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DIAGNOSTIC CORRELATION OF MAGNETIC RESONANCE IMAGING AND CA 125 IN EVALUATION OF PRIMARY OVARIAN LESIONS

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ABSTRACT

Ovarian cancer is usually asymptomatic, diagnosed at an advanced stage. Primary ovarian tumours are known to show epithelial differentiation.
Tumour marker CA 125 is known to be mainly produced by tumour cells, representing the neoplastic potential of these lesions. This study was done to evaluate the association between serum CA 125 levels and magnetic resonance imaging findings in predicting the potential for malignancy in primary ovarian lesions.

Retrospective cross-sectional study was done with 28 patients at department of Radio-diagnosis, ASRAM medical college,Eluru. Out of 28 cases, histopathological diagnosis showed 8 malignant,1 borderline and 19 benign lesions, with majority being serous cystadenoma.Serum 125 was >35 IU/ml in 8 malignant,1 borderline and 7 benign lesions.The overall sensitivity was highest for serum CA 125 levels, while the specificity was highest for multiloculated lesions followed by solid cystic lesions, least being serum CA 125 levels.

Keywords: Ovarian carcinoma, CA 125, magnetic resonance imaging.

INTRODUCTION:

Ovarian cancers are usually asymptomatic, diagnosed at an advanced stage, hence there is a significant interest in screening techniques for earlier detection of ovarian malignancy, including the use of serum tumor markers and radiological imaging.
primary the role of MR imaging in evaluation of primary ovarian lesions include :

- Characterisation of indeterminate ovarian masses and confirmation of ovary as the origin of mass.
- Soft tissue characterisation due to superior contrast resolution.
- Multi sequential imaging.
- Tumour marker ca-125, is a glycoprotein synthesized mainly by neoplastic cells with epithelial differentiation.
- Serum level of ca-125 indicates the biological potential of these lesions.

AIM:

To evaluate the diagnostic accuracy of serum CA 125 levels and magnetic resonance imaging findings in predicting the potential for malignancy in primary ovarian lesions.

MATERIALS AND METHODS:

A retrospective cross-sectional study was done with 28 patients in department of radiodiagnosis, Alluri Sitarama Raju Academy of Medical Sciences,Eluru, Andhra Pradesh, India.
The study period was from december 2022 upto july 2023.

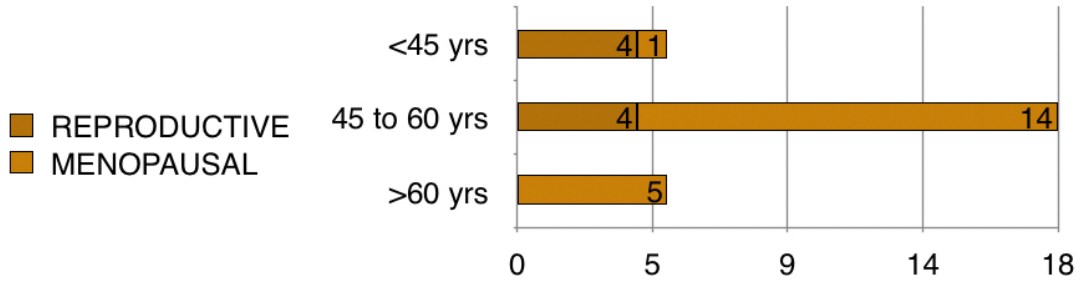
Sensitivity and specificity tests were calculated using SPSS software.

