Original Research Article

Simple vs ugly adnexal lesions: is ultrasonography alone good enough?

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ABSTRACT

Background: Ultrasound (USG) is easily available and effective imaging modality for adnexal lesions. A simple looking lesion on ultrasound is usually benign and an ugly looking adnexal lesion is either benign or malignant. This study aims to evaluate the varied appearance of simple and ugly benign adnexal lesions on USG and to find out any additional role of colour Doppler in such suspected benign lesions. The confirmation of diagnosis was done either by follow up appearance of lesions on USG or by histopathological evaluation.
Methods: A total of 55 consecutive female patients with age between 18 to 50 years were enrolled in this prospective cross sectional study. USG and colour Doppler for all the lesions were done. The patients found to have malignant lesions on histopathological examination, were later excluded from the analysis. Follow up USG was done for all the cases. Those cases wherein there was no resolution of lesions even after 08 weeks, were given an option to undergo laparoscopy as next management step.
Results: Out of 50 benign adnexal masses, 88% masses were ovarian in origin and 12% were tubal masses. Ovarian masses included hemorrhagic cysts, endometriosis, simple cysts, serous cystadenomas and ovarian dermoid. All extra-ovarian masses were hydrosalpinx. Colour Doppler did not add any additional finding. Some of the patients underwent diagnostic laparoscopy followed by excision of masses in majority of them.
Conclusions: Benign adnexal lesions can have varied appearance ranging from simple to ugly on USG. Ultrasonographic features of benign lesions on USG can be appreciated very well even without further use of colour Doppler or cross sectional imaging. Follow up USG remains key modality for benign adnexal masses in absence of MRI.

Keywords: Adnexal lesion, Benign, Laparoscopy, Follow up, Ultrasound

INTRODUCTION

Adnexal masses are frequently found in both symptomatic and asymptomatic women. In women of reproductive age who have had adnexal masses removed surgically, most are benign cysts. Though in patients younger than 30 years, most of the lesions are of low malignant potential, but 10% of masses may be malignant, 33% are mature cystic teratomas and 25% are endometriomas.[1] The rest are serous or mucinous cystadenomas or functional cysts.[1] In premenopausal women, physiological follicular cysts and corpus luteum cysts are the most common adnexal masses. Other masses in this age group include endometriomas, tubo-ovarian abscesses and benign neoplasms. Malignant neoplasms are uncommon in younger women but become more frequent with increasing age.[2] Jain KA, Friedman DL, Pettinger TW et al, stated that the overall sensitivity of endovaginal US was 76% versus 49% for MR imaging, and the overall accuracy of endovaginal US was 83% versus 70% for MR imaging. The authors suggest that

endovaginal US is a better modality than MR imaging for the assessment of suspected pelvic masses.[3]

METHODS

This was a prospective cross sectional study conducted in the Department of Radiology of a zonal service hospital. 55 patients from the outpatient department of Gynaecology were enrolled. Out of these, 05 patients were later excluded from the study as they were diagnosed to have malignant adnexal masses. This study was conducted over a period of 12 months from Jan 2018 to Dec 2018. The patients were between 20 to 50 years of age. Pregnant ladies and patients with post op recurrence cases of adnexal masses were not included in the study. Gray scale Ultrasound and colour Doppler was performed on all patients. In all cases, relevant clinical history was taken. The relevant blood and urine investigations were checked. Informed consent was obtained from all the patients prior to USG. All patients were subjected to ultrasound and colour doppler. Logic P5 USG machine from General Electric (GE) was used using 3.5MHz (Trans-abdominal) and 12 MHz (Trans-vaginal) transducers. Transabdominal sonography of pelvic masses was carried out in sagittal, transverse and oblique planes in supine with full urinary bladder. In cases where the abdominal wall was thick and lesion was not characterized adequately, TVS was done with empty urinary bladder. The final diagnosis was based on either on spontaneous resolution of lesions during follow up USG or during laparoscopy.

