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Evaluating Renal Tumors: A Comprehensive Review of Risk Factors, Clinical Presentations, and Prognostic Histology in 80 Patients

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ABSTRACT

Introduction: This study delves into the intricate histological patterns of kidney cancer, with a focus on renal cell carcinoma (RCC), which accounts for a significant portion of adult solid tumors. Diagnosis of RCC relies on clinical assessment and imaging techniques, confirmed through histopathological examination. By thoroughly analyzing histological subtypes, grading systems, and molecular features of RCC, this investigation aims to deepen our comprehension of the disease's pathological mechanisms. Such insights hold promise for refining clinical management strategies and prognostic assessments in kidney cancer care. **Patients and Methods:** The Urology and Andrology department at UHC Ibn Rochd conducted a descriptive study spanning from February 2018 to December 2023, focusing on patients who underwent total or partial nephrectomy for renal tumors. This retrospective analysis involved meticulous data collection, encompassing various parameters crucial for a comprehensive understanding of the patient cohort. Age, sex, clinical, and paraclinical information were recorded, offering insights into preoperative status and diagnostic workup. Anatomopathological results were meticulously documented, revealing the histopathological characteristics of excised renal tumors. Through systematic data collection and structured analysis, the study provided detailed exploration of patient demographics, clinical presentation, and histopathological features, enriching the understanding and management of renal tumors. **Results and Discussion:** Our study reveals a mean patient age of 62.8 years, with a male predominance (M/F ratio: 1.9), indicating an older demographic predominantly affected by renal tumors. Delays in diagnosis were evident, with an average time from symptom onset to consultation of 11 months. Smoking (51%), hypertension (27.8%), and obesity (21.2%) were identified as key risk factors, emphasizing the importance of addressing modifiable risks in renal cancer prevention. Low back pain (45%) and hematuria (27.5%)

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were the most common symptoms, with incidental discovery accounting for 15% of cases. Radical nephrectomy (62%) was the primary surgical approach,follwoed by partial nephrectomy (36%) with clear cell RCC (90%) being the most common histological subtype. Locally advanced disease (PT2: 48.75%) and moderate differentiation (ISUP grade II: 55%) were predominant, indicating aggressive tumor behavior. These findings provide valuable insights into renal tumor epidemiology, presentation, and histopathological characteristics, informing clinical management and prognosis assessment. **Conclusion:** Clear cell renal cell carcinoma (RCC) is the primary consideration in kidney cancer cases until definitively diagnosed otherwise, with a notable male predominance. Approximately half of diagnosed cases present with an intermediate prognosis, emphasizing the need for careful management and monitoring. Smoking and hypertension are key modifiable risk factors, warranting targeted intervention efforts. Routine annual check-ups can serve as pivotal opportunities for early detection and intervention. By emphasizing proactive screening and risk factor modification, healthcare providers can play a pivotal role in mitigating the burden of kidney cancer and improving long-term prognosis.

Keywords: Renal Tumours, Risk Factors, Clinical Profile, Histopronosis.

INTRODUCTION

Kidney cancer accounts for 3% of all adult solid cancers, Renal cell carcinoma (RCC), the most common form of kidney cancer, constitutes approximately 3% of all malignancies affecting adults. The diagnosis of RCC typically relies on a combination of clinical evaluation and imaging modalities, culminating in histological examination for definitive confirmation. Prognosis and clinical management are guided by various factors, including tumor stage, grade, histological subtype, and patient demographics.

The primary objective of this investigation is to elucidate the histological patterns of kidney cancer, particularly renal cell carcinoma (RCC). RCC comprises 3% of all adult solid tumors and is diagnosed through a combination of clinical assessments and imaging studies, with confirmation typically achieved via histopathological examination. This study aims to provide a comprehensive analysis of the histological subtypes, grading systems, and molecular characteristics of RCC. By delineating these histological patterns, the study seeks to enhance our understanding of the underlying pathological mechanisms driving kidney cancer and to provide valuable insights for clinical management and prognostication.

