

=	=				
:	:	:	:	:	:
	가	82			
:	82	47 (57.3%)	7		
	19 (5)	21		35
	18		17		
	5	2	6 - 15 mm(9.5 mm)	
	14	3	2		6.5 -
	10.7 mm(8.2 mm)			
	1		19		1
	16	5.5 - 9.2 mm(6.8 mm)		
		1			
	(p=0.002).	가 6 mm			7 mm
	82.6%	82.4%	76%	87.5%	82.5%
					7 mm
	87.8%	95.7%	77.1%	84.9%	93.1%
:					

: Uterus, endometrium. Uterus, US. Uterine neoplasms, US.
 Ovary, abnormalities. Ovary, cysts.

8 , 59 ,
15 .

, 가 4 - 10% (disordered proliferative endometrium)

Ultramark - 9 HDI(Advanced Technology Laboratories, Bothell, Washington), 5 MHz
Sequoia(Acuson, Mountain View, CA), 4 - 8 MHz

[1 - 5].

1949

8 - French

[1 -

4, 6 - 11].

4 - 5%가 40 estrogen

, unopposed

10 - 15 ml

20 -

30

2

가

가

가

가

[3, 8, 12 -

14].

가

가

가

5 mm

[21].

가

[15 - 19],

(diffuse), (focal), (uniform),
(polypoid)

(,)

SPSS 10.0(Statistical Package for Social Sciences; SPSS Inc., Chicago, IL)

8

(12)

(70)

82

Student - t test

18 - 41 (30.9)

ANOVA(analysis of variance) test

ROC(receiver operating characteri - stic)

(65),

가

(gold

, 10

standard)

가

(35),

(luteinizing hormone),

(prolactin),

가 , (progesterone)

(follicular stimulating hormone)

(34) [1 - 2, 4 - 5].

가 7 mm

82 47 (57.3%)

8 mm

[6].

7 (8.5%) ,

14

, 1(,)

I (well differentiated) , IA가 5 , IB가 2 5 ,
 5-7 cm , 2 . 7 5
 6-8 mm , 1
 , 4 , 3 .
 (hyperthecosis) . 19 , 6 , 1 , ,
 (23.2%) 5 (6.1%) , 4 , 3 . 2 , 2, 3.4 cm
 21 (25.6%) . 35 , 가
 18 (22%),
 17 (20.7%) . (Fig. 1). 6 , 1
 14 , 3 ,