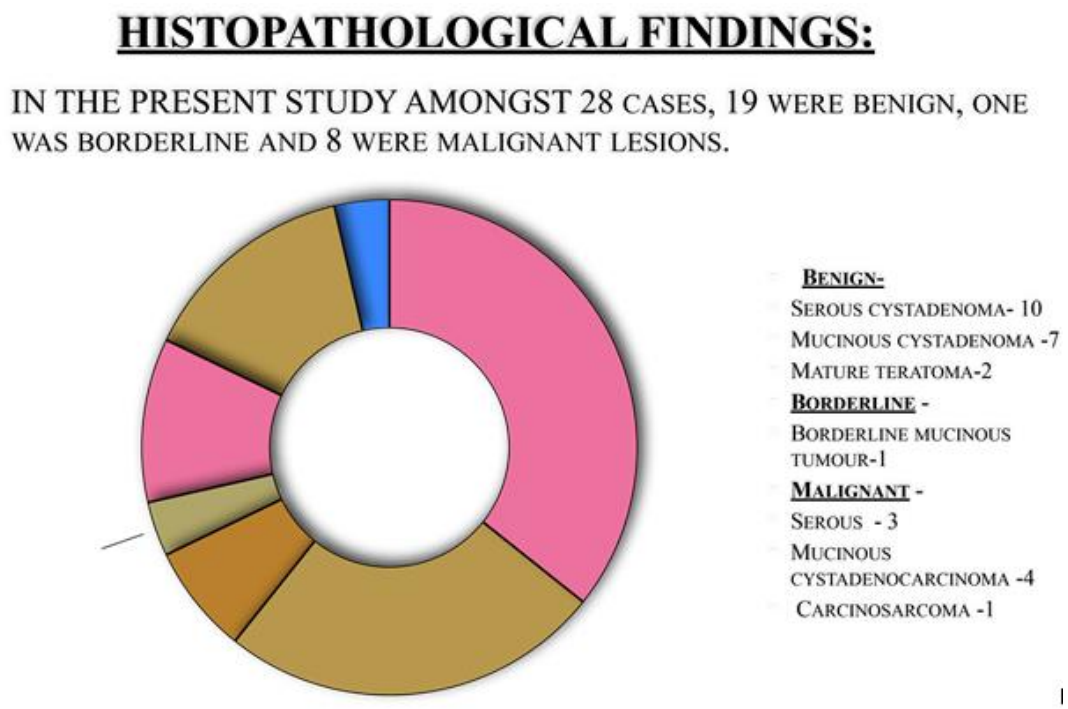
Siemens 1.5 tesla magnetom avanto syngo (mrb-13) channel machine was used.
Serum CA 125 was quantified using fully automated chemiluminescence immunoassay (CLIA) method.

Women with clinically suspected ovarian lesions indeterminate on usg who underwent MR imaging and CA-125 estimation were included. Children less than 12 years of age and patients with metastatic ovarian lesions were excluded.

RESULTS:
These lesions were more commonly seen in women of more than 45 years of age.
The imaging features evaluated for malignant epithelial lesions include:

- Nature of the tumor
- Solid/mixed lesion with or without necrotic areas
- Loculations with increased wall thickness.
- Papillary projections.





SERUM CA 125 WAS >35 IU/ML IN 8 MALIGNANT,1 BORDERLINE AND 7 BENIGN LESIONS.

Malignant potential	Serum CA 125 < 35 U/ml	Serum CA 125 >35 U/ml	Total
BENIGN	12	7	19
BORDERLINE	0	1	1
MALIGNANT	0	8	8

SENSITIVITY: 100% SPECIFICITY: 60%

BASED ON NATURE, SOLID COMPRISES OF 4, WITH MIXED AND CYSTIC LESIONS CONSTITUTING 9 AND 15 RESPECTIVELY.

Nature of tumour	Benign	Borderline	Malignant
Solid	3	0	1
Mixed	3	0	6
Cystic	13	1	1