PATIENTS AND METHODS

The Urology and Andrology department at UHC Ibn Rochd undertook a descriptive study spanning from February 2018 to Decembre 2023, aimed at investigating patients who underwent total and partial nephrectomy for renal tumors. This retrospective analysis involved meticulous data collection, encompassing various parameters crucial for a comprehensive understanding of the patient cohort. Age and sex were recorded alongside clinical and paraclinical information, providing insights into the preoperative status and diagnostic workup of each individual. Moreover, anatomopathological results were meticulously documented, shedding light on the histopathological characteristics of the excised renal tumors. By employing pre-established data collection forms, the study ensured systematic documentation, facilitating robust analysis and interpretation of the findings. This structured approach allowed for a detailed exploration of patient demographics, clinical presentation, and histopathological features, contributing valuable insights to the understanding and management of renal tumors.

RESULTS

The findings from our study reveal a mean age of 62.8 years among the patient cohort, indicating an older demographic commonly affected by renal tumors. Notably, there was a male predominance with a M/F ratio of 1.9, underscoring the higher incidence of renal tumors among men. The average time from symptom onset to consultation was 11 months, highlighting potential delays in diagnosis and the need for improved awareness and early detection efforts.

Table I. Risk factors for renal tumours

Risk factors	%
Smoking	51
Arterial Hyper Tension	27,8
Obesity	21,2

Several key risk factors were identified in our analysis, with smoking accounting for 51% of cases, followed by hypertension at 27,8% and obesity at 21,2%. These findings underscore the importance of addressing modifiable risk factors in renal cancer prevention strategies. Clinically, low back pain was the most common presenting symptom, observed in 45% of cases, followed by hematuria in 27,5%, emphasizing the diverse clinical manifestations of renal tumors.

Table II. Distribution of patients according to mode of revelation

Symptomatology	Cases	Frequency
Low back pain	36	45%
Haematuria	22	27,5%
Classic triad	10	12,5%
incidental discovery	12	15%

Interestingly, incidental discovery accounted for 15% of cases, highlighting the importance of incidental findings in the diagnosis of renal tumors. The majority of patients presented with an Eastern Cooperative Oncology Group (ECOG)/World Health Organization (WHO) performance status of 1 (55.1%), indicative of well-preserved functional status despite the disease burden.

Radical nephrectomy emerged as the predominant surgical approach, performed in 62.5% of cases and partial nephrectomy (37,5%). Renal cell carcinoma (RCC) constituted 90% of cases, with clear cell RCC being the most common histological subtype in 95% of cases. Additionally, 11% of cases exhibited a sarcomatoid component, suggesting aggressive tumor behavior.

Table III. Distribution of patients according to histological subtype

Histological types	cases	%
Clear cell renal cell carcinoma	50	62,5%
chromophobe cell carcinoma	16	20%
Papillary renal cell carcinoma	4	5
Epithelial Nephroblastoma	2	2,5
Oncocytoma	4	5
squamous cell carcinoma	2	2,5
Lymphoma B	1	1,25
Carcinome renale avec translocation MITF	1	1,25
Total	80	100

Tumor staging revealed a predominance of PT2 stage (48,75%), followed by PT3 (32,5%) and PT1 (11,25%) stages, indicating locally advanced disease in a significant proportion of patients.

Table IV. Distribution of patients according to tumour stage

TUMOR STAGE	Cases	%
PT1	9	11,25
PT2	39	48,75
PT3	26	32,5
PT4	6	7,5
TOTAL	80	100

Lymph node metastases were observed in 8,2% of cases, with Furhman grade II being the most common (55%), indicative of moderately differentiated tumors. Vascular emboli were present in 22% of cases, highlighting the propensity for tumor spread via vascular emboli invasion.

Table V. Distribution of patients according to tumour grade

Grade Tumoral	Cases	%
I	15	18,75
II	44	55
III	10	12,5
IV	11	13,75
Total	80	100

Overall, these comprehensive clinical and pathological findings provide valuable insights into the epidemiology, presentation, and histopathological characteristics of renal tumors, informing clinical decision-making and prognosis assessment in affected individuals.

