



Ultrasonographic Profile of Patients with ovarian tumors

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ABSTRACT

Ovarian carcinoma is a "silent killer" and comprises a quarter of the gynecological malignancies even though most of the adnexal masses encountered in the day to day practice are benign. Numerous criteria can allow distinction between benign and malignant lesions. The study was conducted at department of radio diagnosis, Gandhi Medical College and General Hospital and its allied hospitals in Hyderabad from December, 2002 to may 2005. Study participants were patients of all age groups presenting with adnexal masses. Of the total masses studied 11(15%) were bilateral while the rest 59% (85%) were unilateral. Among the unilateral tumors 41 (58.57%) were right sided while 18 (25.71%) were on the left side. The Size of tumor ranged from 4.2 X 4cm to 30 X 18 cm. For Sonographically indeterminate masses MRI is useful for additional lesion characterization. Analysis of T1 W and T2 W signal intensities for benign appearing lesion with the addition of fat saturation for high signal on T1W sequences may lead to an exact diagnosis (or) a narrow differential. For cases considered suspicious by TVUS, more specific diagnosis by MRI may obviate the need for surgery (or) otherwise change management by identification of benign etiology.

KEYWORDS : Profile, patients, criteria

INTRODUCTION

Ovarian carcinoma is a "silent killer" and comprises a quarter of the gynecological malignancies even though most of the adnexal masses encountered in the day to day practice are benign. Numerous criteria can allow distinction between benign and malignant lesions.

Excellent results for ultrasonography for detection of ovarian masses has been confirmed in several studies which have demonstrated that 60-97% of ovarian masses may be visualized sonographically and 93-97% of ovarian masses can be characterized by sonographic morphology and Doppler imaging features.

Although both benign and malignant ovarian masses are cystic, there are important differentiating features. Ultrasound features of benignity include simple cyst wall and septations, less than 3 mm, hyper echoic regions and uniform low level echoes. Reported accuracy of morphology for prediction of benignity is approximately 95%.

Ovarian masses with mural and septal thickness (more than 3 mm), nodularity and papillary projections are suggestive of malignancy. It is said that solid component within an ovarian mass is reported to be most statistically significant finding (Brown et al).¹ The reported accuracy of 50-94% for prediction of malignancy by morphology is slightly lower than for prediction of benign lesions. Bilaterality is also not a useful discrimination factor between primary and secondary ovarian tumors. Mixed and solid tumors are more likely to be Malignant than benign.

MATERIALS AND METHODS

Place of study: Department of radio diagnosis, Gandhi Medical College and General Hospital and its allied hospitals in Hyderabad.

Study participants: Patients of all age groups presenting with adnexal masses.

Study period: It was conducted from December, 2002 to may 2005.

TOSHIBA – SONOLAYER – SSA – 250A and ALOKA-SSD-1000 real time ultrasound, scanner was used. Using a 3.5 MHz convex sector transducer we performed B mode ultra sonography through a trans-abdominal approach. Trans-vaginal ultrasound (TVUS) was performed using a 5& 6 MHz vaginal transducer.

Several grey scale features were analyzed and results were recorded which included Unilateral or bilateral, Site-right or left, Size, Internal consistency, predominantly cystic, predominantly solid, Mixed (Cystic

solid)

Morphological indexing of the adnexal masses was done using the session score based on the visualization of inner wall structure and wall thickness, septae solid parts and echogenicity. A mass with score of 9 was classified as high risk mass (Suspicious of malignancy) FNAC was done for all cases showing scores < 9.

RESULTS

Total number of 70 cases was studied with age ranging from 10-70 years. Trans vaginal ultrasound (TVUS) was found to be advantageous over (TAUS) Trans Abdominal in analyzing masses confined to the pelvis, small masses (< 12 cm), Bilateral masses, patients with gross ascites and obese patients. Trans vaginal ultrasound aided and allowed better morphological characterization of masses (presence of internal echoes, Septations – Thick and thin, areas of necrosis within solid masses etc.,)

Of the total masses studied 11(15%) were bilateral while the rest 59% (85%) were unilateral. Among the unilateral tumors 41 (58.57%) were right sided while 18 (25.71%) were on the left side.

The Size of tumor ranged from 4.2 X 4cm to 30 X 18 cm.

Tumors less than 5 cm which were cystic were excluded.

The internal consistency of tumor included predominantly cystic 32 (45.7%) solid 21(30%) mixed or complex in 17 (24.2%)

Among the tumors that were not solid.

1. Internal echoes were present in 8 cases.
2. Papillary projections were present in 5
3. Septations were present in 26 of which
 - a) 7 had thick septations
 - b) 17 has thin septations
4. Solid components were present in 5.
 - a) Septal nodules in 1 and
 - b) Mural nodules in 4

Among the solid tumors area of necrosis were present in 8 and absent in 13.

Echogenicity was high in 2 low in 7.