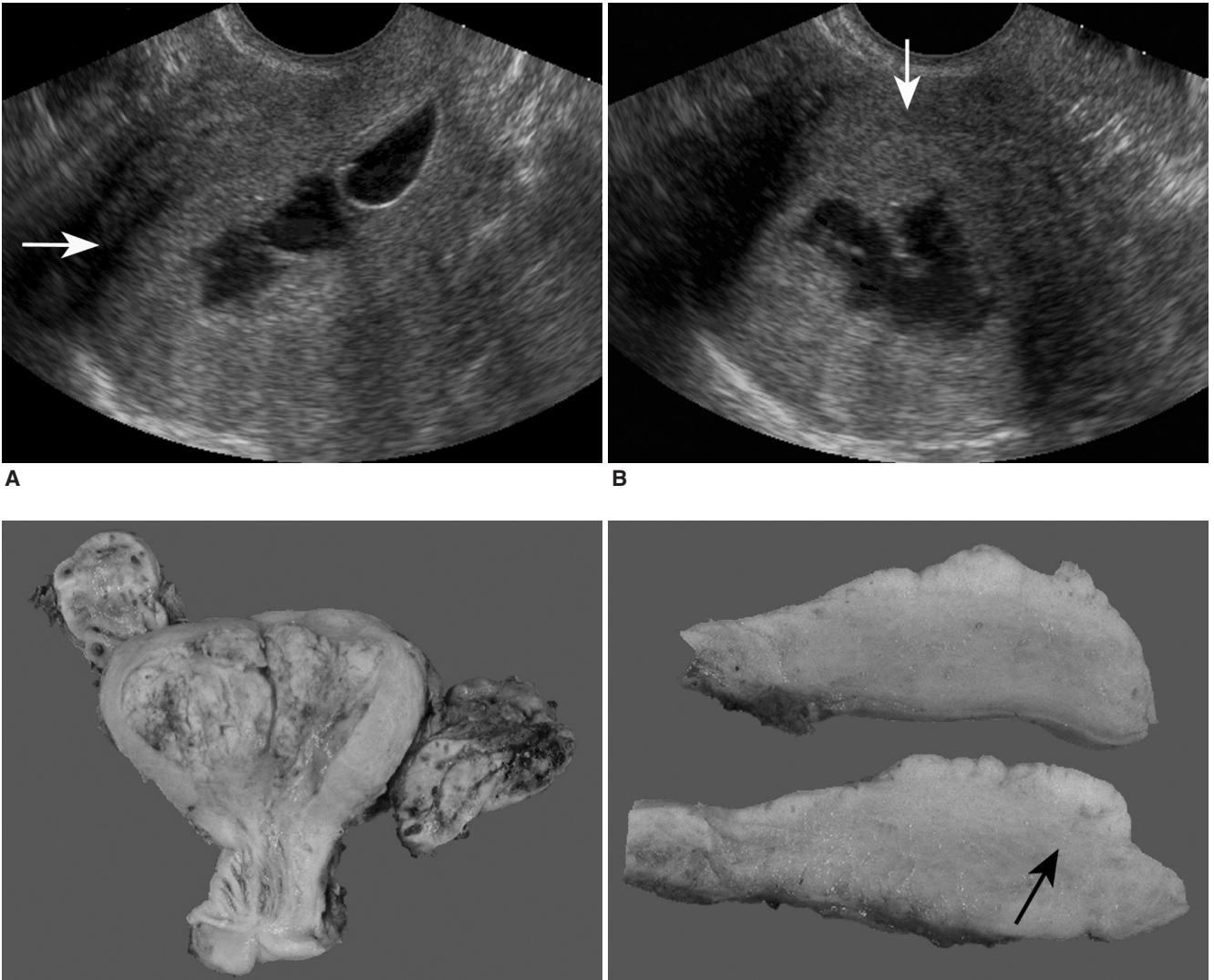
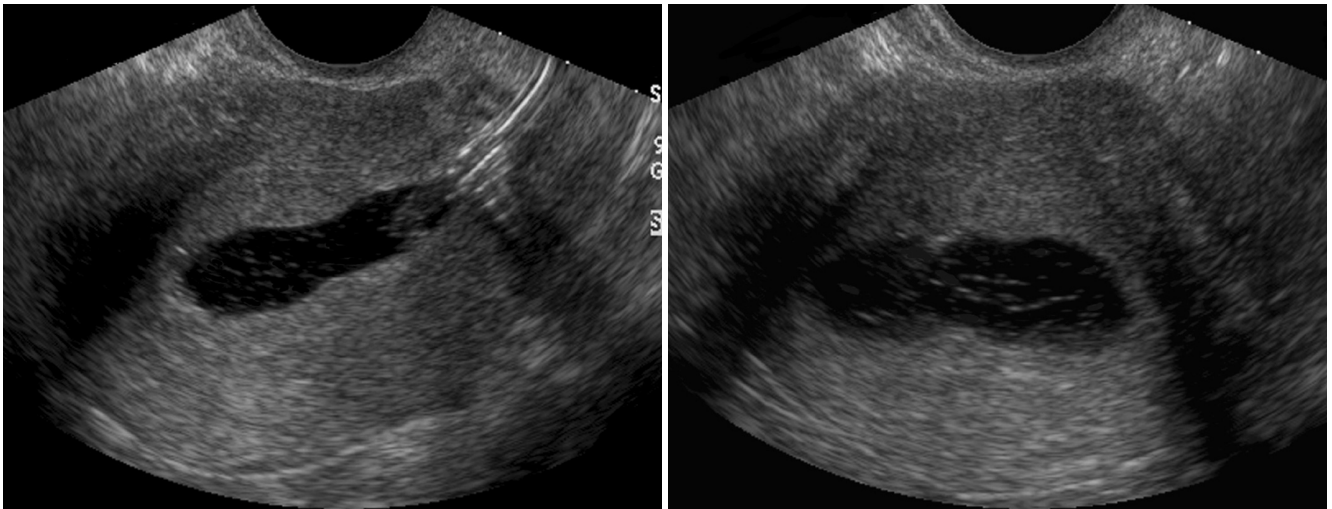


