

# Rhabdoid

1

2 3 4 5

: rhabdoid  
 : 7 rhabdoid  
 6 4 8 ( : 1 6 ) 가 5 , 가 2  
 ( CT ) . CT  
 (renal hilum)  
 II  
 : 3-12cm 가 4 ,  
 가 3 . I rhabdoid 4 (57%) ,  
 1 . II rhabdoid 3 (43%)  
 : rhabdoid  
 , rhabdoid

Rhabdoid 6 4 8 1  
 (1), 가 5 , 가 2  
 (23). Rhabdoid 가 3 , 4 CT  
 (45). Rhabdoid 3 CT 3  
 (4~8), MRI 2  
 CT rhabdoid 7 3 , MRI 1 CT 4  
 가 CT X CT  
 (renal hilum)

1992 9 1997 10 , CT rhabdoid ,  
 MRI 가 rhabdoid II rhabdoid

1 CT 3 가  
 2  
 3 3 1cm  
 4  
 5

Rhabdoid

CT, 1 8

가 10

7

3 가

3-12cm

가 4

4 (57%)

(Fig. 1),

4

3

2 (50%)

3

3 (43%)

3

3 (100%)

2 (67%)

4

CT MRI 1

2 3-4

Rhabdoid 2%

Rhabdoid

(muscle-like, cytoplasmic eosinophilia)

(rhabdomyosarcoma)

(myoglobin)

(myosin)

(6,10).

(7).

3 4 6 ( 11-16 )

1 ( 30-36 )

(11,13).

2:1

가

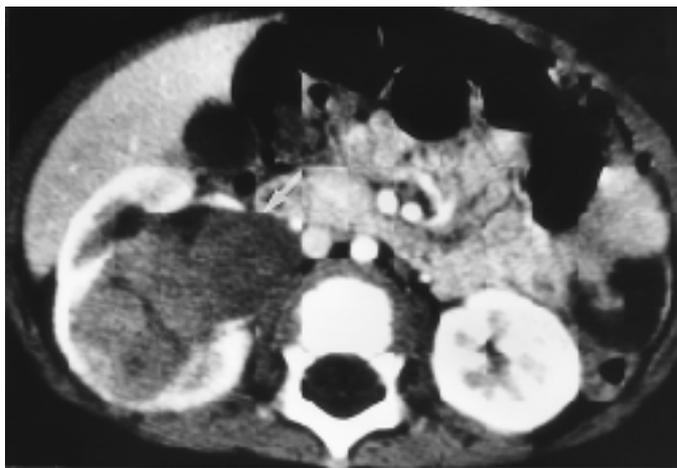
(metastatic neuroblastoma),

(4,14). Rhabdoid

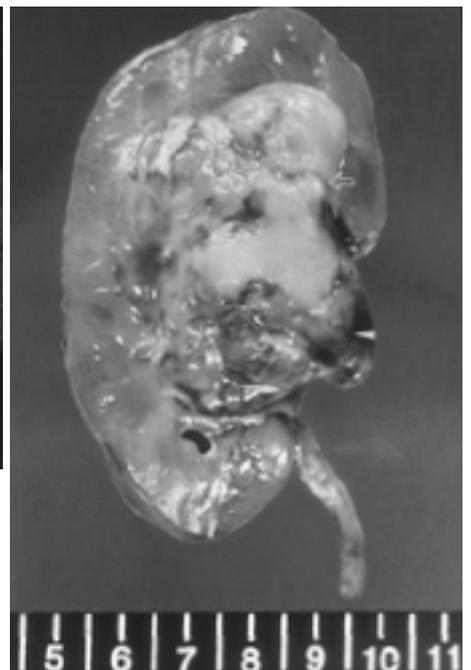
Beckwith-Wiedemann

( 가 ), Soto

Rhabdoid



A



B

Fig. 1. Centrally located rhabdoid tumor in the right kidney (type I) in 12-month-old male infant.

A. Contrast-enhanced CT scan shows a poorly enhancing mass occupying the renal pelvis, which is protruding into renal hilum (arrow). No subcapsular hematoma is noted.

B. Cut surface of the gross specimen shows the mass (open arrow) that is confined in the renal sinus. Note involvement of renal hilum (arrowhead).

