

The clinicopathological profile of Renal cell carcinoma at BP Koirala Memorial Cancer Hospital

Pokhrel G P, Jalan A, Pradhan E , Pokhrel B M ,Gharti B B, Rana S, Nepal U, Lamichhane N

Urology Unit, Department of Surgical Oncology, BP Koirala Memorial Cancer Hospital, Nepal

Abstract**Introduction**

Renal cell carcinoma accounts for 3-5% of all oncological diagnoses. In this study, we aim to assess the clinicopathological profile of Renal cell carcinoma in a cancer hospital of Nepal.

Method

This is a retrospective study conducted at BP Koirala Memorial Cancer hospital Nepal. All patients with localized and locally advanced RCC who underwent radical or partial nephrectomy at our hospital between Jan 2012 to Dec 2018 were included. Normally distributed continuous variables were expressed as median, mean \pm standard deviation (SD). Categorical variables were expressed as frequencies and percentages of an appropriate denominator.

Results

Among 94 patients with RCC, the median age was 55 years (53.56 ± 12.83). Most of the patients were male (56.4%, n=53) and Hindu by religion (67.02%, n=63). Eighty-three percent (n=78) of patients were smokers, 58.5 % (n=55) were hypertensive and 40.4% (n= 38) had history of diabetes mellitus. The most common symptom was incidental renal mass (42.55%, n=40). Ninety-five percent (n=89) of the patients underwent radical nephrectomy and five percent (n=5) of the patients underwent partial nephrectomy. The median duration of postoperative hospital stay was 8 days. The most common histological finding was Clear cell type (86.17, n=81) followed by papillary cell type (10.63%, n= 10) followed by chromophobe type (2.12%, n=2), and duct of Bellini(1.06%, n=1). Most of the patients had pathological T2 (41.48%, n=39) disease followed by T3 (26.59%, n=25) disease.

Conclusion: Smoker males in the fifth to sixth decade of life are at risk for developing RCC. Radical Nephrectomy is the standard of care with Clear cell carcinoma as the most common histological subtype.

Corresponding Author:

Dr Aditya Jalan, MBBS, MS, Registrar, Urology Division, Department of Surgical Oncology, BP Koirala Memorial Cancer Hospital, Nepal Phone: 9846265483, Email: dradityajalan@gmail.com

Keywords: Renal cell carcinoma, Nephrectomy, Clear cell

Introduction:

Renal cell carcinoma (RCC) is the sixth most commonly diagnosed cancer in men and the tenth in women worldwide, accounting for 5% and 3% of all oncological diagnoses, respectively.¹ It is the most common type of malignant kidney tumour, originating in the renal cortex accounting for 80 to 85% of all malignant kidney tumours.^{2,3} Males are around two times more likely than females to develop RCC in sixth to eighth decades of life and is uncommon in those under 40 years of age, and it is extremely rare in children.^{4,5,6} Because of the considerable consequences of the subtypes in the prognosis and management of these cancers, histological classification of RCCs is particularly important.^{7,8} The 3 histological subtypes Clear cell renal cell carcinomas (ccRCC), papillary renal cell carcinomas (pRCC), and chromophobe renal cell carcinomas (crRCC) account for more than 90%.⁹

Methodology

This is a retrospective study that was done at the Urology unit of B P Koirala Memorial Cancer hospital (BPKMCH), Bharatpur, Nepal. Inclusion criteria included patients with localized and locally advanced RCC who underwent radical or partial nephrectomy at our hospital between Jan 2012 to Dec 2018. Exclusions were metastatic RCC. All socio-demographic and clinic-pathological data and duration of hospital stay were collected. Normally distributed continuous variables were expressed as median, mean \pm standard deviation (SD). Categorical variables

were expressed as frequencies and percentages of an appropriate denominator. All of the statistical analyses were performed using SPSS 16.0 software (SPSS Inc., Chicago, Illinois, USA).

Results

Among 94 patients with RCC, the median age was 55 years (53.56 \pm 12.83). Most of the patients were male (56.4%, n=53) and Hindu by religion (67.02%, n=63). Eighty-three percent (n=78) of patients were smokers, 58.5 % (n=55) were hypertensive and 40.4% (n= 38) had history of diabetes mellitus. The most common symptom was incidental renal mass (42.55%, n=40) followed by pain abdomen (31.19%, n=30), followed by hematuria (26.59%, n=25) and abdominal mass (21.27%, n=20). Ninety-five percent (n=89) of the patients underwent radical nephrectomy and five percent (n=5) of the patients underwent partial nephrectomy. The median duration of postoperative hospital stay was 8 days. The most common histological finding was Clear cell type (86.17, n=81) followed by papillary cell type (10.63%, n= 10) followed by chromophobe type (2.12%, n=2), and duct of Bellini(1.06%, n=1). Most of the patients were T2 (41.48%, n=39) disease, followed by T3 (26.59%, n=25) disease, followed by T1 (20.21%, n=19) disease, and T4 (11.70, n=11) disease.