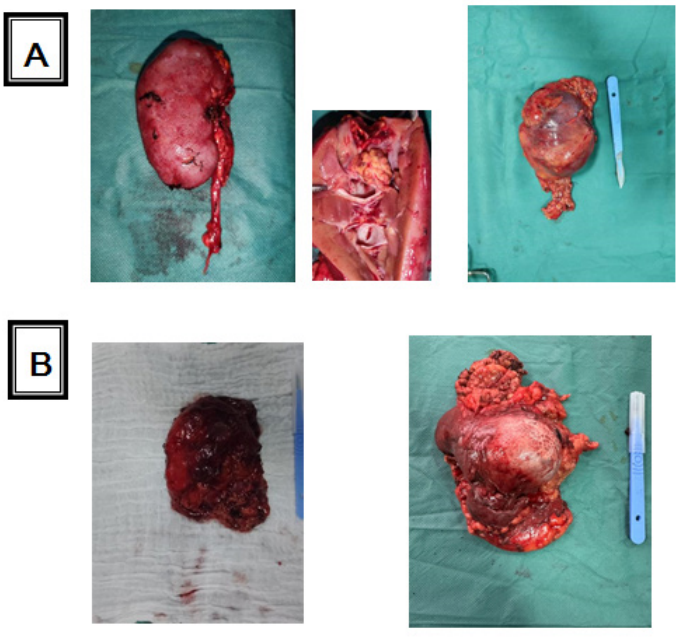

Figure 1. Nephrectomy operation specimens: A- Right B- Left.

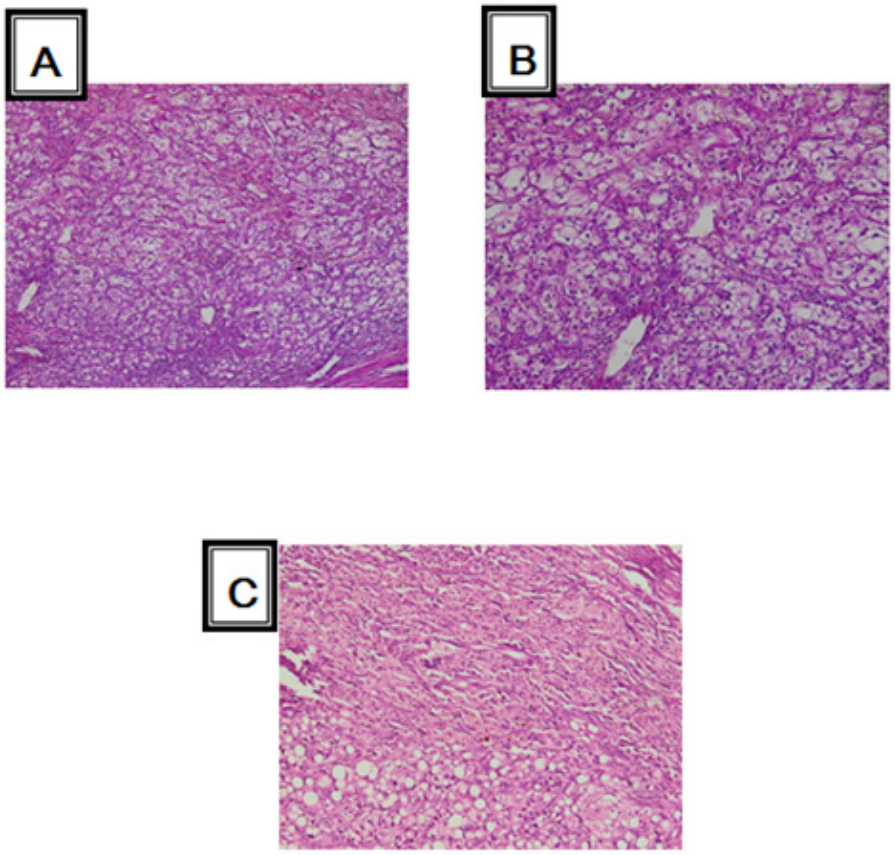

Figure 2. Clear cell renal cell carcinoma growth 10 (A) and 20 (B); chromophobe renal cell carcinoma with liposarcomatous component (C).

