Original Research Paper

Gynaecology

PROSPECTIVE STUDY OF CASES OF OVARIAN NEOPLASM PRESENTING IN A TERTIARY CARE HOSPITAL

Dr. Swarnim Swati	Senior Resident, Department of Obstetrics And Gynecology, Nalanda Medical College And Hospital, Patna
Dr. Khushbu Tewary*	Senior Resident, Department of Obstetrics And Gynecology, Nalanda Medical College And Hospital, Patna *Corresponding Author
Dr. Renu Rohatgi	Professor and Head of Department, Department of Obstetrics And Gynecology, Nalanda Medical College And Hospital, Patna

ABSTRACT Of all the gynaecological cancers, ovarian malignancies represent the greatest clinical challenge in diagnosis. It is one of the major lethal gynaecological malignancy in our country that ranks 3rd after cervical and uterine cancer. It also has the worst prognosis and highest mortality rate. Serum CA - 125 is one of the most useful tumor markers in the management of a patient with ovarian cancer. Pelvic ultrasound is currently the most useful technique for diagnostic evaluation. USG parameters assessed are SOLID AREA, THICK PAPILLARY PROJECTION and CENTRAL FLOW. A recent development in diagnostic radiology is the use of Color Doppler Scanning (CDS) for the identification of malignant ovarian masses. The introduction of Color Doppler scanning allows the assessment of tumor vascularity and neovascularisation thus increases the specificity of diagnosis . In this prospective observational study a total of 100 patients in the age group of 13-65 years having adnexal mass or abdominal mass were recruited. The aim of the study was to study the tumor marker and radiological features of ovarian tumors and to correlate them with intraoperative and histopathological findings and to study the role of color doppler ultrasonography in the detection of ovarian malignancy on the basis of resistance index. Resistance index proved to be very much accurate in differentiation of benign and malignant ovarian mass.

KEYWORDS : Ovarian neoplasm, CA 125, Color Doppler, Resistance Index

INTRODUCTION

Of all the gynaecological cancers, ovarian malignancies represent the greatest clinical challenge in the diagnosis. It is one of the major lethal gynaecological malignancy in our country that ranks 3rd after cervical and uterine cancer. It also has the worst prognosis and highest mortality rate. . It constitutes about 15 – 20 % of genital malignancy .

Ovarian cancer has been associated with low parity and infertility. Majority of ovarian masses are benign (80%), with cystic, solid or mixed characteristics and a favourable prognosis. The other 20% of these masses are malignant tumors. Serum CA - 125 is one of the most useful tumor markers in the management of a patient with ovarian cancer. Pelvic ultrasound is currently the most useful technique for diagnostic evaluation of adnexal mass because it is readily available , non invasive and has a high negative predictive value . A more recent development in diagnostic radiology is the use of Color Doppler Scanning (CDS) for the identification of malignant ovarian masses by the detection of low resistance intratumoral blood vessels secondary to angiogenesis and neovascularisation in malignant tumors . The introduction of color Doppler scanning allows the assessment of tumor vascularity and increases the specificity of diagnosis . . Resistance index is very much accurate in differentiation of benign and malignant ovarian mass .Other useful CDS parameters are SOLID AREA, THICK PAPILLARY PROJECTION and CENTRAL FLOW. In the absence of any screening test, for women who are at high risk, a thorough pelvic examination in combination with TV- CDS and changes in level of CA 125 can be of great aid in diagnosis

MATERIALS AND METHODS

This prospective observational study was carried out in the department of Obstetrics and Gynaecology of NALANDA MEDICAL COLLEGE AND HOSPITAL in collaboration with Radiodiagnosis department during the period from December 2017 to November 2019.

In the study , a total of 100 patients in the age group of 13-65 years having adnexal mass or abdominal mass presenting in the outpatient clinic and emergency of Obstetrics and Gynecology department were recruited

Inclusion criteria
1. Females in the age group 13-65 years
2. Radiologically diagnosed ovarian neoplasm
3. Patients willing to undergo investigations
4. Patients with acute presentation like torsion or haemorrhage

Exclusion criteria
1. Females less than 13 years or more than 65 years of age
2. Females with prior history of removal of ovaries
3. Invasive carcinoma other than ovarian carcinoma
4. Symptomatic metastasis
5. Patients who refuse investigations
6. Patients with past history of major pelvic surgery for non ovarian pathology
7. Patients with vascular changes.

CA-125 level was evaluated. All patients were subjected to transabdominal sonography and color Doppler study. The RI (systolic peak – diastolic peak / systolic peak) was calculated electronically , with the lowest value taken as representative of the most suspicious pathological characteristic .In accordance with the previous reports of Kurjak and others the cut off point of RI is taken as 0.45 . RI greater than 0.45 is considered representative of high impedance flow and values ≤ 0.45 is considered a low impedance flow

RESULT
Table 1: Distribution according to Parity

PARITY	Frequency
Nullipara	9
Primipara	38
Multipara	53
Total	100

This table shows that 9 out of 100 patients with ovarian neoplasm were nullipara , 38 were primipara and 53 patients were multipara .

Table2: Significance of menopausal status

MENOPAUSE	Frequency
Premenopausal	69
Post Menopausal	31
Total	100

This table shows that 69 patients were premenopausal and 31 patients were postmenopausal .In 69 out of 100 premenopausal women , 12 (17.3%) had malignant, 2(2.8%) had borderline and 55(79.7%) had benign tumor.In 31 of 100 postmenopausal patients , 11 (35.4%) malignant, 3(9.6%) borderline and 17 (54.8%) benign .

