

Correlation of Risk of Malignancy Index to Malignant Nature of Ovarian Tumours

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ABSTRACT

Background: Ovarian tumours are relatively common and account for ~6% of female malignancies. Risk of malignancy index is used to categorize patients into high, intermediate and low risk groups.

Aims: To categorize patients into groups according to risk of malignancy in preoperative periods and correlate the risk of malignancy and to histopathologic nature of ovarian tumours.

Study design: Descriptive study.

Place and duration of study: Department of Obstetrics & Gynaecology, Independent University Hospital, Faisalabad from 1st September 2017 to 31st August, 2018.

Methodology: Sixty patients with adenexal masses were enrolled. All patients were investigated by tumour markers and imaging techniques to diagnose ovarian mass and then categorized according to risk of malignancy index. Staging laparotomy was done and specimen was sent for histopathology which was then correlated to risk of malignancy index.

Results: There were 33 (55%) benign and 27 (45%) malignant cases. There were more pre-menopausal patients (43/60) 71.6% while (17/60) 28.33% were post-menopausal. Forty patients (66.6%) had complex ovarian masses (multi-locular, solid areas or associated with ascites). Twenty five (41.6%) patients fall in low risk group with RMI <25, in intermediate risk group with RMI 25-200 were 23 patients (38.3%) and high risk group with RMI >200 had 12 cases (20%).

Conclusion: The study correlated the risk of malignancy to malignant nature of tumours.

Key words: Risk of malignancy index (RMI), CA-125, Ovarian tumour

INTRODUCTION

An ovarian cyst is a sac filled with liquid or semiliquid material. Most ovarian cysts cause no symptoms and some are associated with variety of symptoms.¹ According to ACOG guidelines, transvaginal ultrasonography is preferred for initial diagnosis of pelvic mass².

Definitive diagnosis is made after histology CA-125 is elevated in most ovarian malignancies ~80% cancer antigen CA 125 is useful in combination with ultrasound in management of ovarian cyst.³ Risk of malignancy in adenexal masses is reason for early diagnosis. Tumour markers and imaging techniques guide in planning surgery. Larger simple ovarian cyst more than 10 cm and complex ovarian cyst require surgery².

Definitive diagnosis of ovarian cyst is made on histology showing benign or malignant nature of tumour. Features of complex ovarian cyst are bilateral tumour, thick septations >3mm, papillary projections, solid /cystic components, increased vascularity on colour doppler, associated ascites and regional lymph adenopathy. Ovarian tumours have different histopathologic types: premenopausal-serous (~60%), mucinous (~50%), endometriod (~10%), clear cell (~5%), other (~5%) post-menopausal - serous (~60%), endometrial (~12.5%), clear cell (~10%), mucinous(~7.5%), other (~10%). The risk of malignancy index (RMI) in ovarian tumours is used to calculate initial risk of malignancy to plan for surgery and further management. It is later correlated with histopathologic nature of tumour^{4,5}.

The RMI score includes menopausal status of patient (M), Ultrasound features (u), and the serum CA -125 level: $RMI = U \times M \times CA-125 (u/ml)$ ⁶ U Score 0= no features of malignancy on ultrasound. I = One feature of malignancy on USG 3 = two or more features of malignancy on ultrasound Features of malignancy are (i) Irregular solid or multiloculated cystic mass (ii) solid components (iii) increased Doppler flow (iv) ascites, lymph nodes or other metastasis.⁷ M Score: (1) premenopausal and (3) postmenopausal. RMI Score is categorized, High risk: RMI score more than 200 Intermediate risk: RMI score 25-200 low risk: RMI less than 25. Pre

operative differentiation between benign and malignant ovarian tumours can be based on risk of malignancy index scoring system¹.

The categorization of ovarian masses before surgery helps in referral to oncology. This will help in planning staging laparotomy followed by chemotherapy thus improve outcome^{8,9}.

MATERIALS AND METHODS

This descriptive study was conducted in Gynae unit at Independence University Hospital Faisalabad. Total 60 patients with adenexal masses were included. The study was approved by the Ethical Review Committee of the institution. Routine history and examination was done in all cases. After routine investigations and abdominal ultrasound serum CA-125 was done. CT-125 scan was done in some cases. RMI was calculated from ultrasound features, CA-125 levels and menopausal state and patients were categorized as low intermediate and high risk pre-operatively.

Laparotomy was done in all cases surgical procedure done were cystectomy, unilateral salpingo-oophorectomy, biopsy of contralateral ovary, total abdominal hysterectomy with unilateral or bilateral salpingo-oophorectomy omental biopsy was done in some cases. Peritoneal washings were taken pelvic and para aortic lymph nodes were evaluated. All peritoneal surfaces were evaluated. The specimen was sent for histopathology. The data was entered and analyzed through SPSS-25.