RESULTS

In present study, the 18-50 years age group patients were included. Most of the patients were in 30-40 year range. Out of total 55 patients, 50 patients were detected to have 50 benign adnexal masses. 05 patients had biopsy proven 05 malignant ovarian masses and hence were excluded from the analysis. Out of 50 benign adnexal masses, 44 (88%) masses were ovarian in origin and 06 (12%) were tubal masses (Figure 2).
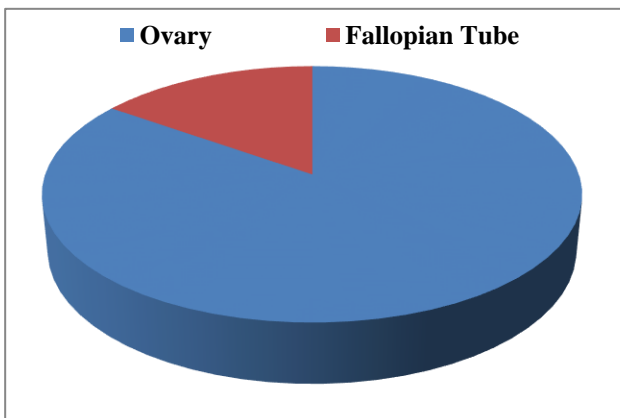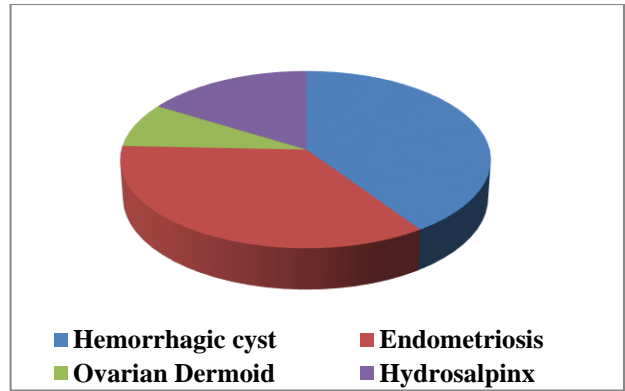

Figure 1: Distribution of adnexal masses.

Figure 2: Distribution of lesions into simple and ugly.

Out of 44 ovarian masses, there were 15 (34%) hemorrhagic cysts, 13 (29.5%) endometriosis, 10 (22.7%) simple cysts, 03 (7%) serous cystadenomas, 03 (7%) ovarian dermoids (Figure 4).

All the tubal masses (06) were hydrosalpinx. We classified all simple cysts into simple adnexal lesions owing to their homogenous nature with anechoic contents within. Rest of the lesions were included in the list of ugly adnexal lesions. The ugly nature of the lesions was determined based on heterogeneous appearance of the lesions on grey scale USG. Colour Doppler, did not add to any additional findings which could change the diagnosis given on grey scale USG. The ugliest lesions were dermoids due to most complex and heterogeneous appearance on grey scale USG owing to different variety of internal contents. Out of 50 masses, we found 13 simple lesion and 37 ugly lesions (Figure 3).
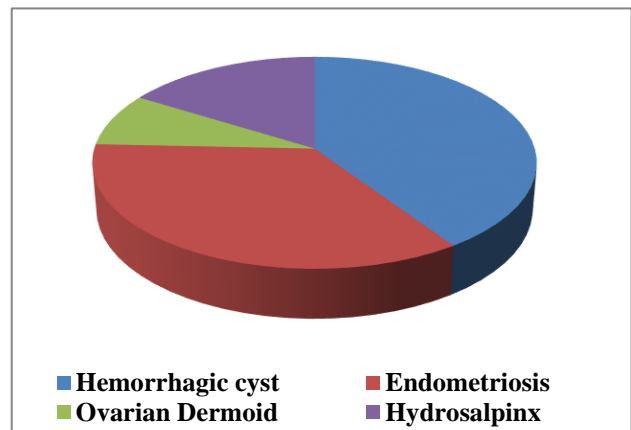

Figure 3: Distribution of ugly adnexal benign lesions.

