

CT :

1

2

: CT , , ,
 , : 167 11 (6.6%)
 CT , , ,
 (attenuation), , Fuhrman ,
 Robson , CT
 : CT 27 - 80 (49.6)
 가 2.5 - 15 cm(7.7 cm)
 CT (n=1) (n=10)
 . 3
 가
 5 , 3 , 3 , II(n=6)
 III(n=5) I(n=8) II(n=3) III 5 3 I 2
 II
 : , CT
 가 가 가

가
 3% (1, 2).
 Mainz (clear cell type) , (7 - 9)
 70%, (chromophilic) 15%, (chromo -
 phobe) 5% (3). 가 (10, 11).
 CT (4, 5) , CT
 CT
 . Jinzaki (6) 3.5 cm (n=40)
 CT - (cor -
 ticomedullary phase) 100 HU 가 CT
 100 HU
 (gradual enhancement)

CT

CT

(83.2%), 16 (9.6%), 12

(7.2%)

CT 3 가

CT (attenuation), CT

11

11 8 , 3 , 49 (36 - 63)

10 CT

62

5

CT 6 , 1

49.6 (27 - 80)

11 CT

(Siemens, Somatom Plus S, Erlangen, Germany)

120 ml

Ultravist 300(Schering, Berlin, Germany)

Omnipaque(Nycomed, Oslo, Norway) 3 ml/sec

10 mm/sec 10 mm

(40)

(3) CT

30%)

(30%)

(well

(well

demarcated and smooth margin),

demarcated and lobulated margin),

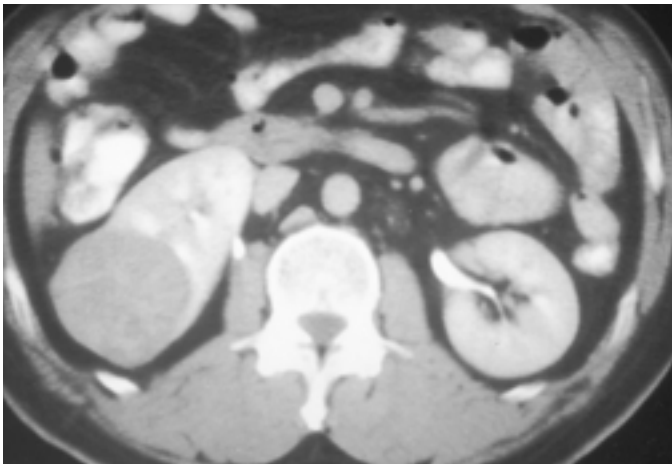
(poorly demarcated margin)

(, 3 mm

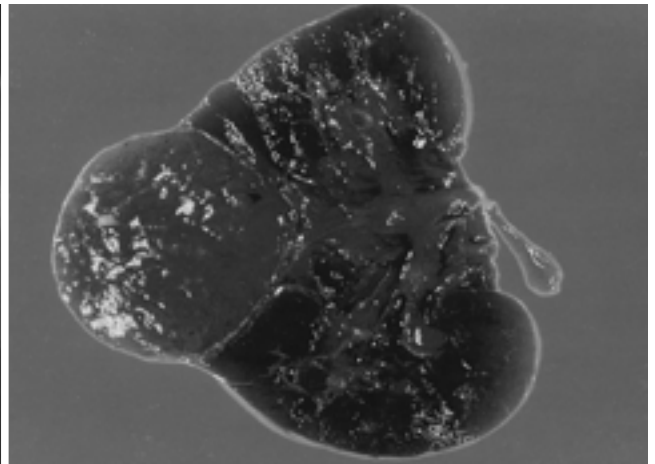
Gerota ,)

CT

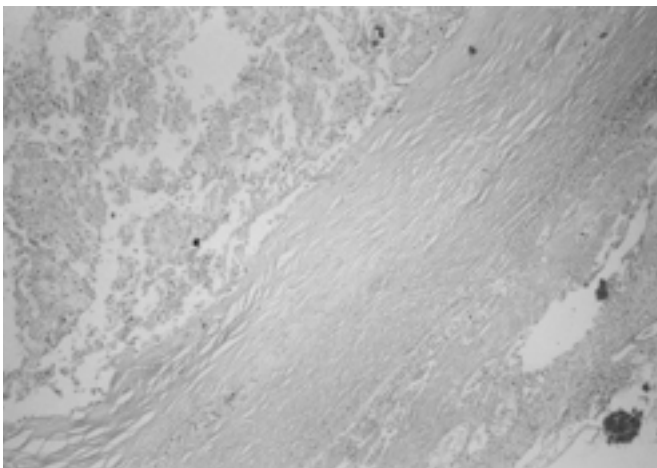
(,



A



B



C

Fig. 1. 53-year-old man with CRCC in right kidney.