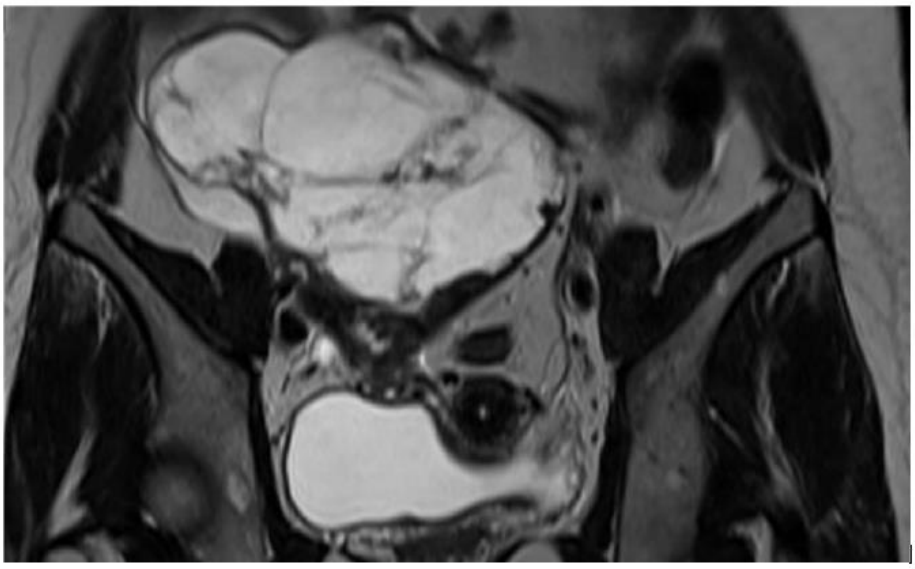
SENSITIVITY: 87.5% SPECIFICITY: 70%

BASED ON LOCULATIONS , THERE WERE 8 MULTILOCULATED LESIONS WITH THICK INTERNAL SEPTATIONS.

Septations	Benign	Borderline	Malignant
Uniloculated/ thin internal septations	17	0	3
Multiloculated (> 3mm thickness)	2	1	5

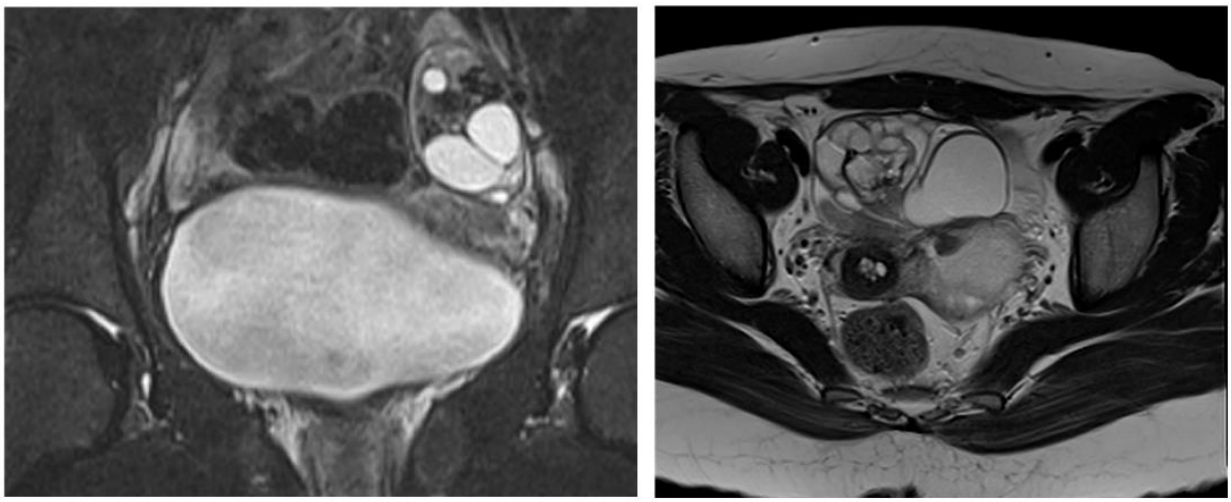
SENSITIVITY: 62.5% SPECIFICITY: 85%

MUCINOUS CYSTADENOMA:

