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Original Research Article

Role of simple ultrasonography rules in preoperative prediction of malignancy of adnexal masses

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ABSTRACT

Introduction: Ovarian cancers account to malignancy in pre-menopausal women and post-menopausal women to about 24% and 60% respectively. This makes screening of ovarian cancers and adnexal masses an important part in diagnosis and management of these patients, as they also majorly form a reason for infertility in reproductive age group other than morbidity and mortality in all women. The limited availability of literature on the screening modalities and their definite role in diagnosing malignancy makes it difficult for gynecologists to diagnose the malignancy preoperatively. Ultrasonographic evaluation is considered as one of reliable and accurate diagnostic tool for the diagnosis of the ovarian cancers, so this study on utility of USG rules can help in preoperative screening of malignancy, and prediction of Malignancy helps in planning the management which avoid repeat surgery and morbidity.

Aims and Objectives: This study attempts to identify a method for early and accurate diagnosis to provide appropriate treatment for the said diagnosis.

Materials and Methods: An observational comparative study was done and all gynecological patients attending IPD at SAMC and PGI with adnexal masses were evaluated for adnexal masses based on history, clinical examination, USG findings and routine preoperative investigations. Her pre operative diagnosis was co-related with histopathological report. After proper data collection, data was organized and analyzed with the application of Pearson chi-square test and associations were studied among the ultrasound findings and the final histopathological finding using p-value.

Conclusion: Among the above said variables assessed by Pearson chi square test they were found to be significantly associated with each other having high p values. So we can predict the risk of malignancy early by using Simple Ultrasonographic Rules as a diagnostic tool and accordingly earlier diagnosis can be made possible by this, thereby preventing both morbidities and mortalities in patient presenting with adnexal masses.

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1. Introduction

Ovarian cancer is the fifth most common cause of cancer death among women and has the highest mortality rate of all gynecological cancers. Up-to 24% of ovarian tumors in pre-menopausal are malignant in pre- menopausal women and upto 60% in post-menopausal women.¹⁻³ The second most common cancer among females and leading cause

of death from gynecologic malignancies in females is ovarian cancer. It occurs rarely before age 40. Risk of developing ovarian cancer increases steeply with its peak during 65-75 years age. Over the last three decades, ovarian cancer an increasing trend of ovarian cancer incidence has been reported in low-risk countries like India. An improved method for pre-operative discrimination of pelvic mass would result in more women receiving first line therapy Thereby suggesting a need for the adaption of various screening methods and diagnostic tools to diagnose

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and intervene such tumors early to increase the five-year survival rates. For improved efficiency, more sensitive and specific methods are required for diagnosing ovarian cancers. Ultrasonographic evaluation is considered as one of reliable and accurate diagnostic tool for the diagnosis of the ovarian cancers. Ultrasonography evaluation is reliable and works well with even those under versed with classification of tumors, hence easily applicable. Also, Ultrasound alone has more diagnostic value than IOTA and RMI. So this study on utility of USG rules can help in preoperative screening of malignancy, and prediction of Malignancy helps in planning the management which avoid repeat surgery and morbidity.

2. Materials and Methods

2.1. Study design

This is a prospective observational-comparative study.

2.2. Study setup

All IPD patients presenting with pelvic adnexal mass or masses.

2.3. Subjects

Includes 60 patients admitted at SAIMS.

2.4. Study duration

The duration of present study is one and half year (November 2019 to April 2021).

2.4.1. Data organisation and analysis

All gynecological patients attending IPD at SAMC and PGI with adnexal masses were evaluated for adnexal masses based on history, clinical examination, USG findings and routine preoperative investigations. Her pre operative diagnosis was co-related with histopathological report. After proper data collection, data was organized and analyzed with the application of Pearson chi-square test and associations were studied among the ultrasound findings and the final histopathological finding using p-value. Statistical technique: SPSS 18.0 was used for the frequency and percentage distribution of data and EPINFO 5.0 was used for pointing out association of variables.

2.5. Inclusion criteria

1. Women with suspected adnexal masses.
2. Pre- or post-menopausal women.
3. Women consenting to be a part of study.
4. Women getting operated for adnexal mass/es.

2.6. Exclusion criteria

1. Women undergoing conservative management for adnexal masses.
2. Pregnant women.
3. Subjects with cysts less than 5 cm.
4. Subjects with evident signs of hepatic, peritoneal metastasis, or lung metastasis.
5. Women not consenting to be a part of study.

3. Methodology

3.1. Study design

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3.3. Subjects

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4. Results

Table 1, most female are belonging in 21-30 years age group and least number of females were from 71-80 years age group. Mean age of female participating in this study is 37.5 years. Modal age of female participating in this study is 28 years. And, majority of females present with benign masses in 21-30years of age and for malignancy majority of females present in various age groups namely 31-40, 41-50 and 71-80years. Thereby concluding that most females in reproductive age group present with benign mass whereas pre-menopausal and post-menopausal women with malignancies.