RESULTS AND DISCUSSION

Kidney cancer, comprising approximately 3% of adult solid cancers, exhibits a notable male predilection, age and gender are two factors that cannot be changed and contribute to risk, with a ratio of 1.5 males to every female and the highest occurrence observed between the ages of 60 and 70 [1], with a reported incidence twice as high in men compared to women, as corroborated by our study findings [2,3]. The primary risk factors associated with kidney cancer encompass obesity, hypertension, smoking, and end-stage renal failure, aligning with established epidemiological trends [4]. Suggestions for primary prevention include quitting smoking, engaging in regular physical activity, and achieving weight loss in obese individuals, all aimed at reducing the risk of kidney cancer [1].

While incidental discovery through imaging examinations like ultrasound is the most common diagnostic mode, our study diverged from this norm, with low back pain being a frequent presenting complaint [5], followed by the classic triad of symptoms [6]. Contrast-enhanced CT scans play a pivotal role in characterizing renal lesions and guiding surgical interventions characterization and surgical planning of renal lesions as well as for the evaluation of the locoregional extension [7].

Renal cell carcinoma (RCC) emerges as the predominant histological subtype, representing 80 to 85% of all renal tumors, consistent with previous studies [8]. Notably, clear cell carcinoma accounts for the majority of RCC cases, as evidenced by our findings and supported by existing literature. Benjelloun A, et al. [9] in a series of 155 cases reported 84.4% CRC, Coulange E and Bretheau D [10] reported 66% clear cell carcinoma, Albasri AM, et al. [11] Reported in a series of 40 cases 85.8% CRC, and in our study it was found in 95% of cases. For all stages combined, the recurrence-free survival rate of these patients operated on for CRC is 70% [12].

Chromophobe cell carcinoma, (chRCC) in its localized form generally exhibits a more favorable prognosis in comparison to clear cell renal cell carcinoma (ccRCC). The 5-year recurrence-free survival and cancer-specific survival rates for localized chRCC were reported at 89.3% and 93%, respectively. However, in advanced stage IV cases, chRCC does

not confer a survival advantage over ccRCC., and constitutes a distinct entity within kidney cancer [13].

Our study identified a notable proportion of chromophobe carcinoma cases 20%, in literrature Atif Ali Hashmi et al. [11] reported only 6% of ChRCC in a series of 64 cases, 100% of which were Fuhrmann grade II, Yddoussalaha O, et al. [14] reported 18.6% of this subtype.

The TNM stage stands as the paramount conventional prognostic determinant in renal cell carcinoma (RCC). However, evidence suggests that relying solely on anatomical, histological, and clinical factors may have reached a prognostic plateau [15].

Furhman grade, histological subtype differentiation, and the presence of microangiogenesis and vascular emboli. Notably, PT2 stage predominated in our study cohort, highlighting the prevalence of localized disease at presentation [16].

Overall, our study contributes to the broader understanding of kidney cancer epidemiology, clinical presentation, histopathological characteristics, and prognostic factors, providing valuable insights for clinical practice and research endeavors in the field.

CONCLUSION

Until definitively diagnosed otherwise, clear cell renal cell carcinoma (RCC) stands as the primary consideration in cases of kidney cancer, with a notable male predominance observed, with two men affected for every woman. This underscores the importance of vigilance, particularly among males, in monitoring for potential symptoms or risk factors associated with kidney cancer.

Approximately half of the diagnosed cases present with an intermediate prognosis, necessitating careful management and monitoring strategies to optimize patient outcomes. Smoking and hypertension emerge as key modifiable risk factors warranting targeted intervention efforts. Encouragingly, routine annual check-ups within the framework of school and occupational medicine can serve as pivotal opportunities for early detection and intervention in incidental cases with poor prognostic indicators.

