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Non clear renal cell carcinoma: metastatic patterns and survival from a real-world cohort

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Background:
Non clear cell RCC (nccRCC) is heterogeneous and under represented in trials. We describe demographics, metastatic patterns—highlighting brain involvement in MIT-family disease—and overall outcomes.

Methods:
Retrospective cohort across two large UK centres (2012–2025). PFS was calculated from first-line therapy to radiological progression/death; OS from metastatic diagnosis to death/last follow-up. Kaplan–Meier medians with 95% CIs were estimated overall and by histology.

Results:
Forty one patients were included (median age 56; 56% male); IMDC: favourable 22%, intermediate 61%, poor 17%. Histologies: papillary 23/41, chromophobe 6/41, unclassified 6/41, MIT-family/TFE3 5/41, oncocytic 1/41. Nodal disease was most frequent overall (30/41). Three patients had brain metastases, of whom two were MIT-family, aligning with this subtype's observed metastatic pattern. Second site patterns varied: lung in papillary/unclassified, liver in chromophobe, brain in MIT-family, and bone in oncocytic variants. KM estimates for the overall cohort: mOS 24.15 months (95% CI 24.38–49.41)**;** mPFS 13.93 months (95% CI 16.10–49.41)**.** By histology, papillary mOS/mPFS: 24.38 (NR–24.38)/16.10 (17.25–NR); chromophobe: 24.15 (6.64–49.41)/24.15 (5.68–49.41); unclassified: 11.01 (6.70–18.79)/7.52 (2.46–NR); MIT-family**:** 47.54 (NR–NR)/7.52 (5.32–NR). Small subgroup sizes account for wide CIs.

Conclusion:
Metastatic patterns differed by histology; brain metastasis was relatively common and observed in 40% of MIT family tumours, supporting consideration of baseline contrast-enhanced head CT/MRI in this subgroup. Survival also varied by subtype, with unclassified tumours showing the poorest outcomes and MIT family displaying the longest OS despite limited events. These

real-world findings support subtype informed imaging strategies but require validation in larger, multi-centre cohorts.