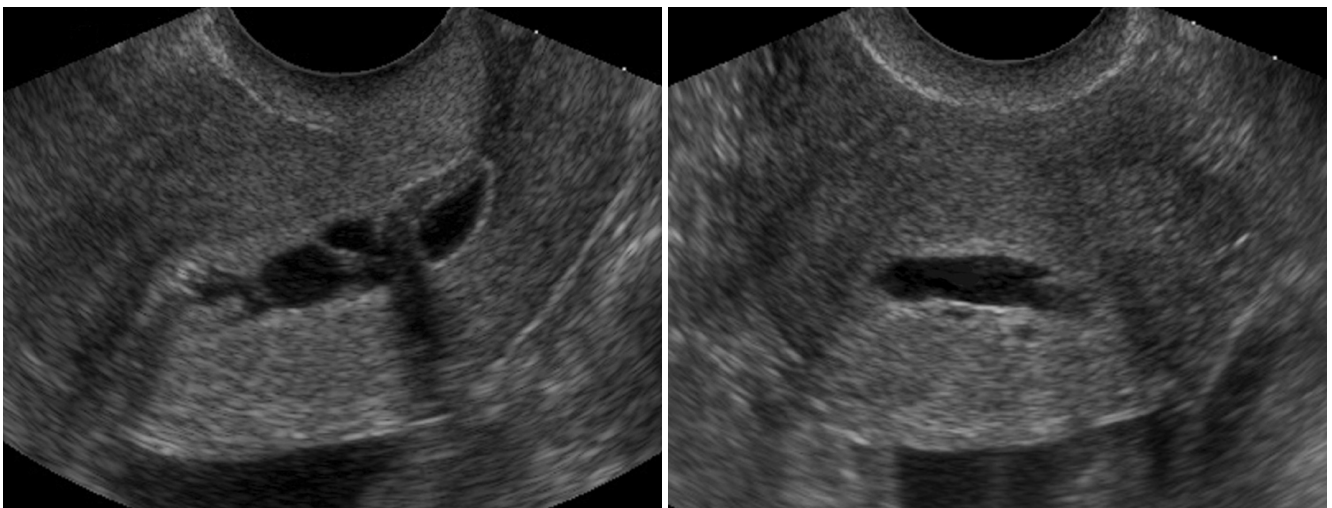
Fig. 1. Endometrial carcinoma in a 38-year-old woman with polycystic ovarian disease.
A, B. Sagittal and transverse sonohysterogram show a diffuse polypoid endometrial thickening (8.4 mm in maximal thickness) with irregular surface and disruption of endometrial-myometrial interface in the anterior corpus (arrows). The endometrial cavity is poorly distended during saline infusion and obliterated by tumor and adhesions.
C, D. Photography of the resected uterus reveals multiple papillary protruding endometrial masses involving the entire endometrial surface. Histologic findings suggested a well-differentiated endometrioid adenocarcinoma with associated endometrial hyperplasia and superficial myometrial invasion (arrow). Both ovaries are markedly enlarged, each measuring 6.5 × 5 cm and 5 × 4 cm, and show multiple small subcapsular cystic follicles and irregular thickened, sclerotic cortical tissue.

2 , 16
 10 , 4 , 2
 , 13 , 3
 , 12 , 4
 . 5 4 , 1
 , 0.8 - 4.1 cm, 2 , 3
 , 4 , 1
 , 4 , 1
 . 1 (Fig. 2, 3).
 19 , 1 ,

1 . 20 14 , 6
 , 0.6 - 2.5 cm, 가
 , 2 5.1, 6 mm
 (Fig. 4). 16
 , 1 ,
 , 17 , 10 ,
 3 , 4 , 15
 , 2 ,
 15 , 2 . 2 2.1, 2.2 cm

