



( MRI ) . CT MRI  
 Dasonic  
 spectra(Diasonics, Miltipas, CA, U.S.A.)  
 1991 1 1998 12 29 3.5MHz 7MHz  
 CT GE 9800(GE Medical systems, Milwaukee, WI,  
 USA) 10mm  
 Iopromide(Ultravist 300, Schering, Berlin, Germany) 100ml  
 19 20 74 ( 46 ) , 40  
 19 65% , 20 가 6 (20%), 30  
 가 4 (15%) . CT ) , 10 1.5 Tesla (Signa, GE Medical  
 Systems, Milwaukee, WI, U.S.A.) 24-30cm

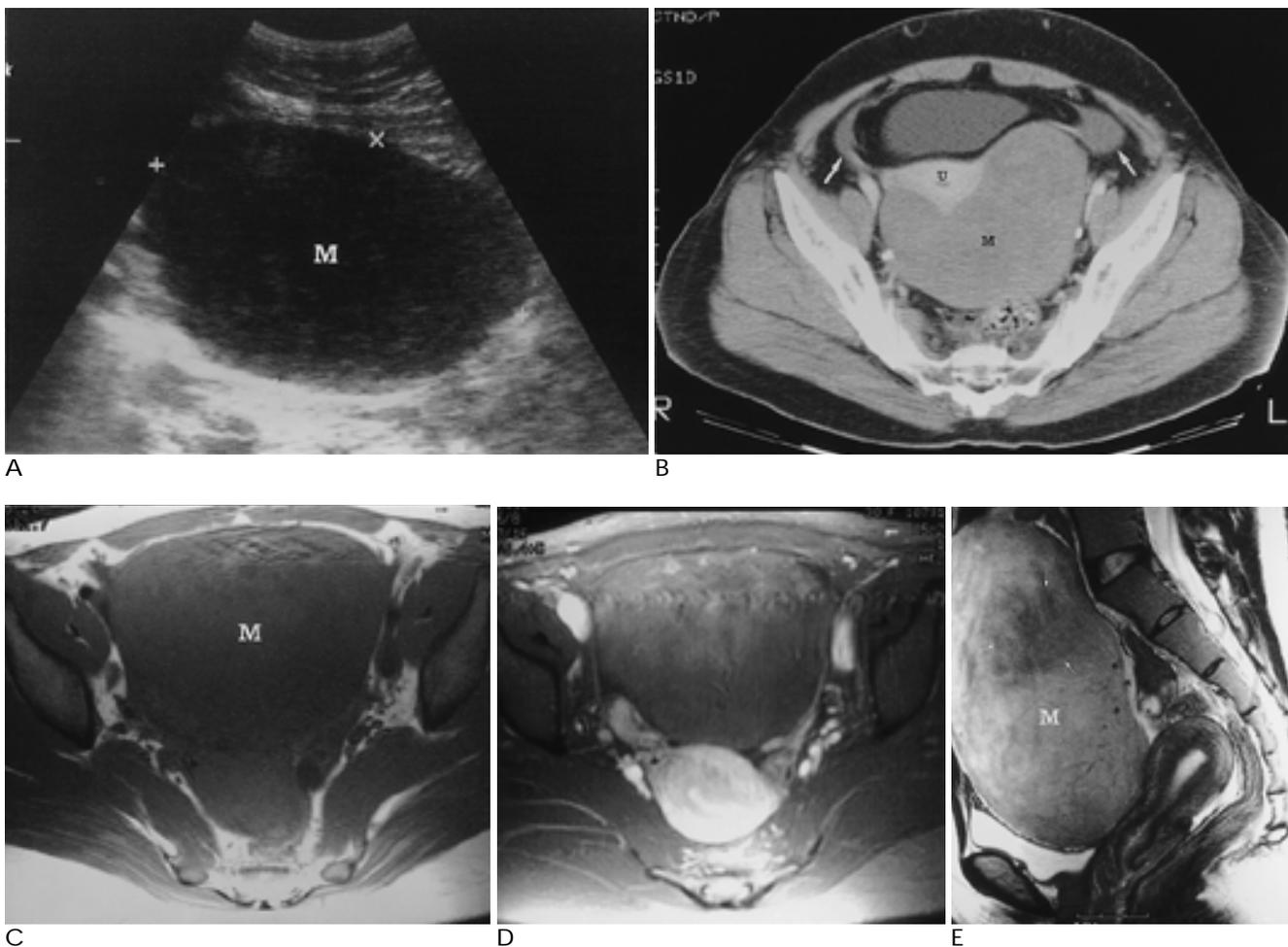


Fig. 1. Typical solid fibrothecoma.