Out of 13 simple lesions, 10 were simple cysts and 03 were serous cystadenomas. Rest of the lesions were hemorrhagic cysts, endometriosis, ovarian dermoids and hydrosalpinx. The follow up and management of these masses was tabulated (Table 1).

During follow up, there was complete resolution of hemorrhagic cysts (15 patients) and simple cysts (10

patients) within a varied time period of 8 weeks. All simple cysts resolved within 4 weeks. 07 hemorrhagic cysts resolved within first 04 weeks and 08 hemorrhagic cysts resolved within next 04 weeks. Out of 13 cases of endometriosis, 03 cases underwent laparoscopic excision as they presented with infertility despite hormonal treatment and 10 cases were followed up on USG following hormonal treatment as they showed gradual regression (more than 08 weeks). All cases of serous cystadenoma and ovarian dermoid underwent laparoscopic excision and diagnosis was confirmed on histopathology. Out of 06 tubal masses (06 patients), 02 patients underwent laparoscopic management as they presented with primary infertility and in 04 cases, diagnosis was finalised on USG only.

Table 1: Follow up and management outcome of the adnexal masses.

Sr No.	Type of lesion	Final outcome
1.	Simple cysts (n=10)	Spontaneous resolution of all 10 lesions within 04 weeks
2.	Hemorrhagic cysts (n=15)	(i) Spontaneous resolution of 07 lesions within 04 weeks (ii) Spontaneous resolution of 08 lesions within next 04 weeks
3.	Endometriosis (n=13)	(i) Regression in size of 10 lesions after 08 weeks (ii) Laparoscopic excision of 03 lesions
4.	Serous cystadenoma (n=03)	Laparoscopic excision of all 03 lesions
5.	Ovarian Dermoid (03)	Laparoscopic excision of all 03 lesions
6.	Hydrosalpinx (06)	(i) Laparoscopic excision of all 02 lesions (ii) USG follow up and non-resolution of 04 lesions

DISCUSSION

In present study, 50 patients (50 masses) in reproductive age group were evaluated by Ultrasound. The symptoms which were present in this study group were pain abdomen, lump abdomen, irregular bleeding per vaginum and dyspareunia. The age group in present study was 20-50 yrs. Hricak et al, conducted an analysis of complex adnexal masses (n=187) in 128 consecutive patients where the average age of study group was 53 years.[4] Hricak, Chen et al, in their study (n=187) found that 177 masses (94.6%) lesions were ovarian in origin, 5 (2.7%) lesions were tubal in origin and 5 (2.7%) lesions were uterine in origin. There were 31 (17.5%) non neoplastic ovarian cysts and 15 (8.4%) endometriotic masses. In this study (n=50), 44 (88%) masses were ovarian in origin and 06 (12%) were tubal masses, however, no adnexal mass of uterine origin could be found. Out of 44 ovarian masses, there were 15 (34%) hemorrhagic cysts, 13 (29.5%) endometriosis, 10 (22.7%) simple cysts and 03 (7%) dermoids. Saroja Adusumilli et al, studied 95 adnexal masses (in 77 patients).[5] The final diagnosis for each of the 95 masses was established by the following methods: histopathology (n= 43), surgical findings (n=6), imaging follow-up (n=26), and clinical follow-up (n=20). In the present study, the final diagnosis of masses was based imaging (n=25), laparoscopy (n=17) and histopathology (n=8). During follow up, there was complete resolution of hemorrhagic cysts (15 patients) and simple cysts (10 patients) within a time period of 8 weeks. 12 cases of endometriosis underwent laparoscopy and 01 patient refused to undergo laparoscopy. All cases of serous cystadenoma and ovarian dermoid underwent laparoscopic excision and diagnosis was confirmed on histopathology. Out of 06 tubal masses (06 patients), 01 patient refused to undergo laparoscopy and in rest of these cases, diagnosis was confirmed on laparoscopy.
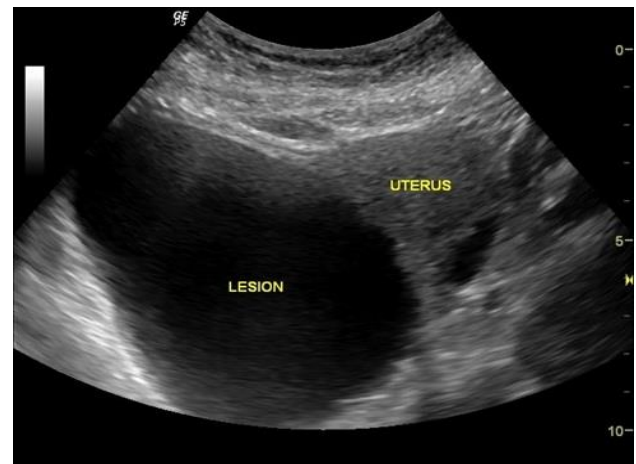