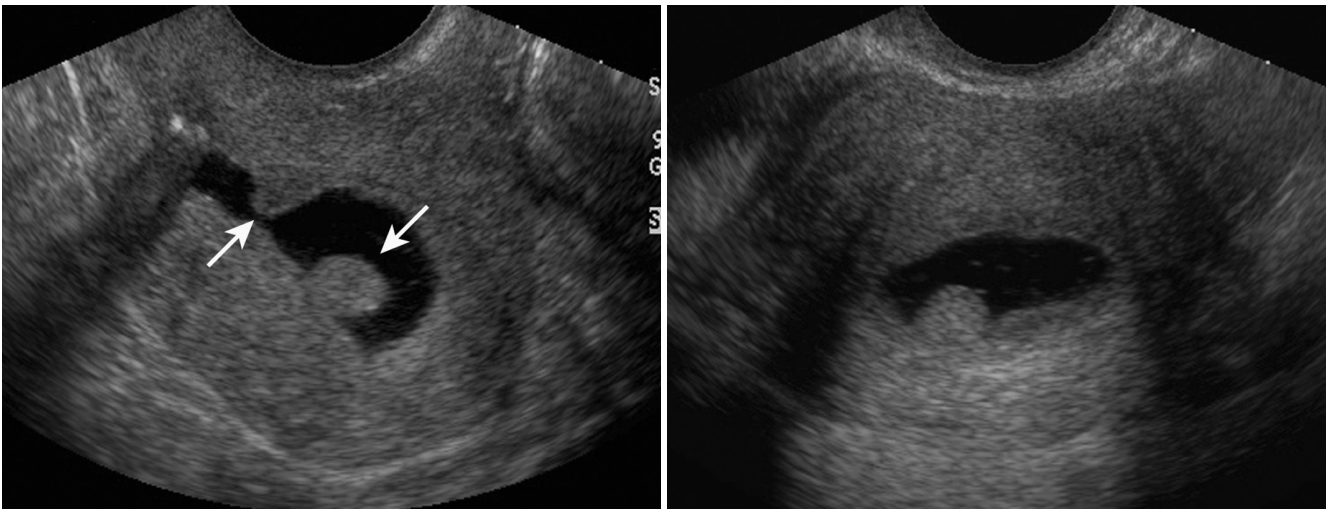


A B
Fig. 2. Endometrial hyperplasia in a 30-year-old woman with polycystic ovarian disease.
A, B. Sagittal and transverse sonohysterogram show a diffuse uniform endometrial thickening measuring 9.2 mm with a homogeneous hyperechogenicity and smooth surface. The uterine cavity is well distended and the endometrial-myometrial interface is preserved.

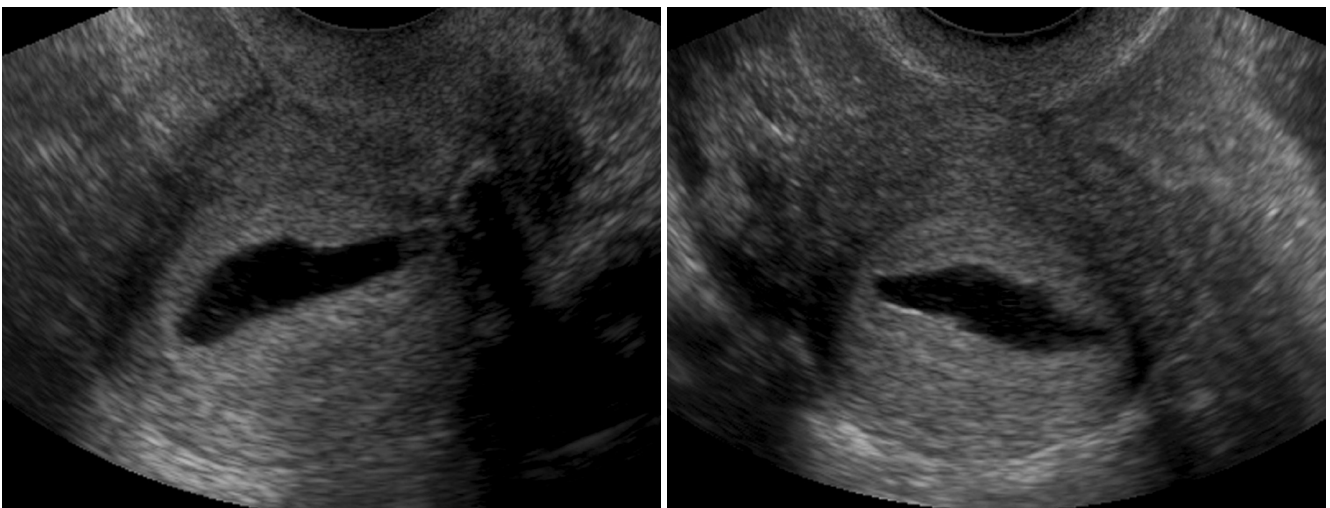


A B
Fig. 3. Atypical hyperplasia in a 28-year-old woman with polycystic ovarian disease.
A, B. Sagittal and transverse sonohysterogram show a diffuse polypoid endometrial thickening (7.4 mm in maximal thickness) with an irregular surface and a poorly distended endometrial cavity.

