



Ear sign: A diagnostic sonographic sign for adenomyosis uteri

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Abstract

Background: Adenomyosis uteri is a cause of abnormal uterine bleeding and pelvic pain.

Aim of the work: to test the accuracy of ear sonographic sign in adenomyosis uteri diagnosis.

Patients and methods: the study included 200 patients suspected to have adenomyosis uteri treated with total abdominal hysterectomy, ultrasound examination performed to all patients searching for ear sign. Correlation between presence of this sign to final histopathological examination after the operation.

Results: of 200 patients 187 of them confirmed to have adenomyosis uteri after hysterectomy by histopathological examination. Ear sign was present in 128 case, all of them were with adenomyosis uteri.

Conclusions: presence of ear sign is a diagnostic for adenomyosis uteri especially in advanced stages.

Keywords: adenomyosis uteri, ear sign, ultrasound, abnormal uterine bleeding, pelvic pain

Introduction

Adenomyosis uteri is a benign condition characterized by the presence of endometrial glands and stroma in the myometrium of the uterus [1].

Adenomyosis is arising from abnormal invagination of the endometrium into myometrium [2]. It may be found within the whole uterine wall or in a localized area [3] This tissue may induce hypertrophy of the myometrium [4, 5].

Risk factors for adenomyosis include repeated vaginal deliveries, recurrent pregnancies and surgical evacuation of the gravid uterus [6]. Multiparous women in their forties or fifties are most affected [7]. Although, the disease has been diagnosed in younger age groups [8].

Clinically adenomyosis uteri is associated with pelvic pain in the forms of dysmenorrhea, dyspareunia, and chronic pelvic pain, abnormal uterine bleeding and impaired reproductive life, but 30% of patients with adenomyosis are asymptomatic [9, 10].

There is a correlation between the degree of the adenomyosis and the severity of dysmenorrhea [11]. The mechanism by which dysmenorrhea and pelvic pain in women with adenomyosis is not known, however, prostaglandins play important role [12]. Also oxytocin receptor overexpression may be the cause [13].

Increased uterine volume, increased vascularization, abnormal uterine contractions and increased production of estrogen and prostaglandins may be the mechanisms by which adenomyosis causes abnormal uterine bleeding [14].

In patients with adenomyosis uteri; abnormal tubal motility, abnormal uterine contractions and abnormal myometrial function may lead to impaired fertility [15-18].

Also there is association between adenomyosis uteri and endometriosis especially deep type [19, 20].

Many sonographic signs are seen in patients with

adenomyosis uteri like: uterine enlargement, heterogeneous myometrium, cystic spaces in the myometrium, uterine walls asymmetrical enlargement and ill-defined endometrial/ myometrial interface [21, 22].

Aim of the study

Is to test the accuracy of ear sonographic sign as a diagnostic sign in adenomyosis uteri detection.

Patients and methods

The study included two hundred women recruited from outpatient clinic in El Shat by maternity university hospital, suspecting to have adenomyosis uteri based on ultrasound criteria, all of them completed family size planned to have abdominal hysterectomy only for this uterine pathology. Correlation between presence of ear sign and final pathology was performed.

Inclusion criteria

- Age between 45 -50 years
- Completed family size
- Complaining of abnormal uterine bleeding &/pelvic pain
- Presence of one or more ultrasound criteria to diagnose adenomyosis uteri
- Accepting to perform hysterectomy

Exclusion criteria

- Presence of other causes explaining abnormal uterine bleeding and/or pelvic pains
- Presence of pathological causes distorting uterine anatomy or sonographic appearance of the uterus; like fibroids ect
- Normal endometrial appearance and thickness by ultrasound.
- History of previous uterine scars

All women accepting to participate in this research and sign a written consent

Statistical analysis

The Data was collected and entered into the personal computer. Statistical analysis was done using Statistical Package for Social Sciences (SPSS/version 20) software.

The statistical test used as follow

Arithmetic mean, standard deviation, for categorized parameters Chi square test was used. While for two groups t-test was used for parametric data. The level of significant was 0.05.

Results

Adenomyosis is a common pathology that may affect the uterus and may lead to its removal, in our research the mean age was 48±3.6 years, all of our patients were multiparous; the range of the parity was between 1 and 8. Presence of comorbidities were present in 34% of the patients, hypertensive disorder was the commonest. Table (1)

Table 1: demographic criteria of all patients:

Medical comorbidities	Number	%
DM	27	13.5
HTN	38	19.0
Asthmatic	3	1.5
More than one comorbidity	16	8.0
No comorbidity	132	66.0
age	45-50	
range mean ± S. D.	48.0±3.65	
Parity	1-8	
range mean ± S. D.	3.0±0.85	

Adenomyosis may be a symptomatic and accidentally discovered after histopathological examination of the surgical specimen, but sometimes may be symptomatic. The most common symptoms are abnormal uterine bleeding &/ pelvic pain; pelvic pain was present in 18% of patients, abnormal uterine bleeding present in 24.5% of patients while 57.5% of patients were complaining of both pelvic pain and abnormal uterine bleeding. Table (2)