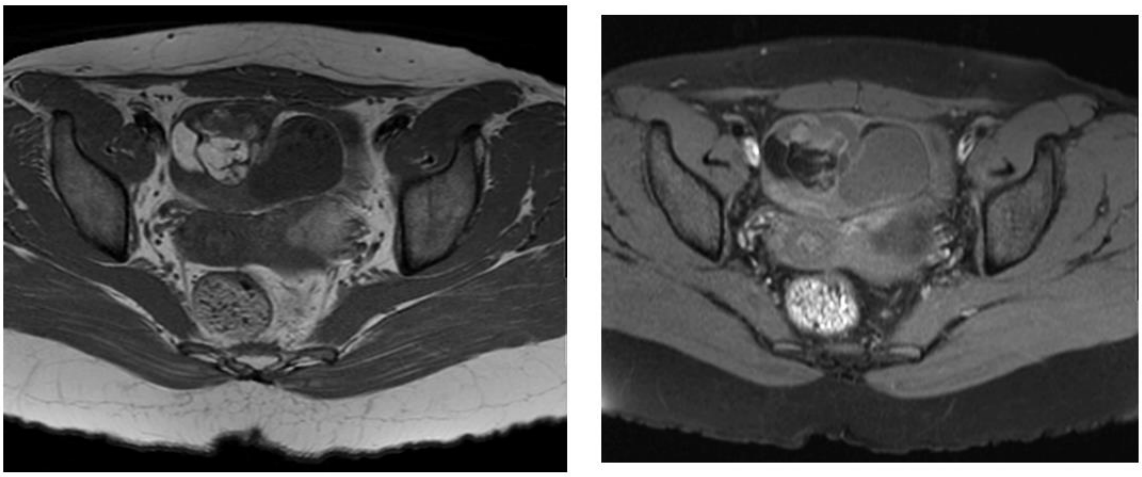


T2 WEIGHTED (CORONAL SECTION) SHOWS RELATIVELY WELL DEFINED CYSTIC LESION ARISING FROM RIGHT ADNEXA WITH THIN INTERNAL SEPTATIONS NOTED WITHIN THE LESION.

MATURE OVARIAN TERATOMA:



T2 W- CORONAL AND AXIAL.

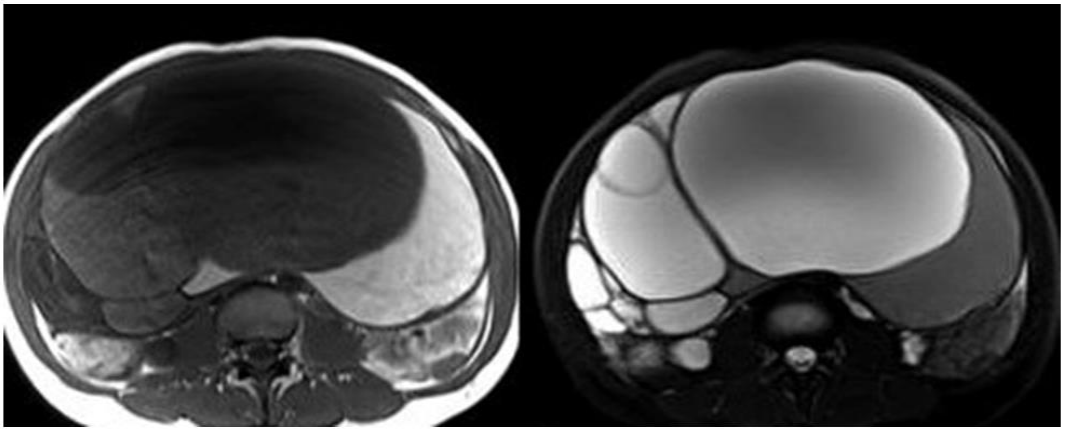


T1 W-AXIAL:

T1 FAT SUPPRESSION-AXIAL:

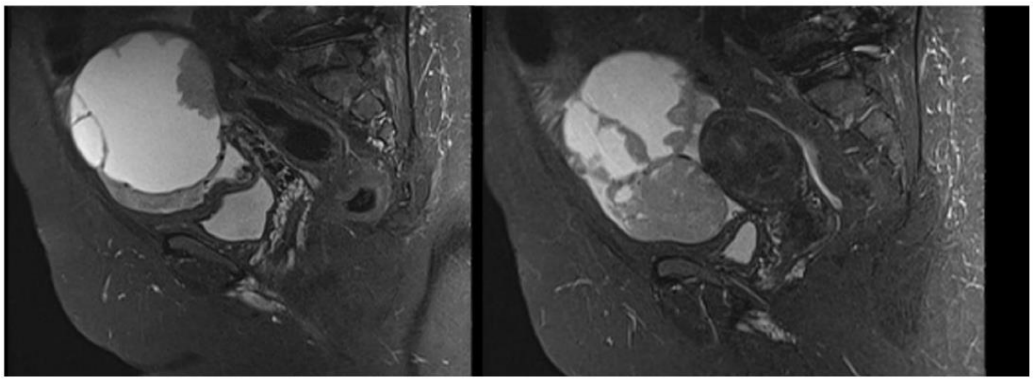
MIXED SOLID CYSTIC LESION IS SEEN ARISING FROM LEFT OVARY WITH CALCIFICATION AND FAT COMPONENTS NOTED WITHIN.

