

Role of USG and CT in Patients with Ovarian Masses

Karthikeyan B¹, Girija B², Nagababu Pyadala^{3,4}

¹Associate Professor, Department of Radiology, Vinayaka Missions Medical College and Hospital, Karaikal - 609609, ²Junior Resident, Department of OBG, Government medical college and Hospital, Karur- 639004, ³Associate Professor, Department of Biochemistry, MNR Medical College and Hospital, Sangareddy, Telangana, ⁴Manager, Department of Research, Genomix CARL, Pulivendula, Cuddapa, Andhra Pradesh, India.

Corresponding author: Dr. Karthikeyan B, Associate Professor, Department of Radiology, Vinayaka Missions Medical College, Karaikal - 609609, India

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A B S T R A C T

Introduction: The polycystic ovarian syndrome consists of many smaller cyst in both ovaries. There are few chances of cysts transforms to ovarian cancer. Study aimed to evaluate the diagnostic accuracy of USG and CT in the diagnosis and differentiation of benign and malignant ovarian masses using histopathology and surgical findings as the gold standard.

Material and methods: This study was conducted in Vinayaka Missions Medical College and Hospital. This study was conducted during the period of 1 year from March 2018 to April 2019. 100 patients found to have ovarian masses on CT and USG were included in the study. USG and CT scan was performed in all these patients after administration of oral and IV contrast. Ovarian masses were classified as benign and malignant on scan findings. Imaging findings were compared with histopathological results and surgical findings.

Results: CT was found to have 98% sensitivity, 91% specificity, and an accuracy of 96% in the differentiation of benign and malignant ovarian masses, while PPV and NPV were 97% and 91%, respectively. The sensitivity of USG was 89%, specificity was 84% and PPV and NPV were 87% and 80% respectively.

Conclusion: CT imaging offers a safe, accurate and noninvasive modality to differentiate between benign and malignant ovarian masses.

Keywords: Ovarian masses, USG and CT

INTRODUCTION

Ovarian cyst is often asymptomatic and it is a fluid-filled sac inside the ovary. Some times it leads to lower abdominal or back pain, pelvic inflammatory disease. But most of the ovarian cysts are not harmful.¹ Ovarian cyst can be follicular, corpus luteum, dermoid and cystadenomas type.² The diagnosis of ovarian cyst can be performed by the use of ultrasound and other laboratory investigations.³⁻⁶ Sometimes if required patients can take medications like ibuprofen or paracetamol. Surgical procedures can be taken in case of larger cysts.^{7,8} Most of the reproductive age female can develop smaller cyst every month. Larger cyst can cause problems before menopause in 8% of women.⁹ 16% of female with ovarian cyst has risk of ovarian cancer. Basically ovarian cysts are investigated by CT, Ultrasound or MRI along with clinical and endocrinological findings. Therefore the aim of this present study is to evaluate the diagnostic accuracy of both USG and CT in suspected ovarian cysts whether being malignant or not former to surgical intervention.

MATERIAL AND METHODS

The study was planned in the Department of Gynecology and Department of Radiology in Katihar medical college

and Hospitals. The data from the 100 patients were collected and presented as below. The approval of the institutional ethic committee had been taken before the study. All the patients were informed consent. The aim and the objective of the study are conveyed to all patients. All patients underwent abdominal Ultrasonography and CT scan with determination of the ovarian mass characteristics. Patients with conservatively manageable ovarian masses were excluded from this study. Complete history of allergy was taken before doing CT scan and if there was history of allergy then non-ionic contrast was used.

RESULTS

The data from the 100 patients reported to the hospital were collected and presented as below. The table 1 shows the Benign and Malignant Masses on Histopathology in Pre and Post-menopausal patients. There are total 64 cases of Pre-menopausal stage and 36 cases of Post-menopausal stage having ovarian cyst. Out of 64 cases of Pre-menopausal conditions have 14 number of malignant and 50 number of benign type of ovarian masses. In the Postmenopausal group there are 26 cases of malignant and 10 cases of benign ovarian mass was observed. Table 2 shows CT and USG comparison for the diagnosis of ovarian masses. Overall, CT was found

Category	Pre-menopausal	Post-menopausal
Malignant	14	26
Benign	50	10
Total	64	36

Table-1: The characteristics of different ovarian masses.

Category	CT Study (No. of Cases)		USG Study (No. of Cases)	
	Benign	Malignant	Benign	Malignant
Sensitivity	98%	85%	89%	74%
Specificity	91%	83%	84%	72%
Positive Predictive Value	97%	90%	87%	80%
Negative Predictive value	91%	87%	80%	75%

Table-2: The comparison between USG and CT in diagnosis of ovarian masses

to have 98% sensitivity, 91% specificity, and an accuracy of 96% in the differentiation of benign and malignant ovarian masses, while PPV and NPV were 97% and 91%, respectively. The sensitivity of USG was 89%, specificity was 84% and PPV and NPV were 87% and 80% respectively.

DISCUSSION

In day-to-day practice, we come across many cases of ovarian masses. Some of these turn out to be benign, some borderline, and some malignant. When an ovarian mass is detected, there are two major issues: to determine whether it is benign or malignant and then if it is malignant, to look for the extent of disease.^{11,12} If the nature of the mass is adequately determined on the image, then it saves the patient unnecessary surgery and expense. Similarly if staging is accurately done on imaging, again it becomes cost-effective and it helps in further planning.¹² However, we understand that surgery has a role in definite diagnosis and the further characterization of masses. Sometimes USG underestimates staging and pelvic examination by a gynecologist and serum CA-125 are of limited value in the diagnosis of pelvic masses and their sensitivity is often below 50%.¹² The sensitivity of morphologic analysis with ultrasound in predicting malignancy in ovarian tumors has been shown to be 85%–97%, whereas its specificity ranges from 56%–95%.¹³⁻¹⁷ The above data is showing more sensitive for the detection of abnormal ovarian mass in the present population. Ovarian tumours present a greatest clinical challenge of all gynecological cancers and ovarian. Carcinoma is the second most common gynaecological carcinoma in incidence. As most of them present in a late stage, clinical diagnosis alone is difficult and as benign ovarian tumours greatly outnumber malignant ones, determination of a degree of suspicion for malignant is critical and is based largely on imaging modalities. The determination of a degree of suspicion for malignancy in an ovarian mass is the most significant step in its management as the decision to perform radical surgery or conservative surgery depends on accurate pre-operative diagnosis.¹⁸ Clinical evaluation with regards to site (unilateral or bilateral), fixity, consistency, presence of nodules in Douglas pouch and presence of ascites 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.^{18,19} CT

can be used to assess the severity of the disease in female with ovarian disorders. There is no strong evidence that CT is more specific and sensitive to find out ovarian cancer and USG is enough to evaluate the simple ovarian cysts. Jeong et al. showed that morphological characteristics associated with strong probability of malignancy were the presence of solid component (63%), papillary projection (92%), and free fluid in peritoneal cavity (56%).²¹ Onyeka et al. found the sensitivity of CT scan for all ovarian cancer detection greater than that of US 83% vs. 67%, but US was more specific.²²

CONCLUSION

In this present study showed significant differences in the two methods i.e USG and CT. CT is showing more advantages regarding tumor localization, characterization. Hence CT can be advised if the unusual abnormalities were observed in routine USG scan in the diagnosis of ovarian masses.

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