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THE ROLE OF USG IN STUDYING OF OVARIAN MASSES:

Radiodiagnosis

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ABSTRACT

After the breast and uterine cancers the third most commonly encountered variety is the carcinoma of the ovaries. The diagnosis often ends up late and the prognosis is poor. This study sincerely puts in an effort to evaluate the ovarian cancer patterns encountered in the USG. The fellow practising radiologists would make a point to check and do the same if possible.

KEYWORDS

Ovarian Malignancy, Menarche, USG, Cystic, reproductive Organ.

Introduction

Ovary is the third most common site for gynaecological malignancies. The prognosis is usually poor. Ovary is complex in embryology, histology, steroidogenesis and has a potential for malignancy. Ovarian growths can occur at any age. [1]

The risk factors for ovarian cancers are, smoking, family history and exposure to HRT. Usually the symptoms are vague and non-specific [2]. Early menarche, late menopause and nulliparity are associated with increased risk of malignant ovarian tumours.

FIGO staging of ovarian cancer is world - wide followed as follows. [3] A solid tumour is almost always suggestive of malignancy, except in cases of fibroma and Brenners tumour. If ultrasound reveals that a tumour is bilateral (sometimes unilateral) or a solid tumour associated with ascitis, thick tumour wall with echogenic areas within the tumour, septum more than five mm in thickness with papillary projections from its walls indicate that the tumour is malignant in nature. The presence of ascitis in ultrasound strongly indicates the nature of the tumour to be malignant. A menopausal ovary measuring more than 2 cm in length, 1.5cm in width and 1 cm in thickness and volume of about 8 ml indicates an ovarian growth to be present.

A colour flow Doppler can further add information about neo vascularisation. CT/MRI can help in recognizing the spread of the tumour and helps in planning the modality of treatment. Fine needle aspiration cytology can give a hint about the nature of the tumour. Tissue markers like CA-125 and NB/70k can be used to follow up certain tumours. [1]

Transvaginal ultrasound with high frequency (5-7 MHz) probes can be recommended for initial assessment of adnexal masses.

Transabdominal ultrasound is of value in the detection of ascites and peritoneal carcinoma, but in assessment of pelvic masses it is of minimal use. Ultrasound can accurately identify the morphology of an ovarian mass, measure tumour size [4] and it can be as accurate as CT/MR for diagnosis of ovarian cancer with a sensitivity of 86-95% and a specificity of 68-90%. A mass is considered complex if it has some solid content inside, thick irregular septa and associated ascites. [5] [6]

This study sincerely puts in an effort to evaluate the ovarian cancer patterns that are commonly encountered in the USG. The study is intended to be helpful for the budding radiologists and the whole of practising radiological fraternity to understand the most commonly encounter patterns and thus prevent the agonising outcome.

Aims and Objectives: To study the ovarian masses using ultrasonography.

Materials and Methods:

This study was done in the Department of Radiology, Travancore Medical College, Kollam

Detailed personal history was taken. A total of sixty cases were studied and the results that were obtained were tabulated.

Inclusion Criteria:

1. Only when the ovarian mass was seen in the USG the case was taken up for the study.

Exclusion Criteria:

1. Microscopic tumors in which the mass was not evident on the studies were not taken up for the study.
2. A case in which the serological CA 125 level confirmation was not done was not taken up for the study.

All the statistical analysis was done using the latest SPSS software (2015). California.

Results:

Table 1: Showing incidence of ovarian tumors in age groups:

Age	Frequency	Percentage
< 50 years	0	0
50 – 60 years	18	30.1%
60– 70 years	28	46.6%
>70 years	14	23.3%
Total	60	100%

Table 2 showing associated findings

Findings	Frequency
CA – 125 > 35 u/l	18
CA – 125 < 35 u/l	42
Ascitis	11

Table 3: Showing type of tumour based on ultra - sonographic features

	Cystic	Bilocular	Multilocular	Complex	Solid
Benign	26	5	3	0	0
Malignant	4	1	9	9	3