Table 1: Frequency distribution of patients masses according to age

Age Group	Frequency	Percent	Benign	Malignant
11-20 yrs	7	11.7	6	1
21-30 yrs	16	26.7	15	1
31-40 yrs	14	23.3	12	2
41-50 yrs	6	10	4	2
51- 60 yrs	10	16.7	9	1
61- 70 yrs	4	6.7	3	1
71- 80 yrs	3	5	13	2
Total	60	100	50	10

Table 2: Frequency distribution of patient and nature of mass according to parity

Obstetrical History (unmarried/parity)	Frequency	Percent	Benign	Malignant
Nullipara	15	25	8	1
Single para	3	5	9	0
Multi para	42	70	33	9
Total	60	100	50	10

As Table 3 suggests –Among the 60 patients examined, majority were multi para f= 42 (70%), and least were nullipara f= 3(5%), and Unmarried participants were 15 (25%). And, most of females participating in study are multiparous and among them majority of female (f=33) presented with benign mass while some (f=9) presented with malignancy. Among nulliparous females all presented with benign masses only while among unmarried ones, 1 Of 9 females presented with malignancy and remaining 8 with benign mass.

Table 3: Frequency distribution of IOTA classification of ovarian mass

IOTA	Frequency	Percent
Benign	50	83.3
Inconclusive	2	3.3
Malignant	8	13.3
Total	60	100.0

The Table 3 suggests that most of the patients were found to be falling under benign category of classification (83.3%), whereas 2 patients were found falling in inconclusive category (3.3%) and 13.3% were in malignant category.

4.1. Co-relation of IOTA classification of mass with the final HPE outcome

On analysing and interpreting the data for same 50 out of 60 subjects are found to be benign clinically out of which 43 are

benign and 7 are malignant histopathologically. Similarly, 2 of 8 subjects were found to be malignant histopathologically as well as according to IOTA classification, while rest 6 were found benign histopathologically. The findings of 2 subjects remained inconclusive on IOTA classification among which 1 was found malignant and 1 as benign histologically.

Based on the data, for statistical analysis Pearson's chi square test was applied to check association between variables affecting the pre-operative prediction of malignancy in women with adnexal masses and its results were as followed:

On applying Pearson's chi square test the χ^2 value ($p= 0.0385$) is less than 0.05 for IOTA grading and histopathological examination inferring an association between IOTA grading and histopathological report.

5. Discussion

For evaluation of ovarian masses approximately 10% of women undergo exploratory laparotomy during their lifetime.⁴ The patient survival rates can be improved by early identification of ovarian malignancy and referring them to specialised oncologist centres. But to predict malignancy by single method is still unavailable. Ultrasound examination and clinical impressions are major diagnostic tools. However due to their limitations of diagnosing malignancy, encountering intra operative malignancy has been common now a days. Thus predicting malignancy with an improved scoring system can improve the pre operative counselling of patients, better pre-operative preparation and early referral of complicated malignancy to specialised oncologic centre.

In the current study, females having ovarian cancer are prioritised for studying diagnostic tools and know the utility of ultrasound score and risk of malignancy index to predict malignancy in women with adnexal masses preoperatively. The mean age in this study was 37.5 years among patients with ovarian mass, which is a bit higher than study conducted by Aliya B. Aziz et al. in 2015.⁵

In our study, patients presenting with malignant ovarian mass constituted 16.67% and 60% of the malignancies were seen among premenopausal and post menopausal patients. Where as in study by Aliya B. Aziz et al. in 2015 found that 13.2% patient had malignant ovarian disease and 42.9% malignancy were seen among premenopausal and post menopausal patients.⁵

In current study among demographic factors, increasing age and the risk of having ovarian cancer are found to be associated. Though the number of participant with older age group of patients are comparatively low, still percentage of having malignancy is noted to be increasing with advancing age of patients. This data appears to agree with previous studies of incidence rate and predilection towards post and pre menopausal patients.^{2,3,6,7}

Other demographic factor, Parity of patient is noticed to be associated with malignant mass and 70% of women presenting with malignant masses were multi para. So the parity and advancing age of a woman plays an important role in diagnosis of malignancy and must be taken in to consideration for predicting malignant masses preoperatively. The study also suggests association between parity and malignancy of cancer.

IOTA is International Ovarian Tumour Analysis group, consistently used in defining morphological features of ovarian masses through a standardized examination technique.

In our study, out of 60 patients initially evaluated, 58 patients were easily classified either as benign or malignant but in 2 patients the findings were inconclusive. Thus, inconclusive result rate was 3.3%. On co-relating IOTA with histopathology, out of total 60 cases studied 10 (16.67%) were malignant and 50 (83.33%) were benign on HPE and out of the 58 cases in which IOTA rules were appropriately applied, 8 (13.79%) were malignant and 50 (86.20%) were benign. In rest 2 cases classified as inconclusive one was malignant and one was benign. The findings are consistent and most close to the study conducted by S Garg et al.⁸ suggesting IOTA simple rules can predict ovarian malignancy and can be a useful tool for diagnosing the same earlier.

6. Conclusion

It is noted that only few literature is available on knowing the utility of diagnostic tools like ultrasound score for predicting preoperatively the adnexal masses malignancy. Also, no available consensus is found about the best possible technique for clinical practice. Till date, studies focusing on stratification of screening tools for Indian population. And thereby with this study can help influencing clinical practice and also encourage gynecologists to collect data to study the utility of diagnostic tools in predicting the adnexal masses malignancy preoperatively.

7. Source of Funding

None.


8. Conflict of Interest

None.

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