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Gynaecology

APPLICABILITY OF RISK OF MALIGNANCY INDEX IN EVALUATION OF ADNEXAL MASSES

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ABSTRACT

Background: To differentiate a benign from malignant ovarian masses is important in planning an approach and treatment options.

Aim: To determine the applicability of RMI 2 in discrimination between benign and malignant adnexal mass.

Methods: A retrospective study of 100 patients with adnexal masses admitted in ISO & Govt. KGH, Chennai, during January 2016 to December 2016. Prior to surgery pelvic ultra-sonogram was performed. Pre-operative serum CA125 levels estimated. Menopausal status was also noted. RMI 2 was calculated using ultra sonogram score, menopausal status and CA125 levels (U/ml). RMI 2 cut-off > 200 was taken to indicate malignancy.

Results: One hundred women with ovarian masses were included in study 82% had benign mass while 18% had malignant ovarian mass. Ovarian malignancy was found with increasing age, high USG score and high serum CA125 level.

Conclusion: Our study shows that RMI 2 is a reliable tool to discriminate between benign and malignant ovarian tumours. It is a simple, easy and cost effective method in resource limited settings.

KEYWORDS : RMI, Adnexal mass

Introduction:

Ovarian cancer is second most common gynaecological cancer and accounts for 10-15% of all gynaecological cancers and 6% of all death due to cancer in women. The peak incidence of ovarian tumour is 55 to 60 years. Average age of patient with borderline tumour is approximately 46 years. Before menarche 10% are malignant, 15% in reproductive age group and after menopause 50% of adnexal masses are malignant. In first two decades of life 70% of ovarian tumours are of germ cell tumours and one third of these are malignant.

The Risk Factors

Increasing age
Nulliparity / low parity
High calorie, High fat diet
Late menopause
Genetic predisposition
Family H/O ovarian, endometrial or breast cancer

Clinical features

80% of ovarian malignancies are of epithelial origin. Ovarian tumours are usually asymptomatic or present with vague symptoms or non-specific symptoms.

Early stage presents with
Lower abdominal pain / pressure
Urinary frequency or constipation
Acute symptoms – pain secondary to rupture or torsion

Advanced stage:

Patients have symptoms related to presence of ascites, omental or bowel metastasis like

Abdominal distention
Bloating
Constipation
Nausea, anorexia
Postmenopausal bleeding

Ovarian cancers are considered as **silent killer** that did not produce symptoms until far advanced. Late diagnosis and early metastasis are responsible for poor survival rate. Only 20% of the cases are confined to ovaries at time of diagnosis. 80% are stage III or stage IV at time of diagnosis.

Modalities like clinical examination, ultrasound and tumour marker assay are used to assess pelvic mass. But parameters when considered separately were inadequately sensitive or specific.

A scoring system known as Risk of Malignancy Index (RMI) was formulated to diagnose between benign and malignant tumours. RMI 1 was introduced by Jacobs et al., is a product of ultrasound findings (U), the menopausal status (M) and serum CA 125 levels.

RMI = U x M x Ca125

Menopausal status (M):- 1 or more year of amenorrhoea or women above 50years, who had undergone hysterectomy.

USG scoring (U) includes 1 point or score for each multi-locular solid areas, bilateral lesion, ascites and intra abdomen metastases.

The serum CA125 levels were taken in U/ml.

Table 1

	RMI 1	RMI 2	RMI 3	RMI 4
Menopausal status (**M**)				
Pre-menopausal	1	1	1	1
Post-menopausal	3	4	3	4
USG score (U)				
Multi-locular 1				
Bilateral 1	No feature =0	≤ 1=1	≤ 1=1	≤ 1=1
Solid areas 1	1 feature =1	> 1= 4	> 1= 3	> 1= 4
Ascites 1	> 1 features=3			
Intra-abdominal metastasis 1				
CA 125 (U/ml)	Absolute level (U/ml)			
Tumour size (S)				
Single greatest diameter of tumor size (cm)				
< 7cm				S= 1
≥7 cm				S =2

RMI 1was modified by Tingulstad et al in 1996 and known as RMI 2, RMI 2 was modified again in 1999 and termed as RMI 3. The difference between the 3 indices lies in the different scoring of ultrasound score (U) and menopausal states (M). In 2009 Yamamoto et al added tumour size (S) to the RMI and named it as RMI 4.

Cut off for RMI 1, RMI 2, RMI 3 is 200, RMI 4 is 450
RMI 1, RMI 2, RMI 3 = M x U x Ca125
RMI 4 = M x U x CA125 x S

The aim of our study was to evaluate RMI 2 as predictor to differentiate between benign and malignant adnexal masses.

Subjects and Methods:

Our study was a retrospective study to evaluate applicability of RMI 2 in 100 patients admitted with adnexal masses in our institution.

Patients were evaluated with detailed history related to age, menstrual H/O, symptoms, CA125 levels, ultrasound findings. RMI 2 was calculated, cut off of 200 was taken to differentiate between benign and malignant. Histo-pathological report of the ovarian tissue that is removed surgically was taken as gold standard.

Results:

A total of 100 women with ovarian tumours were studied, age of the patients were in the range of 19-70 years, of these 100 cases 17 were post-menopausal, 2 patients were post hysterectomy, of these 9 had malignant ovarian tumours. According to histo-pathological reports 82% had benign tumours, 14% had malignant tumour and 4 had borderline. 2 patients had coincidental carcinoma of uterus, 1 patient had H/o surgery for Carcinoma breast. Of the 18 women with ovarian cancer 9 were post-menopausal. The most common benign tumours were serous cystadenoma, mucinous cystadenoma, dermoid cyst and endometriosis. The common malignant tumours were of epithelial origin including serous tumour, mucinous tumour, endometroid tumour. The non-epithelial tumours were granulosa cell tumour.