A. A 36-year-old female. Transverse sonogram of the pelvis demonstrates a well-defined, homogeneously hypoechoic mass (M) with posterior sonic enhancement in left adnexal region.

B. A 54-year-old female. Postcontrast axial CT scan demonstrates a large, well-defined, lobulated mass (M) with homogeneous enhancement. The enhancement of the mass is lower than that of uterine myometrium. A small amount of ascites is seen (arrows). U= uterus.

C-E. A 30-year-old female.

C. Axial T1-weighted image demonstrates a large, oval mass (M) with homogeneous low signal intensity.

D. On Gd-enhanced axial T1-weighted image, the tumor reveals homogeneous enhancement, less than that of uterine myometrium.

E. Sagittal T2-weighted image reveals a relatively homogeneous mass (M) with focal hypointense portion (arrows). The signal intensity of the mass is slightly higher than that of adjacent muscle.



Fig. 2. A 59-year-old female with a predominantly solid fibrothecoma. Contrast enhanced axial CT scan shows a heterogeneous mass with a larger cystic (white arrows) and smaller solid components (S). A small calcification is noted within the mass (arrow head). A small amount of ascites is also noted (black arrows).

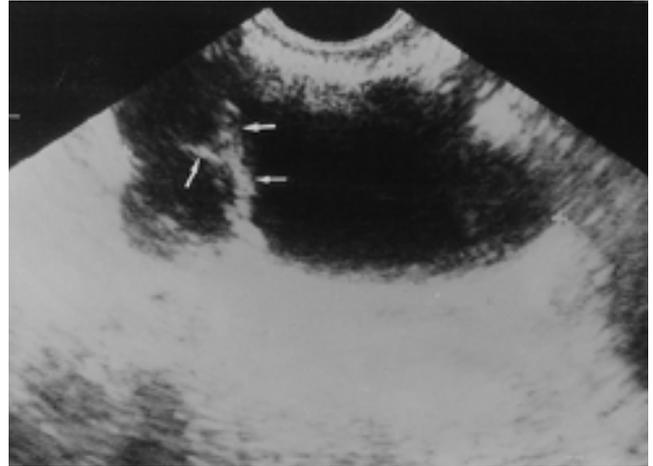


Fig. 3. A 57-year-old female with a cystic fibrothecoma. Endovaginal sonogram reveals a multilocular cyst with multiple thick septa (arrows) in right adnexal region.

256 × 192, 5-7mm, 2.5mm  
 T1 (TR/TE = 500/10),  
 T2 (TR/TE = 3300/120) (sagittal)  
 (transaxial) Gadolinium diethylene tri-  
 amine pentaacetic acid (Magnevist, Schering, Germany) (  
 Gd-DTPA) 0.1mmol/kg

3 (2, 1)  
 MRI T1 T2 CT  
 T1  
 가 5% 5%  
 50% 50% 95%  
 , 95%  
 CT MRI  
 (Douglas pouch)

(n=1), (n=2) .29  
 가 , 11 , 18  
 4.0-18.0cm( 9.6cm) 가  
 , 18  
 , 11  
 , 21 (72%)(Fig. 1),  
 6 (21%)(Fig.  
 2), 2 (7%)  
 (Fig. 3).  
 CT MRI  
 21 가 14 , 가 7  
 14 4  
 , 10  
 가  
 가 6 , 1 가 가  
 가  
 2 CT 9 6  
 , 6 , 5  
 , 1  
 . 2 가  
 , 2  
 . 1  
 (Fig. 4).

(n=2), (n=19), (n=3), 1  
 (n=2), (n=2), (Fig. 3), 9 5

MRI

T1

10 7  
2

가

, 5

가

(Fig. 5). T2

, 6

. T2 2

, 2

가

, 3

가

(Fig. 6).

T1

T2

8

2

6

. 10 5

(Fig. 7).

, 2



Fig. 4. A 57-year-old female complaining of lower abdominal pain.

Precontrast CT scan shows a well-defined, slightly lobulated mass with multiple high attenuated foci (small arrows), those areas corresponded to hemorrhage caused by ovarian torsion. A small amount of ascites is noted (large arrows).

4-6% (1).

(5).

(1).