By emphasizing the importance of proactive screening and risk factor modification, healthcare providers can play a pivotal role in mitigating the burden of kidney cancer and improving long-term prognosis for affected individuals. This proactive approach aligns with broader public health initiatives aimed at promoting early detection and intervention across diverse healthcare settings.

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CONFLICT OF INTEREST

The authors declare that there are no conflicts of interest.

REFERENCES

1. Bigot P, Barthélémy P, Boissier R, Khene Z, Pettenati C, Bernhard J, et al. (2022). French AFU Cancer Committee Guidelines - Update 2022-2024: Management of kidney Cancer. Progrès en Urologie. 32(15):1195-1274.
2. Amling CL. (2004). The association between obesity and the progression of prostate and renal cell carcinoma. Urol Oncol. 22(6):478-484.
3. Patard JJ, Tazi H, Bensalah K, Rodriguez A, Vincendeau S, Rioux-Leclercq N, et al. (2004). The changing evolution of renal tumours: a single center experience over a two-decade period. Eur Urol. 45(4):490-493.
4. Harrison H, Thompson RE, Lin Z, Rossi SH, Stewart GD, Griffin SJ, et al. (2021). Risk Prediction Models for Kidney Cancer: A Systematic Review. Eur Urol Focus. 7(6):1380-1390.
5. Lee CT, Katz J, Fearn PA, Russo P. (2002). Mode of presentation of renal cell carcinoma provides prognostic information. Urol Oncol. 7(4):135-140.
6. Gray RE, Harris GT. (2019). *Renal cell carcinoma: Diagnosis and management*. AAFP. Available at: https://www.aafp.org/pubs/afp/issues/2019/0201/p179.html
7. Sheth S, Scatarige JC, Horton KM, Corl FM, Fishman EK. (2001). Current concepts in the diagnosis and management of renal cell carcinoma: role of multidetector CT and three-dimensional CT. Radiographics 21(suppl):S237-S254.
8. Capitanio U, Bensalah K, Bex A, Boorjian SA, Bray F, Coleman J, et al. (2019). Epidemiology of Renal Cell Carcinoma. Eur Urol. 75(1):74-84.
9. Benjelloun M, Nouri A, Ghannam Y, Karmoun T, El Khader K, Koutan A, et al. (2010). Le cancer du rein chez l'adulte. Etude rétrospective à propos de 155 cas. African Journal of Urology. 15(4):268-277.

10. Bretheau D, Lechevallier E, Eghazarian C, Grisoni V, Coulange C. (1995). Prognostic significance of incidental renal cell carcinoma. Eur Urol. 27(4):319-323.

11. Albasri AM, El-Siddig AA, Hussainy AS, Alhujaily AS. (2017). Clinicopathologic Patterns of Adult Renal Tumors. Saudi J Med Med Sci. 5(3):242-247.

12. Cheville JC, Lohse CM, Zincke H, Weaver AL, Blute ML. (2003). Comparisons of outcome and prognostic features among histologic subtypes of renal cell carcinoma. Am J Surg Pathol. 27(5):612-624.

13. Moch H, Ohashi R. (2021). Chromophobe renal cell carcinoma: current and controversial issues. Pathology. 53(1):101-108.

14. Yddoussalah O, Saouli A, Elouazzani H, Karmouni T, Khader KE, Koutani A, et al. (2018). Carcinome renal à cellules chromophobes: à propos de 16 cas et une revue de la littérature. African Journal of Urology. 24(4):291-295.

15. Klatte T, Rossi SH, Stewart GD. (2018). Prognostic Factors and Prognostic Models for Renal cell Carcinoma: A literature review. World J Urol. 36(12):1943-1952.

16. Sobin LH, Gospodarowicz M, Wittekind C. (2009). Union for International Cancer Control. 7th edn. TNM Classification of Malignant Tumours. Heidelberg, Germany: Wiley.