A. 40-sec delayed post-enhanced image at the level of renal hilum shows 6.5 × 6.0 cm sized well demarcated smooth margined homogeneously low attenuated mass in right kidney. There is no evidence of extension to adjacent structure or regional lymphadenopathy.

B. Gross specimen shows well demarcated renal mass without evidence of hemorrhage, necrosis or renal capsular invasion.

C. Microscopic examination demonstrates intact renal capsule without tumor cell involvement(H&E, × 40).

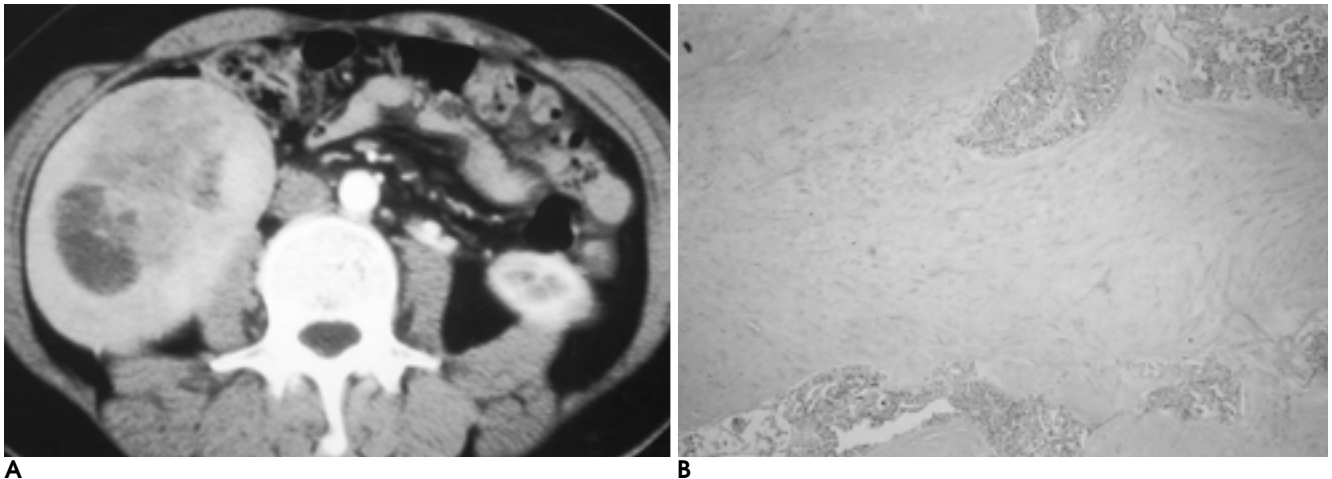


Fig. 2. 35-year-old female with CRCC in right kidney.

A. 40-sec delayed post-enhanced image shows low attenuated renal mass with lower attenuated portion in the center. The mass is 10 × 9 cm in size and well encapsulated with smooth margin without adjacent tissue invasion.

B. Microscopic examination of the lower attenuated portion represents hyalinization(H&E, × 40).

Table 1. Histopathologic Findings of Chromophobe Renal Cell Carcinoma

	Hemorrhage or Necrosis	Cystic Change	Complete Encapsulation	Capsular Invasion	Perirenal Fat Invasion	More Low Density (Hyalinization)
A(n=4)	1	2	0	2	0	0
B(n=3)	1	0	1	0	2	0
C(n=2)	1	0	0	0	0	1
D(n=2)	1	1	1	1	0	1

A(5 cm), B(5-7.5 cm), C(7.5-10 cm), D(10 cm)

A 4 , B 3 , C D
7.7 cm(2.5 - 15 cm)
8 , ()
2 cm 2
(30%)
가 3)
10 CT 가 (7 , 4)
가 CT 가 (Fig. 1). CT 10 ,
(tumor capsule)
(hyalinization) (Fig. 2).
CT
1 , 5
(tumor capsule)
3
1
1 (Table 1).
II(n=6) III(n=5) Robson
I(n=8), II(n=3) III 5 3 (A, B,
1) Robson I 2
5 , 6
CT C

Table 2. Nuclear Grading, Staging, and Survival Rate of Chromophobe Renal Cell Carcinoma

	Nuclear Grading II/III	Staging I/II	Survival
A(n=4)	3/1	4/0	3*/4
B(n=3)	1/2	2/1	3/3
C(n=2)	0/2	1/1	2/2
D(n=2)	2/0	1/1	2/2

*except for one patient with advanced gastric cancer and renal cell carcinoma

II (Table 2).

