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COMPARISON OF INCIDENTALLY DETECTED RCC VS SYMPTOMATIC: A SINGLE CENTER EXPERIENCE.

Urology

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ABSTRACT

OBJECTIVES: Renal cell carcinoma (RCC) is the most common malignancy of the kidney. Introduction and extensive application of modern imaging techniques, including ultrasonography, computed tomography(CT), and magnetic resonance imaging, have led to an increase in the number of incidentally discovered renal tumors. We analysed incidentally detected renal tumours with regard to their incidence, demographics and histopathology in a contemporary series and compared with symptomatic tumours.

MATERIAL AND METHODS: The author reviewed the records of incidentally detected renal masses, treated surgically for suspicion of malignancy between January 2011 and March 2020.The incidence, demographics and histopathology were noted in both incidental and symptomatic tumours.

RESULTS: Out of 244 renal masses, 67 cases were incidentally detected. Out of which, 48 (71.64 %) were men and 19 (28.36 %) were women, 34 (50.74%) were on the left side and 33 (49.26%) were on the right side. The mean size of incidental tumour was 6.2 cm, 27 (39.55%) partial nephrectomies were performed as compared to 10.1 % in symptomatic tumours (p=0.001%) . Out of these 67 renal masses, 7 (10.44 %) were benign, and 60 (89.56 %) were malignant. Among histopath subtypes, 47 (78.33%) were clear cell, 6 (10.00%) were papillary, 3 (5.00%) were chromophobe , 2 (3.33 %) were collecting duct and 2 (3.33%) were other malignancies. Fuhrman grade 2 was most common 31 (50.83 %) in these tumours . Stage T1 tumours were encountered in 93.3 % of incidental masses as compared to only 38.1% of symptomatic (p=0.001).

CONCLUSIONS: The incidentally detected tumours are being diagnosed with increased frequency at lower stage (T1) and grade(grade 2).

KEYWORDS

Renal cell carcinoma (RCC),Incidental renal tumours, Symptomatic renal tumours.

INTRODUCTION

Renal cell carcinoma (RCC) is the most common malignancy of the kidney. In the United States, kidney cancer accounts for approximately 3% of all adult cancer.[1] Introduction and extensive application of modern imaging techniques, including ultrasonography, computed tomography (CT), and magnetic resonance imaging, have led to an increase in the number of incidentally discovered renal tumors, many of which are small. [2] Incidentally discovered tumors have a higher likelihood of being low-stage renal cell carcinomas (RCCs) or benign lesions.[2,3]

The increased detection rate of small renal masses has raised the question about conservative management of these masses in select patients such as those with advanced age, medical comorbidities (which preclude surgical intervention), solitary kidneys, bilateral tumors, poor contralateral kidney function or in patient who do not desire surgery.[4-6] The standard of care for clinically localized RCC remains surgical resection due to the favorable prognosis associated with surgery and the relative ineffectiveness of systemic therapy. Patients undergoing radical or partial nephrectomy for pT1a (4 cm or less) tumors have demonstrated 5-year CSS rates in excess of 95%. [7,8]

However, more recently it was suggested that select exophytic renal tumors more than 4 cm may undergo NSS without compromising oncological efficacy.[9]

The author have analysed incidentally detected renal tumours with regard to their incidence, demographic profile and histopathological findings in a contemporary series and compared with symptomatic tumours.

MATERIAL AND METHODS-

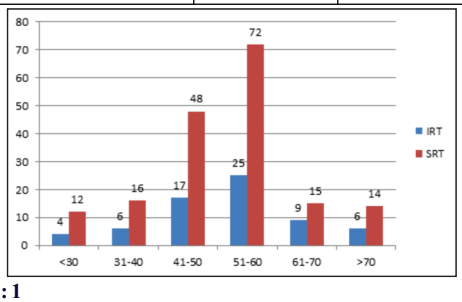
We followed incidentally detected renal masses, which were treated surgically for suspicion of malignancy between January 2011 and March 2020 and compared with symptomatic tumours. Patients were treated with open/laparoscopic radical nephrectomy, laparoscopic/ open partial nephrectomy and adjunctive nephrectomy. Patient demographics, presenting symptoms, imaging, operative details, pathology and complications were evaluated.

Pathology specimens were assigned a histological subtype according to the recommendations of the 1997 American Joint Committee on Cancer report of RCC classification and the Heidelberg classification scheme [10,11].

Only lesions suspicious for neoplasm, including angiomyolipoma and complex cystic structures, were included. Simple symptomatic renal cysts were excluded from the study. The accumulated data were analyzed using chi-square and fisher`s exact tests.

