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ASSESSMENT OF SUSPICIOUS OVARIAN CYSTS IN THE FEMALES BY USING OF TRANS ABDOMINAL ULTRASONOGRAPHY (TAUS) AND COMPUTED TOMOGRAPHY (CT)

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Abstract

Owing to the development and improvement of growing number of conservative surgeries like laparoscopic surgery, the ultimate diagnosis of an ovarian mass is considered to be an important mission in gynecologic practice. The degree of suspicion for malignancy in a given mass is based largely on imaging appearance. Suspicious ovarian masses should be evaluated preoperatively to know their nature and behavior, which in turn persuade the choice of type of surgery. Evaluation of the suspicious ovarian mass should include clinical evaluation and imaging techniques. The aim of this study is to compare the diagnostic value of transabdominal ultrasonography (TAUS) and computed tomography (CT) in evaluation of suspicious ovarian masses

The 50 female patients referred to the Department of Radiology in the Narayan Medical College and Hospital fromJan 2018 to July 2018 was enrolled in the present study. The enrolled females were identified with the ovarian cysts. The females underwent the trans abdominal ultrasonography (TAUS) and computed tomography (CT). Detailed history of allergy and renal function tests were taken before doing CT scan and if there was history of allergy then non-ionic contrast was used. Site, size, papillary projections, wall characteristics, capsular infiltrations, the presence of solid areas inside the mass and presence of as cites were recorded both by US and CT scan.

The results of present study suggest that in diagnosing and determining the benign or malignant potential of an ovarian mass, both USG and CT have concordant roles. CT is more sensitive in determining the malignant lesions, USG is more specific and the difference between the two is statistically insignificant.

Keywords: Suspicious Ovarian Cysts, trans abdominal ultrasonography (TAUS) and computed tomography (CT), etc.

Introduction:

Ovarian tumors, or ovarian neoplasms, are tumors arising from the ovary. They can be benign or malignant (ovarian cancer). An ovarian cyst is a fluid-filled sac within the ovary. Often they cause no symptoms. Occasionally they may produce bloating, lower abdominal pain, or lower back pain. The majority of cysts are harmless. If the cyst either breaks open or causes twisting of the ovary, it may cause severe pain. This may result in vomiting or feeling faint. Most ovarian cysts are related to ovulation, being either follicular cysts or corpus luteum cysts. Other types include cysts due to endometriosis, dermoid cysts, and cystadenomas. Many small cysts occur in both ovaries in polycystic ovary syndrome (PCOS). Pelvic inflammatory disease may also result in cysts. Rarely, cysts may be a form of ovarian cancer. Diagnosis is undertaken by pelvic examination with an ultrasound or other testing used to gather further details.[1]

Often, cysts are simply observed over time. If they cause pain, medications such as paracetamol (acetaminophen) or ibuprofen may be used. Hormonal birth control may be used to prevent further cysts in those who are frequently affected. However, evidence does not support birth control as a treatment of current cysts. If they do not go away after several months, get larger, look unusual, or cause pain, they may be removed by surgery. Most women of reproductive age develop small cysts each month. Large cysts that cause problems occur in about 8% of women before menopause. Ovarian cysts are present in about 16% of women after menopause and if present are more likely to be cancer.[2]

Follow-up imaging in women of reproductive age for incidentally discovered simple cysts on ultrasound is not needed until 5.0 cm, as these are usually normal ovarian follicles. Simple cysts 5.0 to 7.0 cm in premenopausal females should be followed yearly. Simple cysts larger than 7.0 cm require further imaging with MRI or surgical assessment. Because they are large, they cannot be reliably assessed by ultrasound alone because it may be difficult to see the soft tissue nodularity or thickened septation at their posterior wall due to limited penetrance of the ultrasound beam. For the corpus luteum, a dominant ovulating follicle that typically appears as a cyst with circumferentially thickened walls and crenulated inner margins, follow up is not needed if the cyst is less than 3.0cm in diameter. In postmenopausal patients, any simple cyst greater than 1.0cm but less than 7.0 cm needs yearly follow-up, while those greater than 7.0 cm need MRI or surgical evaluation, similar to reproductive age females.

An Axial CT demonstrating a large hemorrhagic ovarian cyst. The cyst is delineated by the yellow bars with blood seen anteriorly. For incidentally discovered dermoids, diagnosed on ultrasound by their pathognomonic echogenic fat, either surgical removal or yearly follow up is indicated, regardless of patient age. For peritoneal inclusion cysts, which have a crumpled tissue-paper appearance and tend to follow the contour of adjacent organs, follow up is based on clinical history. Hydrosalpinx, or fallopian tube dilation, can be mistaken for an ovarian cyst due to its anechoic appearance. Follow-up for this is also based on clinical presentation.