(estradiol, E2)

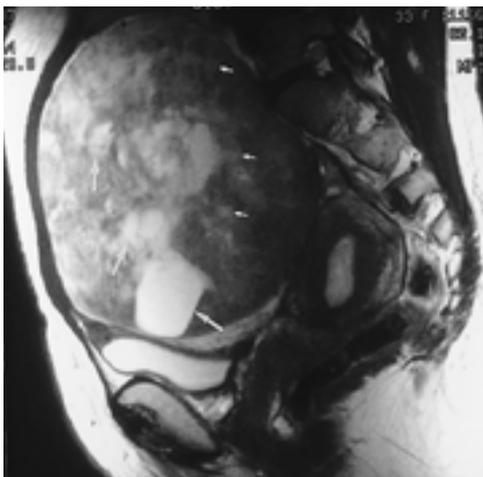
(6-8).

가

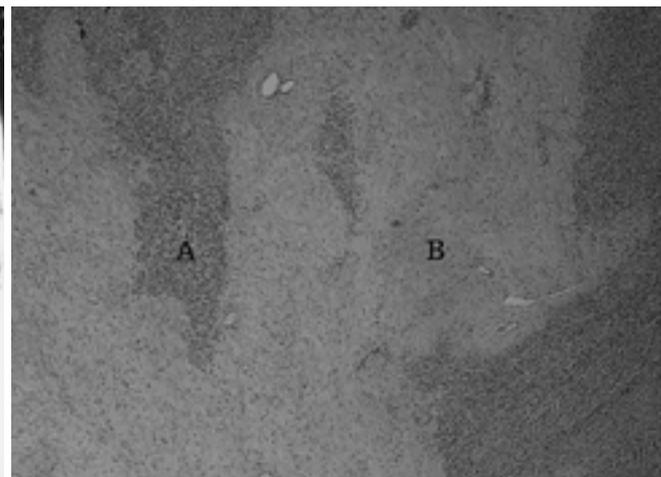
3

1

2



A



B

Fig. 5. A 33-year-old female with a palpable mass in lower abdomen.

A. Sagittal T2-weighted image demonstrates a mainly solid mass with heterogeneous signal intensities. Note cystic components (large arrows) distributed eccentrically; ill-defined, interspersed slightly high signal intensities (small arrows), which represents edema.

B. Photomicrograph of histologic specimen shows densely packed cellular elements (A) that correspond to the low signal intensity, and more widely dispersed cellular elements with increased edema (B). (Hematoxylin-eosin stain,  $\times 40$ )