Figure 4: Simple ovarian cyst with thin walls and anechoic contents.

Simple cyst

On US, a simple cyst is a round or oval anechoic space with smooth thin walls, posterior acoustic enhancement, no solid component or septation, and no internal flow at color Doppler US.[6] The similar features were observed in present study (Figure 4). We classified them into simple lesions due to homogenous anechoic contents within. No flow was seen at periphery of the lesions on colour Doppler.
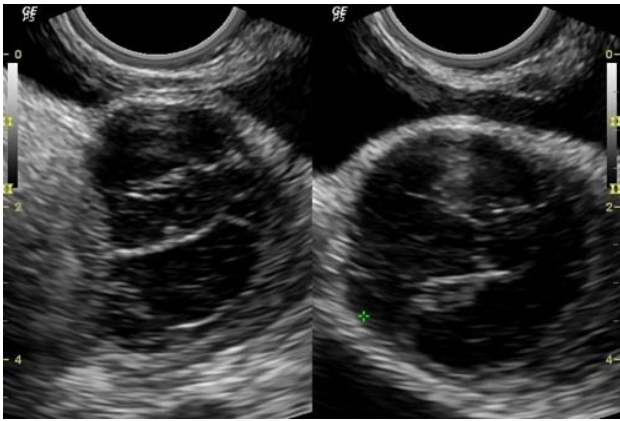
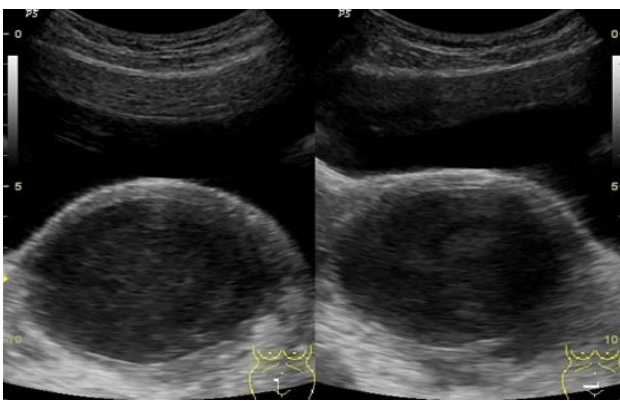**Figure 5: Haemorrhagic cyst showing internal fine septae and echoes.**

Figure 6: Endometrioma showing low level internal echoes.

Figure 7: Endometrioma showing low level internal echoes and echogenic foci.

Hemorrhagic cyst

On US, the typical hemorrhagic cyst shows reticular-type pattern containing internal echoes and interdigitating fibrin strands.[7,8] The similar features were observed in present study in all 13 cases (Figure 5). We classified all these lesions into ugly lesions owing to heterogeneous contents. Colour Doppler did not reveal any internal flow

at color Doppler, however, at periphery, pulsatile arterial flow was observed.