BORDERLINE MUCINOUS TUMOUR :



AXIAL T1W AND T2 WEIGHTED FAT SATURATED IMAGE SHOWS A MULTILOCULAR CYST WITH VARIOUS SIGNAL INTENSITIES BETWEEN ADJACENT LOCULI.

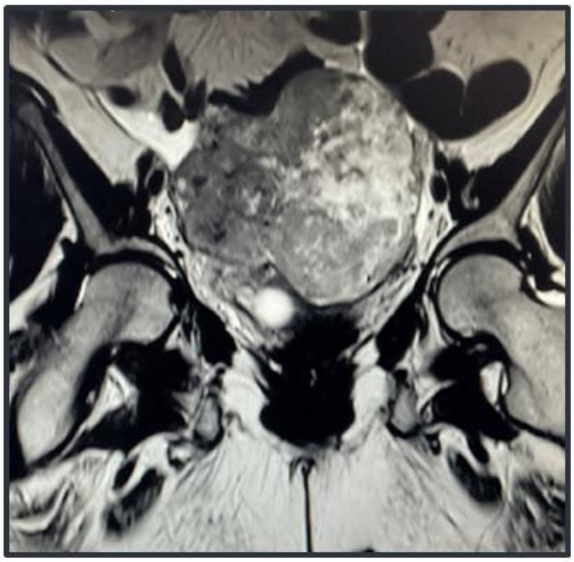
SEROUS CYSTADENOCARCINOMA:



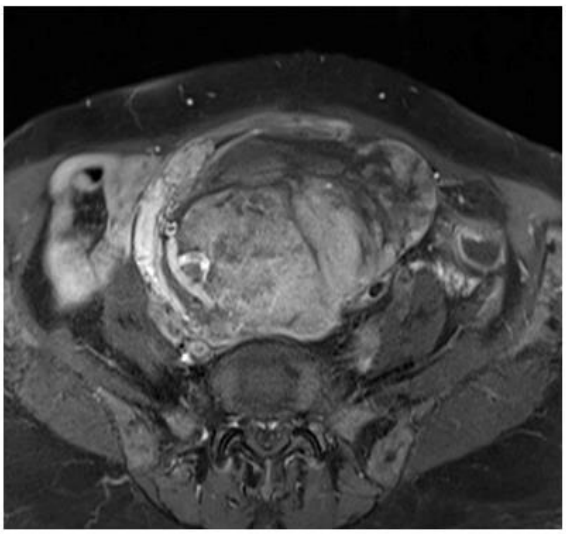
T2 WEIGHTED (SAGITTAL SECTION) SHOWS RELATIVELY DEFINED MULTILOCULATED SOLID-CYSTIC LESION ARISING FROM LEFT ADNEXA WITH PAPPILARY PROJECTIONS NOTED WITHIN THE LESION.NOTE MADE OF MINIMAL ASCITES.

CARCINOSARCOMA:

T2 W-AXIAL:



T1 FAT SUPPRESSION-AXIAL:



T2 WEIGHTED (AXIAL SECTION) SHOWS WELL DEFINED ABDOMINO PELVIC PREDOMINANTLY SOLID LOBULATED LESION WITH FEW CYSTIC AREAS ARISING FROM LEFT ADNEXA.

Discussion:

In the present study, out of 28 cases, primary ovarian lesions are most commonly seen in women of more than 45 years of age, especially in post menopausal women.

Histopathology showed a majority of benign and malignant lesions to be serous cystadenoma and mucinous cystadenocarcinoma respectively.

The overall sensitivity was highest for serum ca 125 levels, while the specificity was highest for multiloculated lesions followed by solid cystic lesions, least being serum ca 125 levels.

Conclusion:

The result of the present study suggests that raised ca 125 levels and cross-sectional imaging findings help in early prediction of potential for malignancy in primary ovarian lesions, which when combined together shows the best diagnostic accuracy.

Limitations:

Small sample size due to restricted time period of study.

The cut off value of ca 125 was taken to be of 35 IU/l, as the majority of patients were of menopausal status.

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