RADIOLOGICAL PATTERN RECOGNITION OF OVARIAN MASSES

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INTRODUCTION

The majority of ovarian lesions are benign and have spontaneous resolution[2]. On the other hand, they may be malignant which is more serious and even fatal[3]. In Egypt ovarian cancer is the 12th cause of cancer deaths amongst all cancer cases.

Ovarian cancer incidence rises dramatically in cases like endometriosis, primary infertility, early menarche, nulliparity, late menopause and postmenopause.

There are 2 kinds of epithelial ovarian cancer. Type I cancers due to neoplastic transformation of ovarian surface and epithelium and Type II which originates in the epithelium of the fallopian tube.

Early-stage ovarian cancer patients have few distinct symptoms, but they frequently have nonspecific symptoms thus screening studies have been carried out with the goal of diagnosing the disease in its early stages

Ultrasound assessment is believed to be the best method of diagnosis for adnexal masses

The pattern recognition approach to ovarian tumors based on sonographic morphology and Doppler vascularity assessment has been demonstrated to be more accurate than other methods.

AIM OF THE WORK

The aim of this study is to validate the ultrasound features of pattern recognition of adnexal masses as a diagnostic tool, for better characterization and prediction of pathological nature of adnexal lesions with reference to histopathological results.

This study was conducted on 142 cases (77 cases of benign ovarian masses) & 65 cases of malignant& borderline masses) in oncology unit in el-shatby hospital between the 1st of September 2021 and the 30th of April 2022.

SUBJECTS AND METHODS

Research strategy-clinical trial study was used to carry out this research. This research strategy enabled the researcher to evaluate and establish the diagnostic radiological pattern recognition by ultrasound of ovarian masses.

RESULTS

Table 1: Agreement (sensitivity, specificity and accuracy) for CEA, CA125, CA19.9, CA15.3, LDH, and AFP

	Pathological				Sensitivity	Specificity	PPV	NPV	Accuracy
	Benign		Borderline & malignant						
	No.	%	No.	%					
Pattern recognition by U/S	(n = 78)		(n = 64)						
Benign	70	89.7	7	10.9	89.06	89.74	87.69	90.91	89.44
Borderline & malignant	8	10.3	57	89.1					
χ^2 (p)	87.959* (<0.001*)								
CEA	(n = 42)		(n = 50)						
Normal (0 –2.5)	30	71.4	29	58.0	42.0	71.43	63.64	50.85	55.43
Abnormal (>2.5)	12	28.6	21	42.0					
χ^2 (p)	1.789 (0.181)								
CA125	(n = 65)		(n = 61)						
Normal	47	72.3	23	37.7	62.30	72.31	67.86	67.14	67.46
Abnormal	18	27.7	38	62.3					
χ^2 (p)	15.260* (<0.001*)								
CA19.9	(n = 38)		(n = 38)						
Normal (0 - 37)	33	86.8	31	81.6	18.42	86.84	58.33	51.56	52.63
Abnormal (>37)	5	13.2	7	18.4					
χ^2 (p)	0.396 (0.529)								
CA15.3	(n = 29)		(n = 31)						
Normal (0 - 30)	20	69.0	16	51.6	48.39	68.97	62.50	55.56	58.33
Abnormal (>30)	9	31.0	15	48.4					
χ^2 (p)	1.880 (0.170)								
LDH	(n = 18)		(n = 14)						
Normal (105–333)	9	50.0	9	64.3	35.71	50.0	35.71	50.0	43.75
Abnormal (>333)	9	50.0	5	35.7					
χ^2 (p)	0.653 (0.419)								
AFP	(n = 22)		(n = 20)						
Normal (0 –40)	22	100.0	16	80.0	20.0	100.0	100.0	57.89	61.90
Abnormal (>40)	0	0.0	4	20.0					
χ^2 (^{FE}p)	4.863* (0.043*)								

Table 2: Agreement (sensitivity, specificity and accuracy) for MRI and pattern recognition by U/S

	Pathological				Sensitivity	Specificity	PPV	NPV	Accuracy
	Benign		Borderline & malignant						
	No.	%	No.	%					
MRI	(n = 19)		(n = 26)						
Benign	14	73.7	1	3.8	96.15	73.68	83.33	93.33	86.67
Borderline & malignant	5	26.3	25	96.2					
χ^2 (p)	24.094* (<0.001*)								
Pattern recognition by U/S	(n = 78)		(n = 64)						
Benign	70	89.7	7	10.9	89.06	89.74	87.69	90.91	89.44
Borderline & malignant	8	10.3	57	89.1					
χ^2 (p)	87.959* (<0.001*)								

Table 3: Agreement (sensitivity, specificity and accuracy) for RMI

	Pathological				Sensitivity	Specificity	PPV	NPV	Accuracy
	Benign (n = 78)		Borderline & malignant (n = 64)						
	No.	%	No.	%					
RMI									
Benign (≤250)	62	79.5	23	35.9	64.06	79.49	71.93	72.94	72.54
Malignant (>250)	16	20.5	41	64.1					
χ^2 (p)	27.748* (<0.001*)								

CONCLUSION

The recommended imaging technique for a suspected or accidentally discovered adnexal mass is pattern recognition of ovarian masses. Expert pattern recognition appeared to have the highest accuracy and therefore appears to be the preferred diagnostic approach; however, MRI has the highest sensitivity thus it can also be done in case there are limitations to perform ultrasound imaging.