Table 2: Complaint of patients

CO	Number	%
Pelvic pains	36	18.0
Abnormal uterine bleeding	49	24.5
both	115	57.5
Total	200	100.0

Ultrasound examination is diagnostic in most cases with adenomyosis uteri, many sonographic signs may be present. Ear sign alone was present in 13.5% of cases, ear sign was present with other sonographic sign in 3.5 % of cases, ear sign with other two sonographic signs in 8% of cases and ear sign with more than other two sonographic sign in 39% of cases, so in most of cases we can find more than one sonographic sign for adenomyosis. Sub endometriotic cysts and asymmetrical enlargement of both anterior and posterior uterine walls were commonly seen in cases with positive ear sonographic sign. Table (3) figure (1, 2, 3)

Table 3: Ultrasound criteria

Sonographic sign	Number	%
Only one sign other than ear sign	11	5.5
Two sonographic signs other than ear sign	42	21.0
More than two signs other than ear sign	19	9.5
Only ear sign	27	13.5
Ear sign + one other sign	7	3.5
Ear sign +other two signs	16	8.0
Ear sign + more than two signs	78	39.0
Total	200	100.0

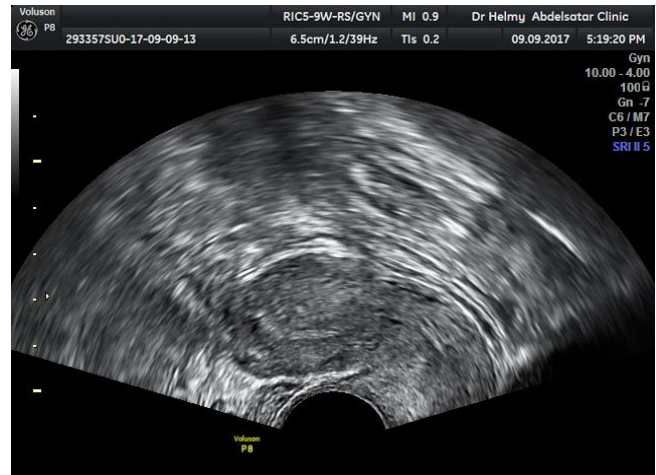


Fig 1: Transvaginal ultrasound shows ear sign and asymmetrically enlarged uterine walls.

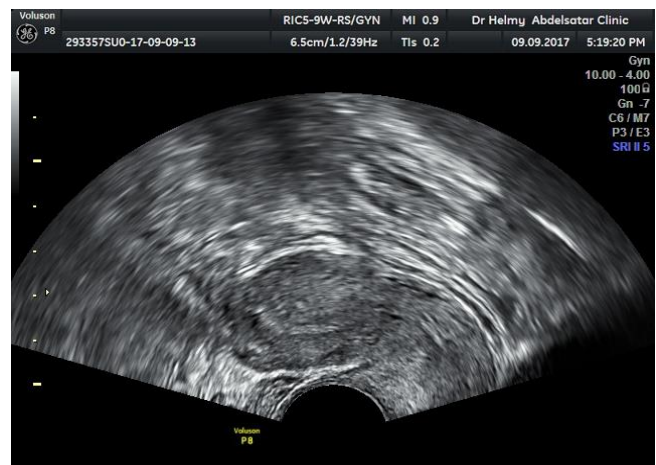


Fig 2: Transvaginal ultrasound shows presence of ear sign.

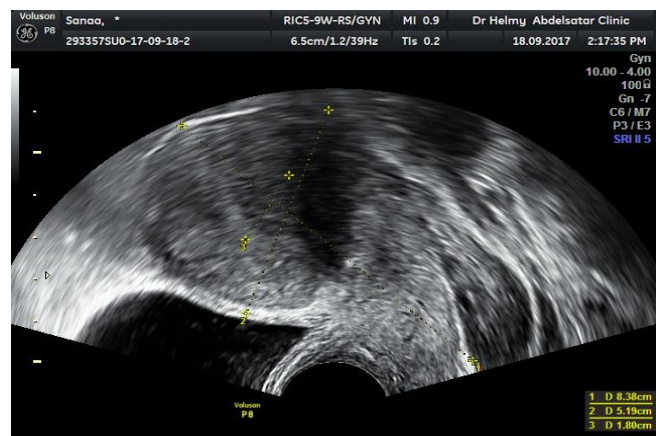


Fig 3: Ear sign with asymmetrically enlarged uterine walls.

Although ultrasound is diagnostic in adenomyosis but it is not accurate 100%, in our study 13 cases were diagnosed as adenomyosis using ultrasound but after histopathological examination of the surgical specimens the diagnosis was

changed, all of them were diagnosed as myometrial hypertrophy, ear sign wasn't seen in any of them. Table (4) figure (4, 5)

Table 4: Accuracy of ultrasound in adenomyosis uteri detection in comparison to final pathological examination

	us	Final pathology
total	200	200
+ve	200	187



Fig 4: Ear sonographic sign.