가 . (astrocytoma) (4,6).  
 Agrons (4) rhabdoid 52%  
 (PNET), (ependymoma) , Eftekhari (8)

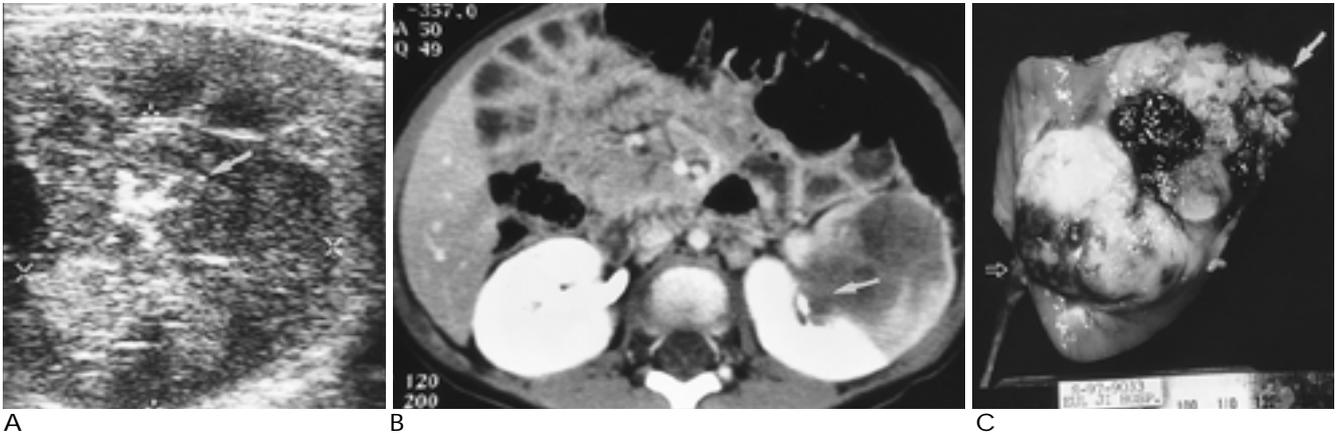


Fig. 2. Centrally located rhabdoid tumor with peripheral extension in 18-month-old girl.  
 A. Transverse sonogram shows an inhomogeneous echogenic mass in the left kidney. Note tiny calcifications (arrow) in the tumor.  
 B. Contrast-enhanced CT scan shows an intrarenal mass of low attenuation compare with the renal parenchyma. Note hilar involvement (arrow).  
 C. Cut surface of the gross specimen shows the mass that arises from central portion of the kidney, invades the renal sinus and reaches the renal capsule (arrow). Also note invasion of the proximal ureter (open arrow).