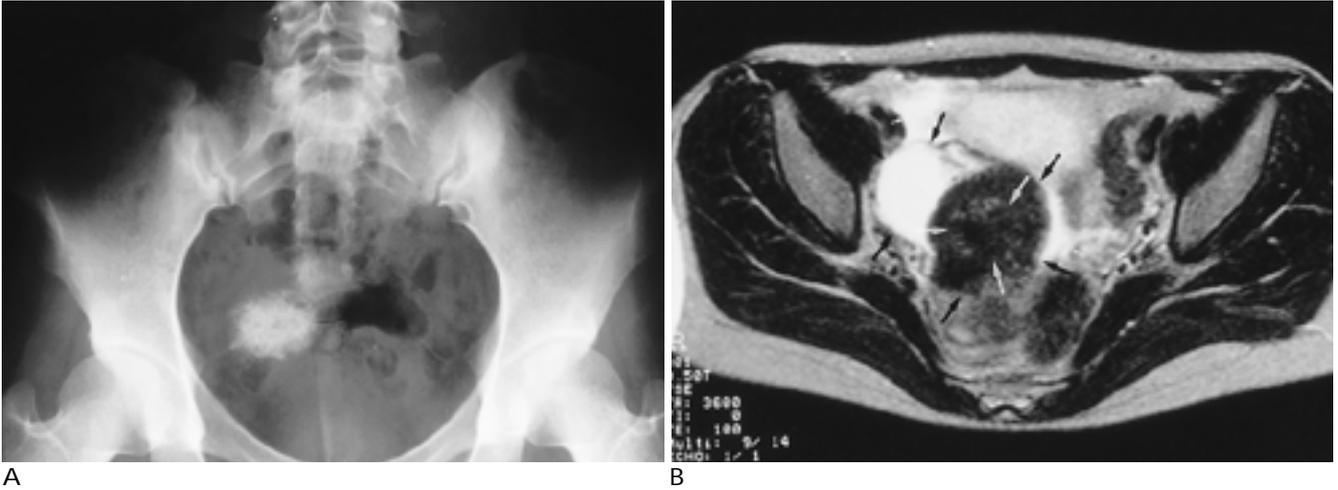


Fig. 6. A 24-year-old female with an incidentally detected, calcified pelvic mass on KUB.  
 A. KUB shows a large calcified mass in right pelvic cavity.  
 B. Axial T2-weighted image demonstrates a lobulated cystic and solid mass (black arrows) containing a large calcification (white arrows) within predominantly hypointense solid portion. A small amount of ascites is noted (small arrows).



Fig. 7. A 32-year-old female complaining of palpable abdominal mass.  
 Sagittal T2-weighted image reveals a relatively homogeneous, oval mass(M) with a large amount of ascites(A). The signal intensity of the mass is slightly higher than that of adjacent muscle.

19 (65%) 20 가 6 (20%), 30 가 4  
 (20%) 10 3-10%  
 (9),  
 9.6cm (2, 3)  
 , 21 (72%),  
 가 6 (21%) , 2  
 (7%)  
 Bazot (2)  
 (10, 11), Athey (12) 14  
 가  
 (4 ), 가  
 (10 ), (7 ), 가  
 (2 ), (6 )  
 CT Bazot (2) 79% 가  
 , 21%  
 가  
 9 6 가  
 , 2  
 가  
 Troiano (4) 12 M-  
 40 RI , T1

가 ,  
 22-65% 7-23%  
 (6-8). 29 4 (14%)  
 , 2 (7%)  
 가  
 46 (2, 3)



- 1997; 37: 333-339
4. Troiano RN, Lazzarini KM, Scoutt LM, Lange RC, Flynn SD, McCarthy S. Fibroma and fibrothecoma of the ovary : MR imaging findings. *Radiology* 1997; 204: 795-798
  5. Amin HK, Okagaki T, Richart RM. Classification of fibroma and thecoma of the ovary. *Cancer* 1971;27(2):438-446
  6. Bjorkholm E, Silfversward C. Theca-cell tumors: clinical features and prognosis. *Acta Radiol* 1980;19:241-144
  7. Stage AH, Grafton WD. Thecomas and granulosa-theca cell tumors of the ovary: an analysis of 51 tumors. *Obstet Gynecol* 1977;50:21-27
  8. Evans AT, Gaffey TA, Malkasian GD, Annegers AJ. Clinicopathologic review of 118 granulosa and 82 theca cell tumors. *Obstet Gynecol* 1980;55:231-237
  9. Gee DC, Rusell P. Pathologic assessment of ovarian neoplasms. *Pathology* 1981;13(2):235-255
  10. Yaghoobian J, Pinck RL. Ultrasound findings in thecoma of the ovary. *J Clin Ultrasound* 1983;11:91-93
  11. Stephenson WM, Laing FC. Sonography of ovarian fibromas. *AJR* 1985;144:1239-1240
  12. Athey PA, Malone RS. Sonography of ovarian fibromas/thecomas. *J Ultrasound Med* 1987; 6:431-436
  13. Outwater EK, Wagner BJ, Mannion C, McLarney JK, Kim BH. Sex cord-stromal and steroid cell tumors of the ovary. *RadioGraphics* 1998; 18: 1523-1546
  14. Scoutt L, McCarthy S, Lange R, Bourque A, Schwartz P. MR evaluation of clinically suspected adnexal masses. *J Comput Assist Tomogr* 1994; 18: 609-618
  15. Sivanesatnam V, Dutta R, Jayalakshmi P. Ovarian fibroma-clinical and histopathological characteristics. *Int J Gynecol Obstet* 1990; 33: 243-247
  16. Samanth KK, Black WC. Benign ovarian stromal tumors associated with free peritoneal fluid. *Am J Obstet Gynecol* 1970; 107: 538-545
  17. Meigs JV, Cass JW. Fibroma of the ovary with ascites and hydrothorax, with report of 7 cases. *Am J Obstet Gynecol* 1937; 33: 249-267
  18. . / . . . . . 1998; 39: 977-981
  19. Kim SH, Kim WH, Park KJ, Lee JK, Kim JS. CT and MR findings of Krukenberg tumors: comparison with primary ovarian tumors. *J Comput Assist Tomogr* 1996; 20(3): 393-398
  20. Ha HK, Baek SY, Kim SH, Kim HH, Chung EC, Yeon KM. Krukenberg 's tumor of the ovary: MR imaging features. *AJR* 1995; 164: 1435-1439
  21. . . . . . 1997;37:711-717
  22. , , , , , , . . . . . 1997;37:327-331
  23. Morikawa K, Hatabu H, Togashi K, Kataoka ML, Mori T, Konishi J. Granulosa cell tumor of the ovary: MR findings. *J Comput Assist Tomogr* 1997;21:1001-1004
  24. Tanaka YO, Kurosaki Y, Nishida M, et al. Ovarian dysgerminoma: MR and CT appearance. *J Comput Assist Tomogr* 1994; 18: 443-448
  25. Brammer HM, Buck JL, Hayes WS, Sheth S, Tavassoli FA. Malignant germ cell tumors of the ovary: radiologic-pathologic correlation. *RadioGraphics* 1990;10:715-724
  26. Levitin A, Haller KD, Cohen HL, et al. Endodermal sinus tumor of the ovary: imaging evaluation. *AJR*;167:791-793
  27. , , , , , . . . . . 1998;38:131-136
  28. Wagner BJ, Buck JL, Seidman JD, McCabe KM. Ovarian epithelial neoplasm: radiologic-pathologic correlation. *RadioGraphics* 1994; 14: 1351-1374
  29. Yoonessi M, Abell M. Brenner tumor of the ovary. *Obstet Gynecol* 1979;54:90-96