Endometriosis/endometrioma

On US, endometrioma appears a well-defined, unilocular or multilocular, predominantly cystic mass containing diffuse, homogenous, low level internal echoes. This is better appreciated on transvaginal ultrasonography. In such masses, the additional features of multilocularity and/or tiny echogenic wall foci can help distinguish them from an acute hemorrhagic cyst.[9,10] Moreover, transvaginal ultrasound can help detect the origin and fixity of the endometrioma lesion by gently pushing it to show whether there is sliding against the pelvic organs to assess its fixity to these structures.[11] The similar features were observed in present study in 12 cases of endometriosis (Figure 6) and in one case, the tiny echogenic focus was picked up on gray scale USG (Figure 7). We have classified all these lesions into ugly lesions due to in homogenous internal contents. Colour Doppler did not reveal any internal vascularity.

Serous cystadenoma

On US, serous cystadenomas are usually thin walled, unilocular cystic masses that may contain thin septations. Papillary projections are occasionally seen.[5]
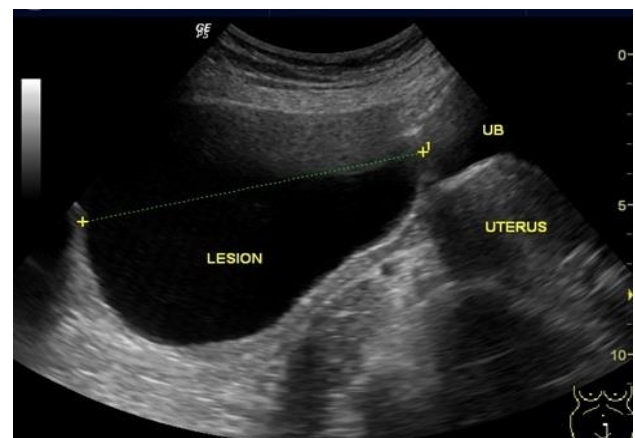

Figure 8: Serous cystadenoma showing thin walled cyst with anechoic contents.

In this study, the features were similar to the simple cysts (Figure 8). We classified all these lesions into simple lesions. Colour Doppler did not reveal any peripheral vascularity.

Dermoid

On US, the features that allow a confident diagnosis are focal or diffuse hyperechoic components, hyperechoic lines and dots and area of acoustic shadowing. Additionally, floating spherical structures, though uncommon, allow a confident diagnosis.[12] The similar features were observed in present study (Figure 9). We

have classified all these lesions into ugly lesions due to their most heterogeneous and complex internal contents. No flow was seen on colour Doppler.

Figure 9: Dermoid cyst showing heteroechoic cystic contents, hyperechoic areas with posterior acoustic shadowing.

Hydrosalpinx

A typical hydrosalpinx appears as a tubular shaped cystic mass with either short round projections or incomplete septae.[13]

Figure 10: Hydrosalpinx showing tubular cystic lesion with incomplete internal septae.

Incomplete septae were seen in all cases in this study (Figure 10). Authors have classified all these lesions into ugly lesions due to their irregular shape. No flow was seen on colour Doppler.

CONCLUSION

USG is an easily available and effective imaging modality which provides adequate imaging inputs about various adnexal lesions. Ultrasonographic appearance of benign adnexal lesions may vary from simple to complex (ugly). Majority of the benign adnexal lesions are complex in appearance. Hence, on ultrasound, the complex looking adnexal lesions are not always malignant. The ugly looking benign lesions on ultrasound have typical characteristic imaging appearance and hence MRI/ tissue diagnosis is not always required for confirmation in these typical cases. Ultrasound also plays an important role during follow up of benign lesions and spontaneous resolution on follow up is again a point in favour on benignity.

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