

Prognostic and predictive molecular biomarkers in metastatic renal cell carcinoma patients treated with immune checkpoint inhibitors: a systematic review

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Introduction: In recent years, the treatment landscape of metastatic renal cell carcinoma (mRCC) has been improved using immune-checkpoint inhibitors (ICI). Nevertheless, the number of patients experiencing clinical benefit from immunotherapy is still limited, while others obtain more benefit from tyrosine kinase inhibitors (TKI). The identification of prognostic and predictive factors would be crucial to better select patients most likely to benefit from immunotherapy among the other potentially available therapeutic options.

Areas covered: This systematic review summarizes the current knowledge (2010–2019) on molecular prognostic and predictive biomarkers, assessed in peripheral blood and/or from tumor tissue, in mRCC patients treated with ICI.

Expert opinion: Among all the biomarkers analyzed, PD-L1 expression on tumor tissue is the most studied. It has an unfavorable prognostic role for patients treated with TKI, which seems to be overcome by ICI-based combinations. Nevertheless, no clear predictive role of immunotherapy efficacy has been observed for PD-L1 in mRCC. Emerging evidence regarding pro-angiogenic or pro-immunogenic genomic and transcriptomic signatures suggests a potential predictive role in patients treated with ICI-based combinations. The rationale for TKI-ICI combinations is based on tumor microenvironment and genomic background, which represent the target of these two main therapeutic options for mRCC.