Table 3: Significance of CA125 level

CA 125	Frequency
Elevated(>35 U/ml)	33
Normal(<35U/ml)	67
Total	100

Ca125 was elevated in 33 out of 100 patients and normal in 67 patients. In 33 out of 100 cases having CA 125> 35U/ml , 17 (51.5%) were malignant , 2 (6.06%) were borderline and 14 (42.4%) were benign . In 67 out of 100 cases not having raised CA 125 , 6 (8.9%) were malignant , 3 (4.4%) were borderline and 58 (86.5%) benign .
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Table 4: Histopathology

HPE	Frequency
Benign	72
Borderline	5
Malignant	23
Total	100

This table shows histopathological examination finding to be benign in 72 patients, malignant in 23 patients and borderline tumor in 5 patients. For calculation purposes, borderline tumors have been put in the category of malignant tumors.

Table 5: SOLID AREA vs HISTO PATHOLOGY

Solid area			Histo Pathology		Total
			Malignant	Benign	
SOLID AREA	present	Count %	27 90%	3 10%	30 100%
	absent	Count %	1 1.4%	69 98.5%	70 100%
Total	Count %		28 28%	72 72%	100 100%

This table shows that solid area was present in 30 out of 100 patients out of which 27 were malignant and borderline malignant and 3 were benign histopathologically. 70 out of 100 patients had absent solid area , out of which 69 were benign and 1 was malignant.

Table 6: Thick papillary projection vs histopathology

Thick papillary projection			Histo Pathology		Total
			Malignant	Benign	
Thick Papillary Projection	present	Count	11	0	11
		% Within Thick Papillary Projection	91.6%	8.4%	100.0%
	Absent	Count	17	72	89
		% Within Thick Papillary Projection	19.3%	80.7%	100.0%
Total		Count	28	72	100
		% Within Thick Papillary Projection	28%	72%	100%

11 out of 100 patients showed presence of thick papillary projections , all of which were malignant in histopathological examination . 89 out of 100 patients had absence of thick papillary projection , of which 17 were malignant and 72 benign .

Table 7: CENTRAL FLOW vs HISTO PATHOLOGY

Central Flow		Histo Pathology		Total
		Malignant	Benign	
CENTRAL FLOW present	Count % within Central Flow	26 86.6%	4 13.4%	30 100%
Absent	Count % within CENTRAL FLOW	2 4.3%	68 95.7%	70 100%
Total	Count% within CENTRAL FLOW	28 28%	72 72%	100 100%

Central flow was present in 30 out of total 100 patients , of which 26 had histopathologically proven malignancy and 4 were benign . 70 out of 100 patients were with absent central flow , of which 68 were benign and 2 malignant .

Table 8: RESISTANCE INDEX vs HISTO PATHOLOGY

Resistance index		HPE		Total
		Benign	Malignant	
Resistance index (>0.45)	Count % within resistance Index	68 95.8%	4 4.2%	72 100.0%
(≤0.45)	Count % within resistance Index	4 10.7%	24 89.3%	28 100.0%
Total	Count % within resistance Index	72 72%	28 28%	100 100%

72 out of 100 patients had resistance index >0.45 , of which 68 were benign and 4 were malignant histopathologically . 28 out of 100 patients had resistance index <0.45 , out of which 24 were malignant and 4 benign .

Phi correlation coefficient 0.921, p=0.000. Kappa agreement between HPE & Resistance index is 92.1%, p=0.000, which denotes a strong agreement between the two. So resistance index is very much accurate in detection of benign and malignant tumor.

Table 9: Statistical significance of solid area , thick papillary projection , central flow

	Pearson Chi Square	P Value
Solid Area	77.383	0.000
Thick Papillary Projection	27.896	0.010
Central Flow	69.069	0.000

DISCUSSION

Predicting an ovarian mass to be benign or malignant is extremely important to establish the correct management as the prognosis is related to the stage of the disease at the time of diagnosis . Ultrasonography is the imaging modality of

choice for the initial evaluation of women with suspected adnexal masses .The introduction of color Doppler ultrasonography has allowed the evaluation of tumor vascularity. In the present study the cutoff used for Resistance index (RI) and CA 125 level are ≤ 0.45 and < 35 respectively for detecting ovarian malignancy . Kurjack et al observed a significant correlation between CDS findings and histopathological findings . In the current study there is a Kappa agreement of 92.1 % between Resistance index and histopathological findings (P = 0.000) which denotes strong agreement. It can thereby be considered that RI is very much accurate in differentiation of benign and malignant ovarian mass

The Doppler parameter central flow was found to be statistically significant in the present study . Carter et al studied flow characteristics in benign and malignant gynecological tumors and found that intra tumor colour flow was common in malignant than in benign tumors (P < 0.0001) .
The current study found postmenopausal status to be statistically significant (P = 0.02) . Singh and colleagues also found postmenopausal status to be a significant predictor of malignancy (p < 0.023) .

CONCLUSION
Ovarian malignancy is a silent disease. Lack of overt symptoms and a reliable screening test at an early stage is a major obstacle for the early diagnosis of ovarian cancer. So the overall 5 year survival rate remains low . Although it has low prevalence in comparison to breast carcinoma, it is three times more lethal. Currently , there is no screening test for the early detection of ovarian cancer but studies to identify effective screening strategies in general population are ongoing. For women who are at high risk, a thorough pelvic examination in combination with TV- CDS and changes in level of CA 125 can be offered.

In the current study there is a strong agreement between Resistance index and Histopathology (Kappa agreement is 92.1 %) and P = 0.000 . So RI is very much accurate in[detection of benign and malignant ovarian mass .Use of color Doppler in conjugation with ultrasonography improves the sensitivity in detection of adnexal mass . The use of color Doppler decreases the false negative results and increases the specificity. Presence of central flow (P = 0.000) was consistently associated with malignancy . However considering the small sample size of the present study further studies need to be conducted for a conclusive proof .

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