Other features associated with the tumor were ascites in 16, peritoneal metastasis in 5, liver metastasis in 6, lymphadenopathy in 2 and

Pleural disease in 2. In my study patient age ranged from 10-70 years.

Table 1: Age Distribution of Ovarian Neoplasms

Age group	No. of Cases	Percentage
10-20	8	11.4%
21-30	17	24.2%
31-40	20	28.5%
41-50	11	15.7%
51-60	9	12.8%
61-70	5	7.14%
	Total - 70	

Most of the patients with ovarian neoplasms were in the reproductive age group 21-40 years.

CORRELATION OF MORPHOLOGICAL (USG) APPEARANCE WITH HPE:

1. Predominantly cystic were 32 (45.7%) of which benign were 30 (93.7%) and malignant were 2 (6.06%).
2. Predominantly solid were 21 (30%) of which benign were 6 cases (28.5%) and malignant were 15 (71.42%).
3. Complex or Mixed were 17 (24.2%) of which benign were 6 cases (35.2%) and malignant were 11 (64.7%).

Table 2: Morphology of ovarian tumors

MORPHOLOGY		NUMBER	PERCENTAGE
CYSTIC	BENIGN	30	93.7%
	MALIGNANT	2	6.2%
SOLID	BENIGN	6	28.5%
	MALIGNANT	15	71.42%
MIXED	BENIGN	6	35.2%
	MALIGNANT	11	64.7%

DISCUSSION

An Ovarian mass is a fairly common finding on a pelvic Sonogram. Ultrasound is usually the first imaging study performed in women with pelvic symptoms and suspected adnexal mass by physical examination. The goal of ultrasound is detection of ovarian masses and Ovarian mass characterization in order to differentiate benign from Malignant disease. This distinction (between benign and Malignant is essential because woman with suspected Ovarian malignancy should be referred immediately to gynecological oncologists for adequate primary surgery and staging.)

In our study cystic lesions were proved to be malignant 6.2% which is comparable to Sawiki et al.

Thus solid and mixed Ovarian tumor were provide to be predominantly Malignant on USG and Histopathological Examination in Brown DL et al¹ in 1998 studied 211 adnexal masses and concluded that solid component is most statistically significant predictor of malignant Ovarian mass which is the same finding in our study.

Location (i.e., Right or left side) of ovarian lesion does not have any significance regarding the nature of the tumor.

Of all the benign tumors 14(33.3%) Ovarian neoplasms were diagnosed to be serous cystadenoma. Next common was mucinous cystadenoma seen in 10 (23.8%) Ovarian neoplasm.

Of all malignant ovarian tumour, 8 (28.5%) on Histopathology were diagnosed to be serous cystadenocarcinoma, next common was Mucinous cystadenocarcinoma (17.8%) which was comparable to Stacey et al 2002.² Where in serous cystadenocarcinoma – 40%, mucinous cystadenocarcinoma – 10%.

Brown DL et al¹ 1988 July: Conducted a study in differentiation of Benign and malignant Ovarian Masses by using Gray Scale and Doppler Sonographic features concluded that solid component is the most statistically significant predictor of a malignant Ovarian mass.¹

Stacey A et al, studied Detection and characterization of adnexal masses they concluded that both ultrasound and MRI perform well for prediction of benignity. Features such as papillary projections, thickened septations aid in differentiation of malignant lesion.²

Thind CR et al, studied the role of USG in the management of Ovarian masses in children concluded that immediate surgery is indicated in children who have a palpable mass, mass with calcification and mass associated with persistent pyrexia.³

Exacoustos C et al, studied the preoperative Sonographic features of Borderline Ovarian tumours and concluded that the most frequent diagnostic features on imaging BOT is the presence of Papillae within the cyst. However neither papilla nor Sonographic features are highly sensitive Sonographic markers of BOT.⁴

Papathamasiou K et al, studied the role of FNAC in the Ovary and concluded that the FNAC of the Ovary is an accurate method of predicting benign ovarian histologic findings in carefully selected populations.⁵

CONCLUSION

The main challenge to the Radiologist is to differentiate benign from Malignant adnexal masses. Morphological characterization by B mode USG performs well for prediction of benignity.

There is less specificity for diagnosis of Malignancy, but features such as

1. Papillary projections
2. Thickened septations
3. Solid components and
4. Internal vascularity (in the nodules) and in this differentiation.

The combination of Morphology and Doppler characteristics provide most accurate USG diagnosis.

For Sonographically indeterminate masses MRI is useful for additional lesion characterization. Analysis of T1 W and T2 W signal intensities for benign appearing lesion with the addition of fat saturation for high signal on T1W sequences may lead to an exact diagnosis (or) a narrow differential. For cases considered suspicious by TVUS, more specific diagnosis by MRI may obviate the need for surgery (or) otherwise change management by identification of benign etiology.

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