For multiloculate cysts with thin septation less than 3.0cm, surgical evaluation is recommended. The presence of multiloculation suggests a neoplasm, although the thin septation implies that the neoplasm is benign. For any thickened septation, nodularity, or vascular flow on color Doppler assessment, surgical removal should be considered due to concern for malignancy.[3]

Most women of reproductive age develop small cysts each month, and large cysts that cause problems occur in about 8% of women before menopause. Ovarian cysts are present in about 16% of women after menopause and if present are more likely to be cancer.[1] Benign ovarian cysts are common in asymptomatic premenarchal girls and found in approximately 68% of ovaries of girls 2–12 years old and in 84% of ovaries of girls 0–2 years old. Most of them are smaller than 9 mm while about 10-20% is

larger macrocysts. While the smaller cysts mostly disappear within 6 months the larger ones appear to be more persistent.[4]

Ultrasound is a first-line tool for evaluating ovarian masses that allows gynecologists to determine the size, shape, complexity, blood flow and movement of the ovaries. While most masses are not malignant, ovarian cancer is the deadliest gynecologic cancer, so it's important to gather as much information as possible when evaluating an ovarian mass. Details and a thorough description of the mass can help you determine the next steps and develop a management plan.

Owing to the development and improvement of growing number of conservative surgeries like laparoscopic surgery, the ultimate diagnosis of an ovarian mass is considered to be an important mission in gynecologic practice. The degree of suspicion for malignancy in a given mass is based largely on imaging appearance. Suspicious ovarian masses should be evaluated preoperatively to know their nature and behavior, which in turn persuade the choice of type of surgery. Evaluation of the suspicious ovarian mass should include clinical evaluation and imaging techniques. [5]

The aim of this study is to compare the diagnostic value of transabdominal ultrasonography (TAUS) and computed tomography (CT) in evaluation of suspicious ovarian masses.

Methodology:

The 50 female patients referred to the Department of Radiology in the Narayan Medical College andHospital from Jan 2018 to July 2018 were enrolled in the present study. The enrolled females were identified with the ovarian cysts. The females underwent the trans abdominal ultrasonography (TAUS) and computed tomography (CT). Detailed history of allergy and renal function tests were taken before doing CT scan and if there was history of allergy then non-ionic contrast was used. Site, size, papillary projections, wall characteristics, capsular infiltrations, the presence of solid areas inside the mass and presence of as cites were recorded both by US and CT scan.

All the patients were informed and consent taken. Approval of the institutional ethical committee was taken prior to conduct of the study. The aim and the objective of the present study was conveyed to the patients.

Following was the inclusion and exclusion criteria for the present study:

Inclusion Criteria: Patients presented with suspicious ovarian masses detected clinically or by ultrasound examination, patients with ovarian masses and scheduled for surgery.

Exclusion Criteria: patients with ovarian masses managed conservatively were excluded.

Results & Discussion:

The data from the 50 females were collected and presented as below. The data was discussed with the previously reported literature.

Table 1: Type of Masses

	Pre-menopausal	Post-menopausal
Malignant	7	14
Benign	21	8
Total	28	22

There are total 28 cases of Pre-menopausal stage and 22 cases ofPost-menopausal stage having ovarian cyst. Out of 28 cases ofPre-menopausal conditions have 7 number of malignant and 21 number of benign type of ovarian mass. In the Post-menopausal group there are 14 cases of malignant and 8 cases of benign ovarian mass was observed.

Table 2: Test Performance Characteristics of USG & CT

	USG Study (No. of Cases)		CT Study (No. of Cases)	
	Benign	Malignant	Benign	Malignant
Sensitivity	43	31	49	42
Specificity	31	45	46	45