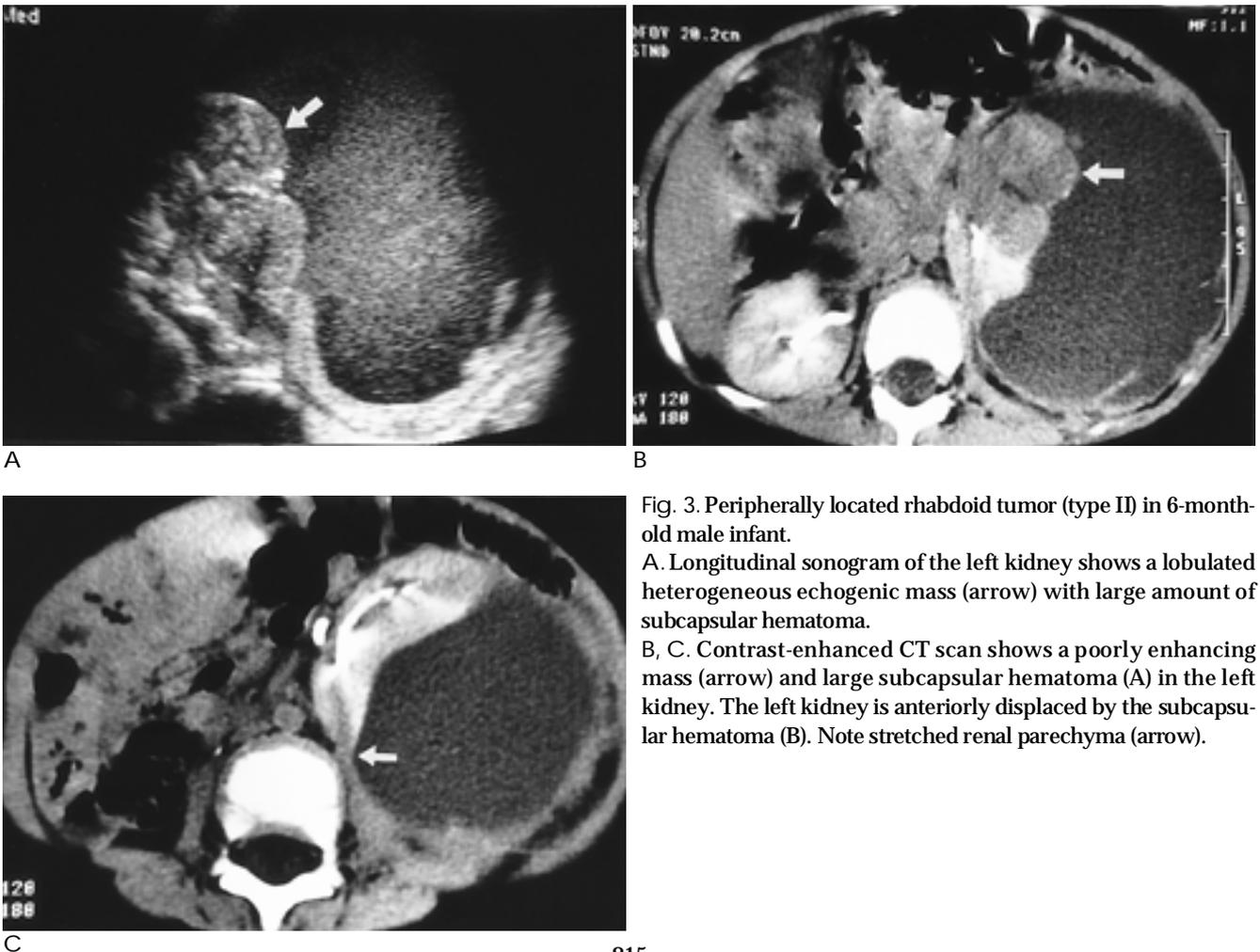


Fig. 3. Peripherally located rhabdoid tumor (type II) in 6-month-old male infant.  
 A. Longitudinal sonogram of the left kidney shows a lobulated heterogeneous echogenic mass (arrow) with large amount of subcapsular hematoma.  
 B, C. Contrast-enhanced CT scan shows a poorly enhancing mass (arrow) and large subcapsular hematoma (A) in the left kidney. The left kidney is anteriorly displaced by the subcapsular hematoma (B). Note stretched renal parenchyma (arrow).

Rhabdoid

13.5%

CT MRI 4 6

1 가 . rhabdoid 3

Agrons (4) 18 rhabdoid 4 CT (16)

16 2 rhabdoid 6%

Chung (6) 8 rhabdoid 3-5 가 25%

4 가 (17). 가 , 9-12 rhabdoid

3

(15) Agrons (4) 가 CT가 rhabdoid 21 15 (71%) 12%

Agrons (4) rhabdoid

2 . Chung (6) 8 rhabdoid

3

5 3 rhabdoid rhabdoid

I rhabdoid II rhabdoid

가 Chung (6) 8

3 , Agrons (4) 가

CT가 3 2 가 3 가 10%

Lowe (10) 3-4 80%가 가 (76%), (26%), (14%), (10%) (7). 4 2 가 3 , 4 2

CT가 , rhabdoid

가 CT MRI 가 Rhabdoid 가 (mesoblastic nephroma), (multilocular cystic nephroma), (clear cell sarcoma) (30 ~ 36 )

1. Beckwith JB, Palmer NF. Histopathology and prognosis of Wilms' tumor: results from first national Wilms' tumor study. *Cancer* 1978;41:1937-1948
2. Haas JE, Palmer NF, Weinberg AG, Beckwith JB. Ultrastructure of malignant rhabdoid tumor of the kidney: a distinctive renal tumor of children. *Human Pathol* 1981;12:646-657
3. Palmer NF, Sutow W. Clinical aspects of the rhabdoid tumor of the kidney: a report of the national Wilms' tumor study group. *Med Pediatr Oncol* 1983;11:242-245
4. Agrons GA, Kingsman KD, Wagner BJ, Avilia CS. Rhabdoid tumor of the kidney in children: A comparative study of 21 cases. *AJR* 1997;168:447-451
5. Chung CJ, Cammoun D, Munden M. Rhabdoid tumor of the kidney presenting as an abdominal mass in newborn. *Pediatr Radiol* 1990;20:562-563
6. Chung CJ, Lorenzo R, Rayder S, et al. Rhabdoid tumors of the kidney in children: CT findings. *AJR* 1995;164:697-700
7. Sisler CL, Siegel MJ. Malignant rhabdoid tumor of the kidney: Radiologic features. *Radiology* 1989;172:211-212
8. Eftekhari F, Erly WK, Jaffe N. Malignant rhabdoid tumor of the kidney in two cases. *Pediatr Radiol* 1990;21:39-42
9. Paniel M, Bourliere-Najean B, Scheiner C, et al. Radiologic features of rhabdoid tumor of the kidney. *Eur J Radiol* 1992;14:204-206
10. Lowe W, Weiss RM, Todd MB, True LD. Malignant rhabdoid tu-