Discussion

Renal Cell Carcinoma is usually a disease of the elderly male population where around 50% of patients present between the age group of 55 to 75

years. The median age is 64 years.¹⁰ RCC shows male predominance (Male: Female ratio of 2:1).¹¹ In our study, the mean age of the patient was 53.56 ± 12.83 years and the median age was 55 years (Male: Female ratio of 1.3:1).

Incidence of RCC has increased recently due to improvements in the imaging systems and more than 60% of RCC are incidental findings on radiography with asymptomatic patients.¹² The incidence of incidental findings was also higher in our data which may be due to increased use of available imaging. In this study, 42.5% of RCC cases were found on an incidental basis via various imaging modalities.

Various Risk factors play a significant role in the incidence of RCC and directly affect the survival rate. Tobacco consumption in any form is considered the most common independent risk factor Cumulative exposure is directly proportional to RCC risk with a 7% increased risk for a smoker with pack-years of less than 10 years and 80% greater increased risk of advanced RCC for a smoker with pack-years of more than 30-40 years.¹³ In our study, 82.9% of patients were smokers. Likewise, Hypertension, Diabetes are also established risk factors for RCC. In our study, Hypertension was prevalent in 58.5% and diabetes in 40.4% of patients.

Though RCC has a broad spectrum of histological entities in which clear cell carcinoma is the most common variant seen in western countries.¹² In our study, Clear cell carcinoma was the most common histological subtype followed by papillary carcinoma. Various studies mentioned, RCC is mostly diagnosed at T2 disease status.

Similarly, in our study, most of the patients presented at the T2 tumour stage. In contrast, Nardi et.al reported the T1 tumour stage as the most common T stage (32%).¹⁴

Nephron sparing surgery is the standard of management of clinical T1 renal mass and Radical Nephrectomy for higher stage RCC. In our series, however, 95% underwent Radical Nephrectomy and 5% underwent partial Nephrectomy. The decision for the best approach is, however, case dependent and various factors may play a role in decision making such as the presence of co-morbidities, life expectancy, anatomical variation, difficulty in surgery.

Our study does have some limitations. This study was a retrospective study with a smaller sample size. Only the patients who underwent surgery were included, which may have resulted in an under representation of higher stage RCC. A further prospective study is required for better results.

Conclusion

Smoker males in the fifth to sixth decade of life are at risk for developing RCC. Radical Nephrectomy is the standard of care with Clear cell carcinoma as the most common histological subtype.

References

1. Siegel RL, Miller KD, Jemal A. Cancer statistics, 2018. *CA Cancer J Clin.* 2018; 68(1):7–30.
2. Liu W, Ren D, Xiong W, Jin X, Zhu L. A novel FBW7/NFAT1 axis regulates cancer immunity in sunitinib-resistant renal cancer by inducing PD-L1

- expression. *J Exp Clin Cancer Res.* 2022; 41(1):1–18.
3. Siegel RL, Miller KD, Fuchs HE, Jemal A. Cancer statistics, 2022. *CA Cancer J Clin.* 2022; 72(1):7–33.
 4. Siemer S, Hack M, Lehmann J, Becker F, Stöckle M. Outcome of renal tumors in young adults. *J Urol.* 2006; 175(4):1240–4.
 5. Thompson RH, Ordonez MA, Iassonos A et al. Renal Cell Carcinoma in young and old patients. *J Urol.* 2008; 180(4):1262.
 6. Cook A, Lorenzo AJ, Salle JLP, et al. Pediatric renal cell carcinoma: Single institution 25-year case series and initial experience with partial nephrectomy. *J Urol.* 2006; 175(4):1456–60.
 7. Lopez-Beltran A, Carrasco JC, Cheng L, Scarpelli M, Kirkali Z, Montironi R. 2009 Update on the Classification of Renal Epithelial Tumors in Adults. *Int J Urol.* 2009; 16(5):432–43.
 8. DeCastro GJ, McKiernan JM. Epidemiology, Clinical Staging, and Presentation of Renal Cell Carcinoma. *Urol Clin North Am.* 2008; 35(4):581–92.
 9. Lopez-Beltran A, Scarpelli M, Montironi R, Kirkali Z. 2004 WHO Classification of the Renal Tumors of the Adults. *Eur Urol.* 2006; 49(5):798–805.
 10. Sanchez A, Allard CB, Wilson KM. Epidemiology of renal cell carcinoma. *Pathol Epidemiol Cancer.* 2016; :313–34.
 11. Chow WH, Devesa SS, Warren JL, Fraumeni JF. Rising incidence of renal cell cancer in the United States. *J Am Med Assoc.* 1999; 281(17):1628–31.
 12. Sirjuesingh D, Sandy R-A, Persaud SA. Clinicopathological Profile of Renal Cancer in a Caribbean Hospital: Analysis of a Surgical Case Series. *Cureus.* 2021; 13:2019–22.
 13. Ljungberg B, Campbell SC, Cho HY, et al. The epidemiology of renal cell carcinoma. *Eur Urol.* 2011; 60(4):615–21.
 14. Nardi AC, Zequi S de C, Clark OAC, Almeida JC, Glina S. Epidemiologic characteristics of renal cell carcinoma in Brazil. *Int Braz J Urol.* 2010; 36(2): 151–7.