## **Radiologic Findings of Ovarian Fibrothecoma<sup>1</sup>**

Dong Cheol Yang, M.D., Ju Hyeon Im, M.D., Sun Su Kim, M.D., Jong An Kim, M.D.,  
In Young Kang, M.D.<sup>2</sup>, Kang Seok Ko, M.D.<sup>3</sup>, Byung Ran Park, M.D.

<sup>1</sup>Department of Radiology, Kwangju Christian Hospital

<sup>2</sup>Department of Radiology, Kwangju Green Cross Hospital

<sup>3</sup>Department of Diagnostic Radiology, College of Medicine, Chosun University

**Purpose :** To evaluate the radiologic features of fibrothecoma of the ovary, which is a rare solid tumor originating from the ovarian sex cord-stroma.

**Materials and Methods :** The radiologic findings of 29 patients with pathologically-proven fibrothecoma of the ovary were retrospectively evaluated for bilaterality, size, shape, margin, echogenicity, CT attenuation, signal intensity on magnetic resonance imaging, calcification, and amount of ascites.

**Results :** All fibrothecomas were unilateral, and had well defined margins. The diameter of the mass was 4-18(mean, 9.6)cms. Eighteen of 29 tumors were round or oval with a smooth margin, and eleven were lobulated. The internal architecture of the tumor was purely solid in 21 patients, predominantly solid in six, and predominantly cystic in two. A broad spectrum of sonographic features was apparent, including a homogeneously hypoechoic mass (with posterior shadowing in four cases, and without posterior shadowing in ten), a homogeneously hyperechoic mass in seven cases, an anechoic mass with septations in two, and a mixed echoic mass in six. On precontrast CT scans, the mass was isodense to the uterine myometrium in eight of nine cases, while on postcontrast scans the lesion was slightly hypodense to the myometrium in seven cases and isodense in one. On T1-weighted MR images, nine of ten cases showed a relatively homogeneous low signal intensity, while on T2-weighted images, signal intensity was homogeneously low in two patients and predominantly low with focal high intensity in seven of the other eight. On gadolinium-enhanced T1-weighted images, most tumors showed slight heterogeneous enhancement. Calcifications were present in two cases, and in two others there was a large amount of ascites.

**Conclusion :** The characteristic finding of ovarian fibrothecomas is a well-defined, oval or lobulated homogeneously solid mass, which on CT scans enhances less than uterine myometrium and demonstrates a predominantly low signal intensity on both T1- and T2-weighted images. However, a predominantly solid mass with cystic components or a predominantly cystic mass may also be presented.

**Index words :** Ovary, US  
Ovary, CT  
Ovary, MR  
Ovary, neoplasm

Address reprint requests to : Dong Cheol Yang, M.D., Department of Radiology, Kwangju Christian Hospital  
#264, Yangrim-dong, Nam-ku, Kwangju 503-715, Korea.  
Tel. 82-62-650-5197 Fax. 82-62-671-7447