1 10 49.6 (27 - 80) CT (Table 2).

8% (sarco - matoid change)가 (12).

(7) CT 가

(13). 1985 Thoenes

가 가 (8).

(10). Thoenes (14) 500 12 5 - 25 cm H - E

가 Hale's colloidal iron method cian blue (8, 14).

CT (A, B, D 1)

가 (11, 15, Zinzaki (29%)

16). CT (6) (32%) (24%), 2 cm (38%)가 80 mm

Zagoria (4) 78 (94%) (exophytic

growth) (70%) . 5 cm

(78%) CT 87%가 61%

CT 60% 22% 35 80% 89% (17). 87% 5 cm (4) 10 cm CT 8 , 3) (32%), (4%) (32%), (32%), 41% (97%) 가 (4). CT (54%), (37%), (9%) 89%가 , 11% (17). Fujimoto (18) 5 cm 96 CT 96 72 (alveolar architecture) 가 . 5 CT 1 CT 3 (A, B, D 1) 가 (74%), (29%) (32%) (24%), 2 cm (38%)가 80 mm (4). 23% 9% (17). Bilis (10) 106 7 (6.6%) 가

5 (45.5%) 가
(94.2%)
(17). 가 가
(17). 가 가
(30%) 가 (17). 가 I II
(70%) 가 32%
가
3
가 가
가
(19). 가
(20, 21). Birnbaum
(21) (22) 가 가
가 가
가 가 (21, 23). Crotty
(9) 50 86% Robson I
47 (94%)
가 (9).
II(n=6)
III(n=5) I(n=8) II(n=3)
Robson A, B, C
III Robson I
CT
CT
가
CT

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**Spiral CT Findings of Chromophobe Renal Cell Carcinoma:
Correlation with Pathologic Features and Prognosis¹**

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Purpose: To describe the spiral CT findings of CRCC and to correlate these with the pathologic features, nuclear grading, tumor staging, and prognosis.

Materials and Methods: We encountered eleven cases of CRCC among 167 cases of histopathologically proven RCC, retrospectively evaluating the spiral CT findings of CRCC including tumor size, internal texture, attenuation, margin, and the involvement of veins or lymph nodes. In addition, the CT findings were correlated with the pathologic features, Fuhrman's nuclear grade, Robson's staging, and the prognosis. Between 27 and 80 (mean, 49.6) months later, the follow-up CT scans of tea patients were examined for tumor recurrence.

Results: All tumors, which ranged in size from 2.5 to 15 (mean, 7.7) cm, were solid and well demarcated from renal parenchyma. Pre-contrast CT scans showed that their attenuation was equal to (n = 1) or slightly lower (n = 10) than that of renal parenchyma, and on early and delayed phase post-contrast enhanced scans, attenuation was low in all cases. In three, focal areas in which attenuation was lower than in the rest of the tumor were observed; histopathologically, these represented hyalinization. There was neither venous nor lymph node involvement, and no distant metastasis. Histopathologic examination demonstrated cystic change (n = 1), hemorrhage or necrosis (n = 5), complete encapsulation (n = 3) and perirenal fat infiltration (n = 3). Nuclear grading was II (n = 6) or III (n = 5), and tumor staging was I (n = 8) or II (n = 3). Among the five cases in which the nuclear grade was III, three were stage I and two were stage II. Follow-up scans showed no evidence of tumor recurrence, and all patients survived.

Conclusion: Pre-, early- and late-phase post-contrast enhanced spiral CT scans showed that the attenuation of a CRCC was lower than that of renal parenchyma. Even where the nuclear grade was higher, a well-demarcated solid mass was observed, the tumor stage was lower and the prognosis better.

Index words : Kidney neoplasm, CT
Kidney neoplasms, diagnosis

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