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Real world outcomes of immune checkpoint inhibitors in metastatic renal cell cancer(mRCC) from a tertiary care cancer centre in South India

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BACKGROUND:

Immune-checkpoint inhibitors(ICI) have transformed the management of metastatic renal cell carcinoma(mRCC). However, data on the patterns of use and outcomes of mRCC treated with ICI from resource-limited settings are scarce. We present our real-world experience using ICIs for mRCC, from a tertiary cancer centre in South India.

METHOD:

All patients with mRCC who were treated with ICIs at Cancer Institute (WIA), Chennai, from 2016 to 2025 were included in this retrospective study. Progression-free survival (PFS) and overall survival (OS) were calculated using the Kaplan-Meier method. Cox-multivariate regression analysis was utilized to identify independent factors affecting survival.

RESULTS:

Out of 160 patients with mRCC evaluated during the study period, 49(30.6%) received ICI and were included in the analysis. The median age was 54 years (range 25-84 years), 82% were male (n=40). Majority had IMDC intermediate risk (n=34/49, 69.4%), while the rest were poor risk (n=15/49, 30.6%). ICIs were used predominantly in first-line or second-line of therapy (n=26/49, 53.1% and n=13/49, 26.5% respectively). The drugs used were pembrolizumab (n=22, 44.9%), low-dose nivolumab (n=18, 36.7%), nivolumab (n=7, 14.3%), and avelumab (n=2, 4.1%). The TKI partners were lenvatinib (n=22, 44.9%), cabozantinib (n=19, 38.8%), axitinib (n=3, 6.1%), and no TKI in 5 (10.2%) patients.

ICI was given for a median of 6 cycles (IQR 4-19). Of 28 patients with a documented response assessment, the overall response rate (complete and partial response) was 39.3%. At a median follow-up of 23 months (95% CI 11.2-34.8), median PFS was 15.1 months (95% CI 5.3-24.9), and median OS was 22.3 months (95% CI 10.2-34.4). Multivariate analysis of ICI drug, TKI partner, and line of therapy, did not identify a statistically significant independent

prognostic factor. Hypothyroidism was the most frequent immune-related adverse event (26.5%), while non-endocrine immune-related toxicities occurred in 10.2% of patients.

CONCLUSION:

Less than 1/3rd patients with mRCC received ICIs, highlighting limited access in resource-constrained settings. Despite use across multiple treatment lines, ICI-based therapy achieved encouraging survival outcomes (median PFS 15.1 months; OS 22.3 months) with acceptable toxicity. These findings support real-world ICI effectiveness while underscoring cost-adapted strategies to improve access.