2
 (Fig. 5).
 17 2.2 - 6.7 mm(4.3 mm)
 3
 (p=0.002),
 가
 (p=0.0022), 가
 가
 (Table 1). 7 6 - 15 mm(9.5 mm)
 3 16 ROC 0.824 ,
 6.5 - 10.7 mm(8.2 mm) 1 (95% CI 0.71, 0.896, p<0.001).
 17 5.5 - 9.2 mm(6.8 mm)



A B
Fig. 4. Endometrial polyps in a 22-year-old woman with polycystic ovarian disease.
A, B. Sagittal and transverse sonohysterogram show 1.0 and 0.9 cm polypoid endometrial masses (arrows) with smooth surface in the anterior and posterior corpus



A B
Fig. 5. Disordered proliferative endometrium in a 25-year-old woman with polycystic ovarian disease.
A, B. Sagittal and transverse sonohysterogram show a diffuse uniform endometrial thickening (6.4 mm in maximal thickness) with a smooth surface and homogeneous echogenicity.

Table 1. Endometrial Thickness at Sonohysterography in Patients with Polycystic Ovarian Disease

Pathologic diagnosis	Endometrial thickness (mm)								Range (Mean)
	<5	5 - 6	6 - 7	7 - 8	8 - 9	9 - 10	10 - 11	11	
E carcinoma (n=7)			1	1	2	1		2	6 - 15 (9.5)
E hyperplasia (n=16)			3	3	6	3	1		6.5 - 10.7 (8.2)
DPE (n=17)		4	7	3	1	2			5.5 - 9.2 (6.8)
Normal E (n=17)	13	3	1						2.2 - 6.7 (4.3)

E: Endometrium, DPE: Disordered proliferative endometrium

가 6 mm 100%

7 mm

82.4%, 76%, 82.5%, 82.6%, 7

6 16 13 가 7 mm

1) 7 mm 3 (17 6

가 7 mm 11

17 7 mm 7 mm

7 mm

87.8%, 95.7%, 77.1%, 7

84.9%, 93.1% (Table 2).

6 , 5

1 , 1 , 가 , 가 , 가 ,

3 , 1 , 가 , 가 , 가 ,

10 2 14 ,

21 , 2 12 , 가 ,

2.4% 18

8 9.8%

6 , 2 . 35

25%가 , 25%

35.7% , 25%

가 [6 - 9],

0.4%,

18%, 23 - 25%

[1 - 4, 6 - 11]. [6, 10],

가 30%

[3].

unopposed estrogen (mitogenic effect) [11].

Table 2. Diagnostic Accuracy of Sonohysterography for Predicting Endometrial Abnormalities in 82 Patients with Polycystic Ovarian Disease

Sonohysterographic diagnosis	Pathologic diagnosis		
	Abnormal	Normal	Total
Abnormal	45	8	53
Normal	2	27	29
Total	47	35	82

(overexpression) [1, 2, 10], , , ,

estrogen - producing aromatase

estrogen 가 [3 - 5].

가

가 , 가 ,

가 가 ,

가 ,

[1, 2, 4].

. 35

25%가 , 25%

35.7% , 25%

가 [6 - 9],

0.4%,

18%, 23 - 25%

[1 - 4, 6 - 11]. [6, 10],

가 30%

[3].

unopposed estrogen (mitogenic effect) [11].

:
 26.3% ,
 [2, 3],
 가 8.2 mm ,
 triple - line appearance가 [6].
 5 - 15 mm(7.5 mm) , 5 mm 64.3% ,
 [1 - 3, 6, 9], 가 5 - 11 mm , 87.2%
 10 mm 15 mm , 35.9% (asynchronization)
 [6].
 [2, 3]. 가 7 - 15 20.7% , 22%
 mm(9.5 mm) 5 - 14 mm(7.7 mm) 6.8 mm
 , 가 7 mm 가 6 mm
 가
 7 - 15 mm mm가 가 7
 [2, 3, 6]. 가 6 mm 62.2%
 , 7 mm 76%, 8 mm 83.3% ,
 가 6 mm 7 mm
 , 6 mm
 5 - 6 mm ,
 4 - 7 mm [6].
 6 mm [15].
 10 - 12 mm 가 [20 - 23].
 가
 [16 - 19, 20, 23].
 5 - 6 mm ,
 가
 57.3%
 25.6% 가 ,
 8.5%
 9.5 mm
 ,
 23.2%

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= Abstract =

Sonohysterographic Findings of Endometrial Abnormalities in Women with Polycystic Ovarian Disease

Eun Ju Lee, M.D.