Table 1

Variable	Symptomatic tumours (SRT) (n= 177)	Incidental tumours(IRT) (n==67)	P value
Mean age (years)	57	51	0.07
Gender (%)			
Male	71.1	71.2	0.10
female	28.8	28.7	0.10
Mean size (cm)	7.8	6.2	0.04
Surgical treatment			
Radical	89.9	60.4	0.08
Partial	10.1	39.5	0.001
Pathology			
Benign	3.3	10.4	0.001
Malignant	96.6	89.5	0.04
Histopathology			
Clear cell	77.1	77.5	0.10
Papillary	9.9	12	0.08
Chromophobe	4.9	5	0.10
Collecting duct	4.1	4.1	0.10
Undifferentiated and others	3.8	5	0.10
Fuhrman nuclear grading			
G1	14.9	16.6	0.08
G2	48.9	46.6	0.09
G3	22.8	25.5	0.07
G4	13.1	11.1	0.06
TNM Stage			
T1N0M0	38.1	93.3	0.001
T2N0M0	19.9	4.1	0.002
T3N0M0	8.7	2.5	0.06
N+	4.9	0	-
M+	28.1	0	-



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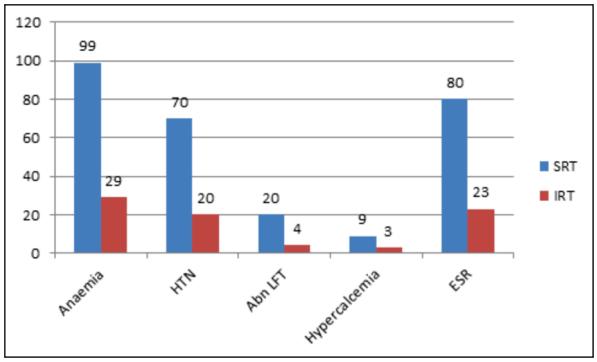

RESULTS-

Clinical and pathological characteristics of renal tumours are summarized in table 1.

The study included 177 surgically treated symptomatic solid renal masses and 67 incidentally detected renal tumours. Among incidental renal tumours 48 (71.64 %) were men and 19 (28.36 %) were women ,34 (50.74%) were on the left side and 33 (49.26%) were on the right side. Correspondingly, 71.1 % symptomatic renal tumours were detected in males and 28.1% in the females.

As shown (figure 1), 25(37.31%) incidental tumours were detected in the sixth decade and 72(40.67%) symptomatic renal tumours were detected in the same decade. Mean size of incidental renal tumours was 6.2 cm as compared to 7.8 cm of symptomatic renal tumours(p value=0.001).

Nephron sparing surgery was performed in 39.1%of incidental renal tumours as compared to 10.1 % of symptomatic renal tumours(p=0.001).

Benign renal tumours on histopathological examination were found in 3.3% of symptomatic renal tumours and 10.4% of incidental tumours(p= 0.001).

Among histopathologic subtypes clear cell carcinoma was detected in 77.5 % of incidental renal tumours and 77.1 % of symptomatic renal tumours ; Fuhrman nuclear grade 2 was most commonly encountered viz. 46.66 % and 48.1 % respectively.

However stage 1 (T1NoMo) tumours were encountered in 93.3 % of incidental tumours as compared to only 38.1% of tumors with symptomatic presentation (p= 0.001). Similarly T2 disease was found in 4.1 % of incidental tumours and 19.1 % of symptomatic tumours.

Incidence of systemic syndromes was quite similar in both groups (Figure 2). Incidence of systemic syndromes was indicative of Indian population- anaemia (57.42%) , elevated ESR (45.54 %), hypertension (39.60 %), abnormal LFT (8.9 %) and hypercalcemia (4.95 %). Incidence of systemic syndromes associated with RCC in western population is anaemia (36.3%), elevated ESR (55.6 %), hypertension (37.5 %), abnormal LFT (14.4%) and hypercalcemia (4.9 %).

DISCUSSION

Treatment trends in renal surgery may be altered by increased frequency of detection of incidentally found renal lesions. The incidence of RCC has increased in the last decades across all age groups with the greatest increase in patients with localized tumors, leading to a migration toward earlier stages that is probably due to earlier detection [12]. The detection rate of incidentally discovered masses has increased from 7% to 13% in the early 1970s to 48% to 66 % in recent years[13].Then the big question arises- how should a patient with a small renal mass, perhaps incidentally discovered on cross-sectional imaging, be managed in the setting of a normal contralateral kidney?

Treatment options include open and laparoscopic radical nephrectomy, open and laparoscopic partial nephrectomy, and needle ablation with radiofrequency or cryotherapy probes. For most patients, surgery with radical or partial nephrectomy is the treatment of choice yet considerable controversy persists about the optimum surgical approach.