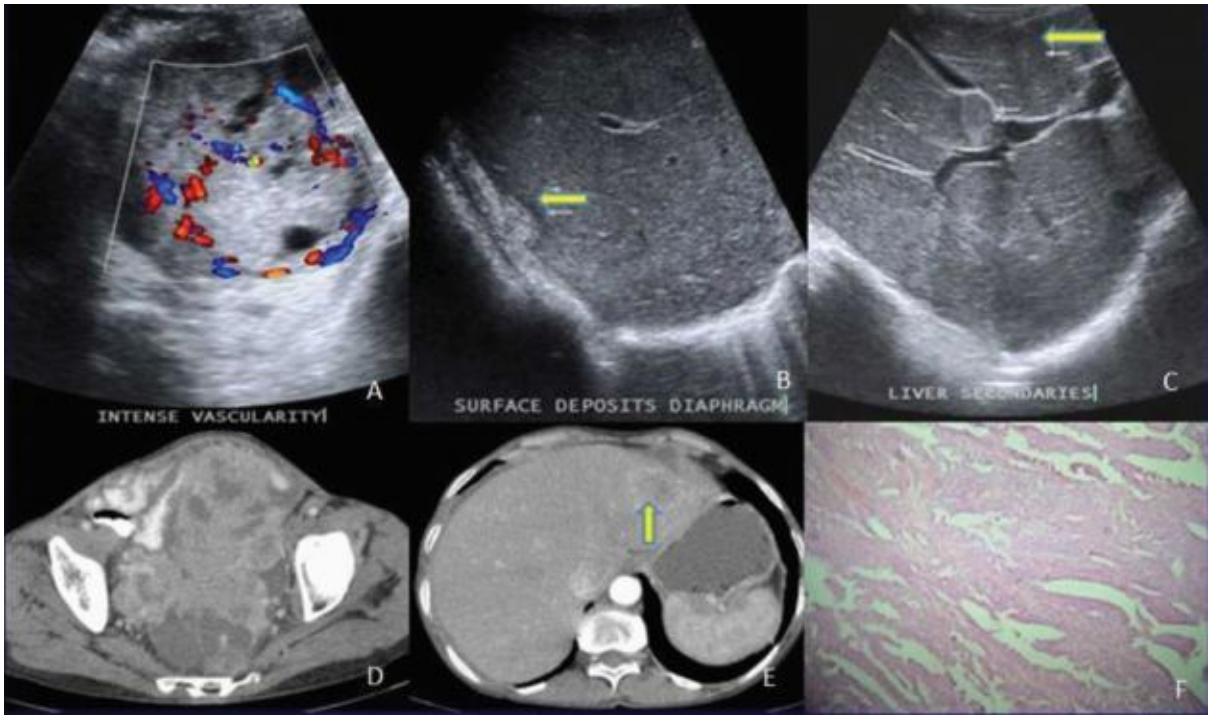

Figure (a-c): USG showing pelvic solid cystic lesion and (d-e): axial contrastenhanced CT showing cysts

Clinical evaluation of patients with ovarian mass is considered to be the first preliminary tool to increase suspicion of malignancy in such mass. The clinical evaluation include detailed history taking as regards age, menstrual status, parity, family history of ovarian malignancy and past history of breast, colonic and endometrial cancers. Assessment of the criteria of the mass as regards site (unilateral or bilateral), fixity, consistency, presence of nodules in Douglas pouch and presence of ascites. Alone the clinical evaluation increase the suspicious of malignancy to certain extent but if combined with other tools as tumor markers and two dimensional ultrasounds, the sensitivity for malignancy increases [6].

Among women with ovarian disorders, CT has been used primarily in patients with ovarian malignancies, either to assess disease extent prior to surgery or as a substitute for second look laparotomy. CT is preferred for identification of peritoneal implants, lymphadenopathy and extent of the disease. However, studies failed to demonstrate that CT is significantly superior to other modalities in characterization of ovarian cancer. And moreover, simple ovarian cysts are better evaluated by ultrasound. [7]

Jeong et al. [8] examined the accuracy of grey scale ultrasound in delineating a malignant ovarian mass based on size and appearance. In that study fixed septa, tumor size exceeding 5.0cm, and multiloculations were considered warning for ovarian malignancy.

Another study done by Onyka et al. showed comparative diagnostic values of grey-scale US

versus CT Scan in the primary management of gynecological pelvic mass with emphasis on ovarian cancer detection and staging. The sensitivity of CT scan for all ovarian cancer detection was greater than that of TAUS 83% vs. 67%, but TAUS was more specific. Both methods were equally efficacious in detecting and staging advanced ovarian cancer cases. Over all CT did not offer significant additional features and did not result in a change in management plan in any of the patients reviewed. Both methods were almost equally efficacious in detecting ovarian cancer cases [9] .

CT is the preferred technique in the pretreatment evaluation of ovarian cancer to define the extent of disease and assess the likelihood of optimal surgical cytoreduction. Tumor involvement of the diaphragm and the large bowel mesentery has been shown to be the most reliable CT predictor of suboptimal cytoreduction, although other features such as suprarenal paraaortic adenopathy; omental tumor extending into the spleen, stomach, or lesser sac; tumor growth into the pelvic sidewall; and hydroureter, are also associated with a poor surgical result [10].

USG remains the primary modality for detection and characterization of ovarian masses. Major advantages of USG include its easy availability and good morphological characterization. Lesion characters like size, solid/cystic consistency, shape, probable organ of origin and relationship to surrounding pelvic structures are helpful in the decision making process. Majority of ovarian masses can be adequately characterized with US alone. Lesions that are indeterminate, poorly visualised or inadequately localized warrant further characterization by MRI and CT [11-12].

CT is primarily used in cases of suspected malignancy in order to assess the extent of the disease in preoperative setting, pertaining to its larger field of view and its comprehensive approach which provides a better evaluation of lymphadenopathy, omental deposits and genitourinary involvement in a single setting. Also, in patients with recurrent or residual ovarian carcinoma, CT-scan act as an alternative to second Laparotomy [13-14].

Conclusion:

The results of present study suggest that in diagnosing and determining the benign or malignant potential of an ovarian mass, both USG and CT have concordant roles. CT is more sensitive in determining the malignant lesions, USG is more specific and the difference between the two is statistically insignificant.

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