

Title: A Clinicopathological study of adult renal cell carcinoma with comparison and re-grading of Fuhrman system with ISUP 2012 – A 3 year retrospective study.

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Introduction: Renal cell carcinoma is the 9th most common malignancy in men and 14th most common malignancy in women in world. It is also the most lethal urological malignancy and continues to be on the rise in developed countries. Though only 34.1% of the new renal cell carcinomas are diagnosed in developing countries, they contribute to 41.6% of all deaths.

The clinical management depends on pathological parameters like tumour stage, grade, lymphovascular invasion and histological subtype. Nuclear grading is important because it indirectly reflects on the biochemistry of the malignant cells. Fuhrman grading of nuclei (1982) has been the most used so far but studies have highlighted problems concerning its interpretation, validation and reproducibility which led to the ISUP grading. This has been validated as an indicator for prognosis especially with clear cell and papillary RCC at the 2012 ISUP consensus conference and subsequently endorsed by the WHO.

Aim: To compare Fuhrman grading with ISUP/WHO grading and re-grade where applicable, study the microscopic features of clear cell and papillary renal cell carcinoma in adults and to determine event free survival in comparative grades.

Materials and Methods: All renal cell carcinomas of clear cell and papillary sub-type diagnosed in the Department of General Pathology from January 2013 to December.

171 cases (158 cases of clear cell and 13 cases of papillary RCC were analysed for histological features initially and then graded separately using both of Fuhrman system and the ISUP system.

Results: The mean age of presentation was 52.89 years with male: female 4.5:1 and 52% incidentally detected cases. The mean tumour size was 5.99cm. The overall agreement between both the systems was 92.79% with a weighted kappa of 0.5554. About 89.47% patients were free of disease at their last follow up with a mean disease free survival of 4 years 11 months. The initial clinical presentation was found to be significant. The histopathological parameters with prognostic significance were lymphovascular invasion and nuclear grade.

Conclusion: The ISUP grading system was found to be superior to the Fuhrman system due to its diagnostic reproducibility. There was no significant change in grades of Fuhrman grade 1 and grade 4 tumours on applying ISUP system while there was a significant downgrade in Fuhrman grade 2 and grade 3 tumours to ISUP grades 1 and 2 as ISUP grading was dependent only on nucleolar morphology. ISUP grading also had a relatively better ability to predict clinical outcomes especially in those that were downgraded from Fuhrman grade 2.

Key words: RCC, nuclear grading, Fuhrman grade, ISUP/WHO.