RESULTS

There were 33(55%) benign and 27(45%) malignant (Table 1). Majority of patients were in the age group (40-59) years 12(46-66%) followed by (20-39) years 23(38.33%) age group. Seven (11.66%) were above 60 years and 2(3.3%) patients were below 20 years (Table 2).

There were more pre-menopausal patients (43/60) 71.6% while (17/60) 28.33% were post-menopausal (Table 3). A total of 46(76%) patients had unilateral ovarian masses. That included benign as well as malignant cases while 14(23.33%) patients had bilateral tumours. 40 patients (66.6%) had complex ovarian masses (multi-locular, solid areas or associated with ascites) [Table 4].

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Risk of malignancy index was correlated with malignant nature of tumour 25/60 (41.6%) patients fall in low risk group with RMI <25 out of these 23 were benign and 2 were malignant while in intermediate risk group with RMI (25-200) were 23 patients (38.3%) with comparable distribution of benign 10 and 13 malignant cases. High risk group with RMI >200 had 12 cases (20%) with all having malignant masses which shows strong correlation of raised RMI with malignant nature of tumour (Table 5).

Histopathology nature of tumours showed among 33 patients with benign tumours serous cyst adenoma was most common (18.33%) followed by mucinous cyst adenoma and chocolate cyst (11.66%) each among malignant tumours out of 27 cases most common was serous cystadenocarcinoma 25% than papillary serous cystadenocarcinoma 21.66% (Table 6).

Table 1: Frequency of benign and malignant cases (n=60)

Variable	No.	%
Benign	33	55.0
Malignant	27	45.0

Table 2: Distribution of patients according to age

Age	Benign	Malignant	Total	%
<20	2	0	2	3.3
20-39	17	5	23	38.33
40-59	12	16	28	46.66
>60	2	5	7	11.66

Table 3: Menopausal state

Variable	No.	%
Premenopausal	43	71.6
Postmenopausal	17	28.33

Table 4: Ultrasound characters

On ultrasound	Benign	Malignant	Total
Unilateral	30	16	46 (76%)
Bilateral	3	11	14 (23.33%)
Multilocular	7	15	22 (36.66%)
Solid areas	3	7	10 (16.6%)
Ascites	2	6	8 (13.3%)

Table 5: Ultrasound score Risk of malignancy index

	Benign	Malignant	Total
Low risk RMI <25	23	2	25 (41.6%)
Intermediate RMI 25-200	10	13	23 (38.3%)
High risk RMI >200	—	12	20%

Table 6: Frequency of tumour types (n=60)

Tumour type	No.	%
Benign tumour (n=33)		
Serous cystadenoma	11	18.33
Fibroma	1	1.66
Mucinous cystadenoma	7	11.66
Dermoid cyst	4	6.66
Fimbrial cyst	3	5.0
Chocolate cyst	7	11.66
Malignant tumour		
Serous cystadenocarcinoma	15	25.0
Papillary serous cystadenocarcinoma	13	21.66
Mucinous cystadenocarcinoma	7	11.66
Mucinous	2	3.33

DISCUSSION

The study was carried out to assess pre-operative risk of malignancy in ovarian tumours based on serum markers (CA-125) ultrasound characteristics and menopausal status. Serum CA 125 estimation was useful marker for estimation of risk of malignancy¹⁰.

Risk of malignancy index was calculated to categorize patients into low, intermediate and high risk group, using RMI for

earlier categorization and referral of ovarian malignancies.¹¹ So RMI calculation using three parameters was more useful in prediction of ovarian malignancy than individual parameters. Majority of patients in our study were in age group. 40-59 years which is comparable to similar study by Aledenizetal in 2009¹².

In present study 45% of malignancies occurred in postmenopausal group. This shows a little higher incidence than earlier reports of ovarian malignancy in post menopausal patients¹³.

Ultrasound characters showed more bilateral tumours with multilocular and solid areas and ascites in malignant tumours as compared to benign with ultrasound score of 3 similar to other reports using this method¹⁴.

This pre-operative system for referral of ovarian malignancies by RMI calculation is best available tool¹⁵. Most studies reported a cut off of RMI as 200 for high Risk group¹⁶.

CONCLUSION

There is no definite screening method for ovarian malignancy. The present study demonstrated that the risk of malignancy index calculation gives a better estimation of high-risk cases for preoperative referral.

Conflict of interest: Nil

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