Department of Diagnostic Radiology, Ajou University, School of Medicine

PURPOSE : To describe the sonohysterographic findings of endometrial abnormalities, and to determine the usefulness of sonohysterography (SH) for predicting endometrial abnormalities in women with polycystic ovarian disease (PCOD).

MATERIALS and METHODS : 82 patients with PCOD who had vaginal bleeding or endometrial thickening and lesion mass on baseline transvaginal sonography were prospectively examined with SH. The SH findings were evaluated for endometrial thickness, the presence of endometrial thickening and lesion mass, echogenicity and surface contour, distensibility of the endometrial cavity, and disruption of endometrial-myometrial interface. These findings were compared with the pathologic findings and the diagnostic accuracy of SH for predicting endometrial abnormalities was assessed.

RESULTS : Endometrial abnormalities were identified in 47 (57.3%) of 82 PCOD patients, and their pathologic diagnosis included endometrial carcinoma in 7 cases, hyperplasia in 19 cases (atypical hyperplasia, n=5), and polyp in 21 cases. Of the 35 patients who did not have endometrial abnormalities, there was disordered proliferative endometrium in 18 cases and normal proliferative or secretory endometrium in 17 cases. The SH findings of endometrial carcinoma were endometrial thickening in 5 cases, endometrial thickening and lesion mass in 2 cases, and the endometrial thickness ranged from 6 mm to 15 mm (mean 9.5 mm). They were characterized as a diffuse polypoid endometrial thickening or a sessile endometrial mass with irregular surface, homogeneous hyperechogenicity, and obliteration of the endometrial cavity. Endometrial hyperplasia appeared as endometrial thickening in 14 cases, endometrial lesion mass in 3 cases, and endometrial thickening and lesion mass in 2 cases, and the endometrial thickness was between 6.5 - 10.7 mm (mean 8.2 mm). They showed a diffuse uniform endometrial thickening or a polypoid endometrial lesion mass with homogeneous hyperechogenicity and a regular surface. Endometrial polyps appeared as endometrial mass in 19 cases, and focal endometrial thickening and endometrial thickening and lesion mass occurred in one case each, respectively. They had a homogeneously echogenic, polypoid endometrial mass with a regular surface. 16 cases with disordered proliferative endometrium had endometrial thickening, measuring between 5.5 to 9.2 mm (mean 6.8 mm) in thickness, which were homogeneously hyperechoic and smooth surfaced, and one case each had an endometrial mass and an endometrial thickening with mass. The endometrial thickness of endometrial carcinoma and hyperplasia was significantly higher than those of disordered proliferative endometrium ($p=0.002$). Endometrial abnormalities could be excluded when the endometrial thickness was less than 6 mm. An endometrial thickness of 7 mm or greater was most useful parameter for the differentiation of endometrial carcinoma and hyperplasia from disordered proliferative endometrium with a sensitivity of 82.6%, a specificity of 82.4%, an accuracy of 82.5%, a positive predictive value of 76%, and a negative predictive value of 87.5%. Using endometrial thickening greater than 7 mm and the abnormal findings as the positive findings for predicting endometrial abnormalities in PCOD patients, the sensitivity, specificity, accuracy, positive predictive value, and negative predictive value of SH were 95.7%, 77.1%, 87.8%, 84.9%, and 93.1%, respectively.

CONCLUSION : The SH findings were accurate and could be useful for predicting endometrial abnormalities for women with PCOD.

Address for reprints : Eun Ju Lee, M.D., Department of Diagnostic Radiology, Ajou University, School of Medicine
San 5, Woncheon-dong, Yeongtong-gu, Suwon-si, Gyeonggi-do 443-721, Korea.
Tel. 82-31-219-5856 Fax. 82-31-219-5862 E-mail: ejlee@ajou.ac.kr