- mor of the kidney in an adult. *J Urol* 1990;143:110-112
11. Jafri SZH, Freeman JL, Rosenberg BF, Cacciarelli A, Madrazo BL. Clinical and imaging features of rhabdoid tumors of the kidney. *Urol Radiol* 1991;13:94-97
  12. Strouse PJ. Pediatric renal neoplasms. *Radiol Clin North Am* 1996;34:1081-1100
  13. White KS, Grossman H. Wilms' tumor and associated renal tumors of childhood. *Pediatr Radiol* 1990;21:81-88
  14. Mayes LC, Kasselberg AG, Roloff JS, Lukens JN. Hypercalcemia associated with immunoreactive parathyroid hormone in a malignant rhabdoid tumor of the kidney. *Cancer* 1984;54:882-884
  15. Niu CK, Chen WF, Chuang JH, Yu TJ, Wan YL. Intrapelvic Wilms' tumor: Report of 2 cases and review of the literature. *J Urol* 1993;150:936-939
  16. Hartman DS, Lesar MSL, Madewell JE, Lichtenstein JE, Davis CJ Jr. Mesoblastic nephroma: Radiologic-pathologic correlation of 20 Cases. *AJR* 1981;136:69-74
  17. Glass RBJ, Davidson AJ, Fernbach SK. Clear cell sarcoma of the kidney: CT, sonographic, and pathologic correlation. *Radiology* 1991;180:715-717
  18. Reiman TAH, Siegel MJ, Shackelford GD. Wilms' tumor in children: Abdominal CT and US findings. *Radiology* 1986;160:501-505
  19. Jaffe MH, White SJ, Silver TM, Heidelberger KP. Wilms' tumor: Ultrasonic features, pathologic correlation and diagnostic pitfalls. *Ultrasound* 1981;140:147-152

## Imaging Features of Rhabdoid Tumor of the Kidney in Children<sup>1</sup>

Sang Ho Lee, M.D., Tae Il Han, M.D., Myeong Joon Kim, M.D.<sup>2</sup>, Hye Kyung Youn, M.D.<sup>3</sup>,  
Jong Cheol Kim, M.D.<sup>4</sup>, Jin Young Chung, M.D., Hyun Young Han, M.D.,  
Youn Seon Choi, M.D., Mun Kab Song, M.D., Kyuchul Choeh, M.D.<sup>5</sup>

<sup>1</sup>Department of Diagnostic Radiology, Eulji Medical College.

<sup>2</sup>Department of Diagnostic Radiology, YonSei University College of Medicine.

<sup>3</sup>Department of Diagnostic Radiology, Samsung Hospital, Sungkyunkwan University.

<sup>4</sup>Department of Diagnostic Radiology, Chungnam University College of Medicine.

<sup>5</sup>Department of Pediatrics, Eulji Medical College.

**Purpose:** To evaluate the difference in radiologic features of rhabdoid tumor of the kidney (RTK) in children according to the location of the tumor within the kidney.

**Materials and Methods:** We retrospectively reviewed the radiologic findings of pathologically confirmed RTK in seven children (5 boys and 2 girls; age range, 6 months to 4 years 8 months; median, 18 months). All subjects underwent abdominal CT. We analyzed tumor location, size, and margin; renal hilar involvement, subcapsular hematoma, calcification, necrosis, and lymphadenopathy. RTK was classified according to the location of the tumor within the kidney: A tumor that mainly located in the central portion of the kidney with or without peripheral extension was described as type I, while one located at the periphery was type II. Imaging findings between the two types were compared.

**Results:** Tumor size varied from 3 cm to 12 cm. Tumor outlines were ill-defined in four cases but relatively well-defined in three. Four tumors (57%) were type I. Hilar involvement was found in all four and a small subcapsular hematoma in one. Three tumors (43%) were type II, and in all three, large crescent-shaped subcapsular hematomas were found.

**Conclusion:** Centrally located RTK showed hilar involvement with a small subcapsular hematoma, while in cases of peripherally located RTK, a large subcapsular hematoma was present. These findings may be helpful for the differential diagnosis of other pediatric renal tumors.

**Index words :** Kidney neoplasms, CT  
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Neoplasms, in infants and children

Address reprint requests to : Tae Il Han, M.D., Department of Diagnostic Radiology, Eulji Medical College.  
#24-14, Mok-Dong, Jung-Gu, Taejeon 301-726, Korea.  
Tel. 82-42-259-1396 Fax. 82-42-259-1125 E-mail:tihan@emc.eulji.ac.kr