Table-2. Histo-pathological classification of cases:

Histological diagnosis	Number of cases (%)
Benign cases	
Simple serous cyst	36
Mucinous cystadenoma	17
Endometriosis	9
Papillary serous cyst adeno fibroma	9
Mature cystic teratoma	9
Fibro thecoma	2
Malignant case	
Adult granulosa cell tumour	3
Endometroid tumour	4
Papillary serous cystadenocarcinoma	4
Mucinous serous cystadenocarcinoma	2
Adenocarcinoma	1
Borderline Endometroid tumour	1
Borderline Papillary serous tumour	2
Borderline mucinous tumour	1

Serum CA125 value of 35U/ml was taken as cut off value to differentiate between benign and malignant lesions.

Table-3 Distribution of CA 125 in women with ovarian tumours

Serum CA125 U/ml	Benign	Malignant	Borderline
< 35 U/ml	66	6	1
> 35 U/ml	16	8	3

Fig. 1

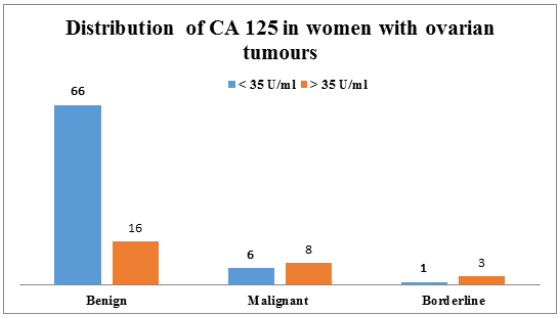


Table-4 Distribution based on USG scores

USG features	Benign	Malignant
Ascites	2	7
Metastases	0	4
ML	40	13
Solid	12	12
BL	8	2
USG Score	Benign	Malignant
1	72	6
4	9	12

Table-5 Results obtained after calculation of RMI 2 are summarised in Table 5

RMI 2	Benign	Borderline	Malignant
< 200	71	3	6
> 200	11	1	8

Fig. 2

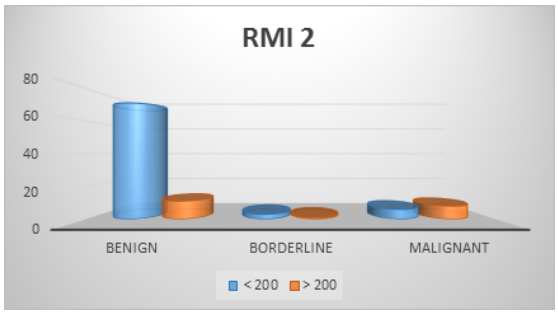


Table-6. Distribution of ovarian pathologies that gave rise to false positive results.

False positive	No. of patients
Simple serous cystadenoma	2
Mucinous cystadenoma	2
Fibrothecoma	1
Endometriod cyst	5
Papillary serous cystadenoma	1

Fig. 3

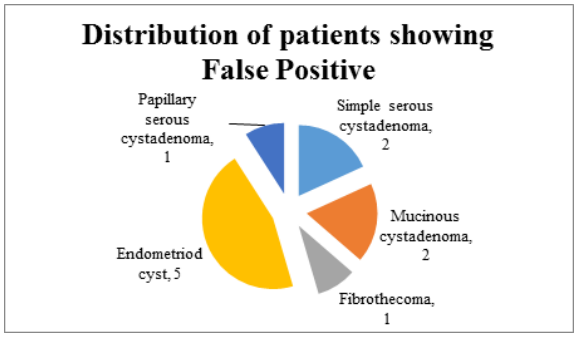
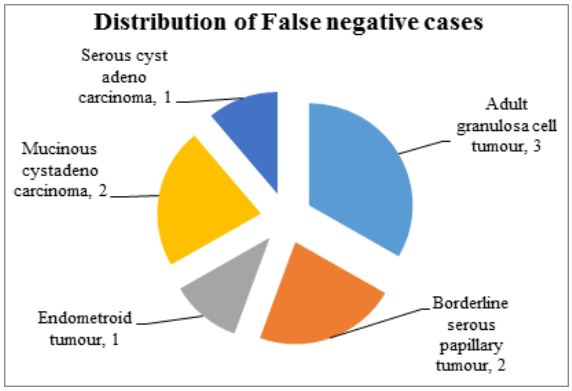


Table.7

False Negative	No. of patients
Adult granulosa cell tumour	3
Borderline serous papillary tumour	2
Endometroid tumour	1
Mucinous cystadeno carcinoma	2
Serous cyst adeno carcinoma	1

Fig.6



Discussions:

The present study showed that ovarian cancer increases with increasing age. 18 cases were detected to be malignant on histopathology including 4 borderline tumours.

RMI was more accurate than any individual criterion in distinguishing malignant from benign mass.

Raised serum CA125 levels were found in association with benign ovarian cyst, endometriosis and pelvic infections.

False positives observed in mucinous cystadenoma, enodmetriosis and dermoid cysts due to high values in ultrasound score.

Conclusion:

Present study demonstrated that RMI 2 was simple, easy and useful method to accurately diagnose adnexal masses with high risk of malignancy. RMI 2 is best screening method to use in resource limited settings and where the volume of patients' needs to screen is enormous.

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