Although Belldegrun A et al in 1999 have suggested that incidental and symptomatic RCC have equal proportions of early-stage lesions and therefore incidental RCCs are of lower stage and are associated with improved survival.[14] Over the last 10 years, several series have been published on the natural history of untreated small renal masses, but most of these are small retrospective series.

The differential diagnosis of an incidentally detected renal mass includes both benign and malignant renal masses. Malignant renal masses include RCC, sarcoma, lymphoblastoma, metastatic disease (especially lung, breast, prostate, colon, testes), and urothelial-based tumors of the pelvis and collecting system. Of these, RCCs account for most such masses.

Role of percutaneous biopsy for renal masses is expanding and, in the future, will provide valuable information about which masses are safe to watch.

Caoili EM et al in 2002 proved that the technique, risks, and results of needle biopsy have improved significantly as a result of better image guidance and one-handed automated needles with echogenic and depth markings.[15]

This is also supported by the fact that ideal treatment of small renal masses should include proper oncologic efficacy, reduced invasiveness, low complication rates, and (potentially) reduced costs.

Laparoscopic approaches to renal malignancies are gradually replacing open procedures for the treatment of low-stage renal tumors.[16] Appropriate tumors continue to be treated with open NSS; however, laparoscopic NSS is increasing in frequency.

If radical nephrectomy is desired, laparoscopic radical nephrectomy is now the standard of care for the treatment of low-stage renal neoplasia. Importantly, laparoscopic nephrectomy has been widely accepted in the community and is now been widely accepted in the community and is no longer performed solely at high-volume surgical centers.[17,18]Open partial nephrectomy (OPN) has also expanded its role. Although, in previous years, it was reserved for patients with compromised renal function or multifocal masses, it has recently been accepted as an alternative to open radical nephrectomy in the elective setting[19]. There is an expansion of the indications of use of NSS to pT1bN0M0 (size less than 7 cm) recently.[20,21]

However, this surgery is still being underutilized. One of the major concern with this approach has been the risk of local recurrence due to inadequate tumor excision or tumor multifocality, thus decreasing long-term survival. However, various studies have proved convincingly the long-term oncological efficacy of NSS in terms of local recurrence and 5 – year cure rates.[22,23]

Thermal ablative therapies, including renal cryosurgery and radiofrequency ablation, have emerged as alternative nephron-sparing treatments of localized RCC; however, long-term efficacy is not established, and preliminary data suggest that the local recurrence rate may be somewhat higher than that reported for traditional surgical approaches.[25] Thermal ablative therapies have limitations of availability and cost in developing countries.

This is one of the largest reported series from India comparing incidental and symptomatic renal masses. The results of the study show that rate of incidental tumour detection was on lower side (27.59%) with relatively bigger tumours (average size- 6.2 cm) compared to developed countries.[13,26] 71.27 % of incidental renal tumours were detected in males and 32.67 % of patients were in the sixth decade of life.

Benign renal tumours on histopathological examination were found in 3.3% of symptomatic renal tumours and 10.4% of incidental tumours and nephron sparing surgery was performed in 39.1% of incidental renal tumours as compared to 10.1 % of symptomatic renal tumours.

T1 tumours were encountered in 93.3 % of incidental tumours as compared to only 38.1% of tumors with symptomatic presentation showing the benefit of incidental detection.

Mohammed S. Al-Marhoon et al in 2011 concluded that incidental renal tumours are smaller at presentation and their diagnosis offers a better prognosis and longer CSS. The only factors that have significant effects on CSS in the symptomatic group are tumour stage, grade, histological type and tumour location, whereas in the incidental group

only tumour size and nodal stage have effects on survival.[27]

The study by Palsdottir et el in 2012 concluded that incidental detection appears to affect survival favorably and to a greater extent than can be explained by differences in stage, grade or patient demographics compared to those of patients with symptoms which is similar to our study.[28]

Vasudev NS et al in 2020 found that the majority (60%) of patients with RCC in the UK are being diagnosed incidentally, with almost three-quarters of these (74%) during investigation of symptoms unrelated to RCC. Patients with an incidentally detected RCC tended to have smaller, lower stage and grade tumours than those presenting with related symptoms, but, nevertheless, almost one in five of patients identified incidentally had stage III/IV disease.[29]

CONCLUSIONS-

The incidentally detected renal tumours are being diagnosed with increased frequency at lower stage (T1) and grade(grade 2) ,with more frequent use of nephron sparing surgery as compared to symptomatic renal tumours. This is resulting indirectly in better preservation of renal function with favourable oncological outcome.

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