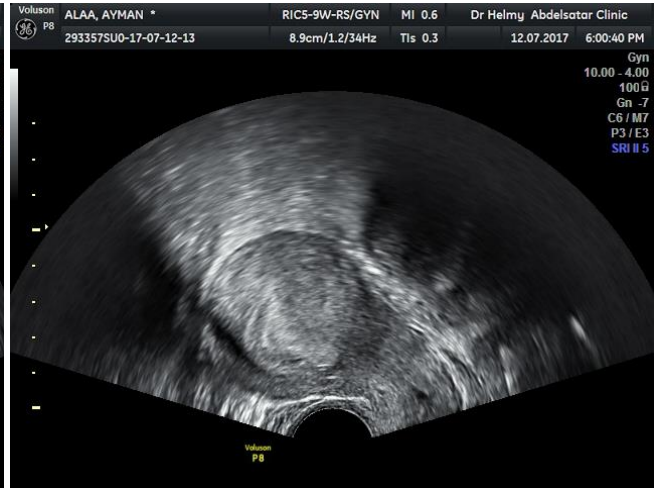


Fig 5: Ear sonographic sign.

So ear sign sensitivity, specificity and accuracy in detection of adenomyosis was 68.5%, 100% and 70% respectively.

Table (5) figure (6)

Table 5: Accuracy of ear sign in detection of adenomyosis

Ear sign	+ve adenomyosis with final pathology	-ve adenomyosis with final pathology	total
+ve	128	0	128
-ve	59	13	72
total	187	13	200
Sensitivity		68.5	
Specificity		100.0	
Accuracy		70.0	



Fig 6: Surgical specimen after total abdominal hysterectomy.

Discussion

High parity, pregnancy and surgical curettage of the gravid uterus are risk factors for adenomyosis. Multiparous women in their forties or fifties are most affected. Although, severe

disease in younger age groups have been identified. In our research the mean age was 48±3.6 years, all of our patients were multiparous.

In a study performed by Taran FA *et al*; [23] 70 to 80% of women undergoing hysterectomy for adenomyosis are in their fourth and fifth decade of life and are multiparous and reported a mean age over 50 years for women undergoing hysterectomy for adenomyosis.

A high percentage of women with adenomyosis are multiparous. Pregnancy might facilitate the formation of adenomyosis by allowing adenomyotic foci to be included in the myometrium due to the invasive nature of the trophoblast on the extension of the myometrial fibers. In addition, adenomyotic tissue may have a higher ratio of estrogen receptors and the hormonal milieu of pregnancy may favor the development of islands of ectopic endometrium. Alternatively, there may be an increased acceptance of hysterectomy in multiparous women.

And in another study done by Filip G *et al*. [24] Mean age of women at hysterectomy was 47.7+5.3 years due to adenomyosis Adenomyosis may be a symptomatic and accidentally discovered after histopathological examination of

the surgical specimen, but sometimes may be symptomatic. The most common symptoms are abnormal uterine bleeding &/ pelvic pain; pelvic pain was present in 18% of patients, abnormal uterine bleeding present in 24.5% of patients while 57.5% of patients were complaining of both pelvic pain and abnormal uterine bleeding.

In a study performed by Pinzauti S *et al.* [25] among women with adenomyosis, 83% complained of at least one painful symptom: dysmenorrhea was reported by 79.2% of women with adenomyosis, while dyspareunia and dyschezia were reported by 32.0% and 26.4%, also he found that there is a linear correlation between the extent of adenomyosis and dysmenorrhea.

Ultrasound examination is diagnostic in most cases with adenomyosis uteri, many sonographic signs may be present. Ear sign alone was present in 13.5% of cases, ear sign was present with other sonographic sign in 3.5 % of cases, ear sign with other two sonographic signs in 8% of cases and ear sign with more than other two sonographic sign in 39% of cases, so most of cases we can find more than one sonographic sign for adenomyosis. Sub endometriotic cysts and asymmetrical enlargement of both anterior and posterior uterine walls were commonly seen in cases with positive ear sonographic sign.

Although ultrasound is diagnostic in adenomyosis but it is not accurate 100%, in our study 13 cases were diagnosed as adenomyosis using ultrasound but after histopathological examination of the surgical specimen the diagnosis was changed, all of them were diagnosed as myometrial hypertrophy, ear sign wasn't seen in any of them.

So ear sign sensitivity, specificity and accuracy in detection of adenomyosis was 68.5%, 100% and 70% respectively.

In a study done by Pinzauti S *et al.* [25] asymmetrical myometrial thickening of the uterine walls being the most common, it was present in 56.6% of cases, myometrial anechoic lacunae or cysts were present in 49.1% of cases, 17% of patients were with hypoechoic myometrial striation and 26.4% of cases with heterogenous myometrium.

Conclusions

Ear sonographic sign is a diagnostic sign of adenomyosis uteri especially advanced stages but in absence of posterior wall uterine scars.

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