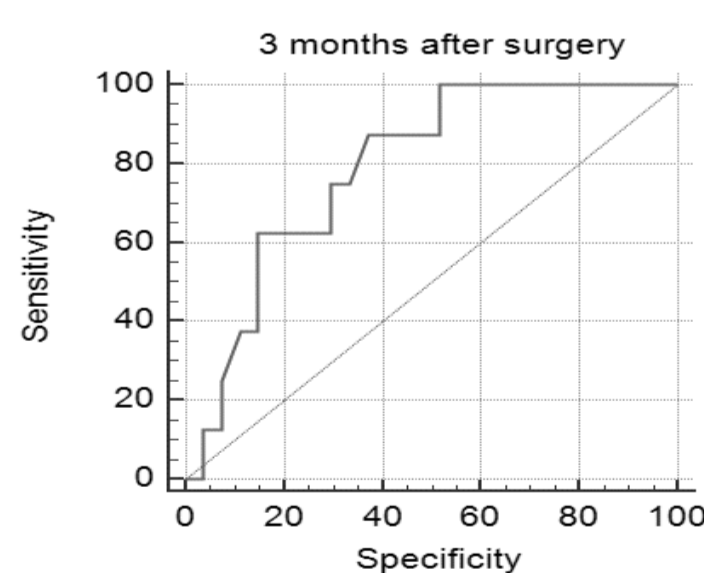


Fig 2. Cut-off value of PIGF serum concentration for the risk of ccRCC recurrence.

Cut-off value of PIGF serum concentration for the risk of ccRCC recurrence >11.41 pg/mL (AUC 0.792, specificity 62.96%, sensitivity 87.5%, $p=0.0003$).

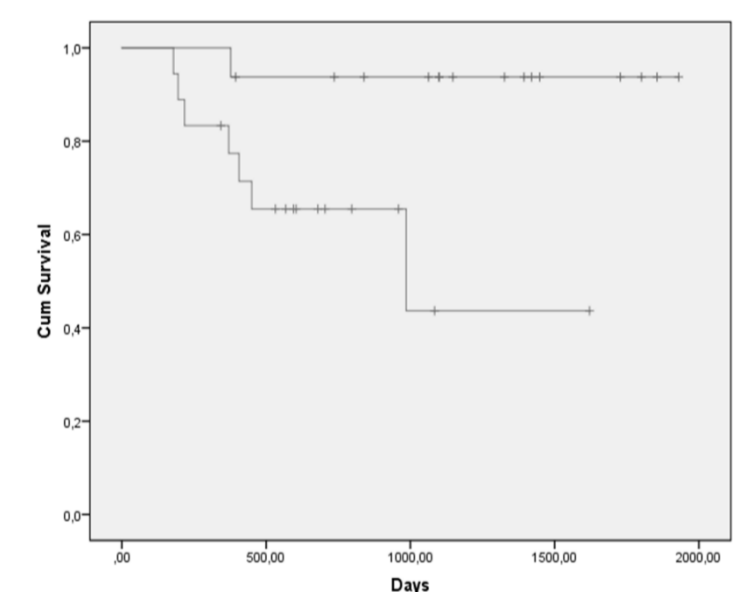


Fig 3. Kaplan-Maier curves of 3-years cancer specific survival (CSS).

Kaplan-Maier curves of 3-years cancer specific survival (CSS). Upper line – patients with PIGF serum concentration <11.41 pg/mL 3-years CSS 93%, lower line - patients with PIGF serum concentration >11.41 pg/ml 3-years CSS 61%.

Conclusion:

Based on our findings, PIGF serum concentration seems to be a useful biomarker in diagnostics and prediction of prognosis in ccRCC.