Table 4: Showing wall thickness of cystic masses

Wall thickness	Frequency
<5 mm	51
>5 mm	9

Age * Enhancement Crosstabulation

			Enhancement heterogenous	Total
Age	50 and below	Count	6	6
		% within Age	100.0%	100.0%
		% within Enhancement	20.0%	20.0%
	51 - 60	Count	12	12
		% within Age	100.0%	100.0%
		% within Enhancement	40.0%	40.0%
	61 - 70	Count	7	7
		% within Age	100.0%	100.0%
		% within Enhancement	23.3%	23.3%
	Above 70	Count	5	5
		% within Age	100.0%	100.0%
		% within Enhancement	16.7%	16.7%
Total		Count	30	30
		% within Age	100.0%	100.0%
		% within Enhancement	100.0%	100.0%

Table 5: Lymph node enhancement

Age * Lymph nodes Crosstabulation

			Lymph nodes		
			Nil	Present	Total
Age	50 and below	Count	0	6	6
		% within Age	.0%	100.0%	100.0%
		% within Lymph nodes	.0%	20.7%	20.0%
	51 - 60	Count	0	12	12
		% within Age	.0%	100.0%	100.0%
		% within Lymph nodes	.0%	41.4%	40.0%
	61 - 70	Count	1	6	7
		% within Age	14.3%	85.7%	100.0%
		% within Lymph nodes	100.0%	20.7%	23.3%
	Above 70	Count	0	5	5
		% within Age	.0%	100.0%	100.0%
		% within Lymph nodes	.0%	17.2%	16.7%
Total		Count	1	29	30
		% within Age	3.3%	96.7%	100.0%
		% within Lymph nodes	100.0%	100.0%	100.0%

Table 6: Local Viscera extension

Age * adjacent viscera extension Crosstabulation

			adjacent viscera extension		
			nil	Present	Total
Age	50 and below	Count	4	2	6
		% within Age	66.7%	33.3%	100.0%
		% within adjacent viscera extension	26.7%	13.3%	20.0%
	51 - 60	Count	5	7	12
		% within Age	41.7%	58.3%	100.0%
		% within adjacent viscera extension	33.3%	46.7%	40.0%
	61 - 70	Count	4	3	7
		% within Age	57.1%	42.9%	100.0%
		% within adjacent viscera extension	26.7%	20.0%	23.3%
	Above 70	Count	2	3	5
		% within Age	40.0%	60.0%	100.0%
		% within adjacent viscera extension	13.3%	20.0%	16.7%
Total		Count	15	15	30
		% within Age	50.0%	50.0%	100.0%
		% within adjacent viscera extension	100.0%	100.0%	100.0%

Table 7: Metastasis

Age * Metastasis Crosstabulation

			Metastasis		
			Nil	Present	Total
Age	50 and below	Count	6	0	6
		% within Age	100.0%	.0%	100.0%
		% within Metastasis	31.6%	.0%	20.0%
	51 - 60	Count	8	4	12
		% within Age	66.7%	33.3%	100.0%
		% within Metastasis	42.1%	36.4%	40.0%
	61 - 70	Count	2	5	7
		% within Age	28.6%	71.4%	100.0%
		% within Metastasis	10.5%	45.5%	23.3%
	Above 70	Count	3	2	5
		% within Age	60.0%	40.0%	100.0%
		% within Metastasis	15.8%	18.2%	16.7%
Total		Count	19	11	30
		% within Age	63.3%	36.7%	100.0%
		% within Metastasis	100.0%	100.0%	100.0%

Discussion:

Serous cystadenomas are the most common benign epithelial tumour. It is bilateral in 10% of cases and usually unilocular.

Mucinous cystadenoma is the second most common benign epithelial tumour. It is a large unilateral multilocular cyst.

Brenner tumour is more common after forty years. It is usually less than 2 cm in size.

Sex cord stromal tumours represent 4% of benign ovarian tumours. They can occur at any age including children and post menopause. They are hormone secreting.

Germ cell tumour shows differentiation along the embryonic pathway. They can be divided into three categories.

- Mature (Benign)- eg. Dermoid cyst
- Immature (Malignant)- eg. Solid teratoma
- Monodermal (Highly specialized)- eg. Stuma ovarii

80-85 % of all malignant ovarian tumours are epithelial tumours. Of the epithelial tumours, serosa type accounts for 50%, endometroid accounts for 10%, mucinous type accounts for 10%, clear cell type accounts for 5% and undifferentiated accounts for 10-15%.

Germ cell tumours account for 2-3% of all ovarian malignancies. It is usually seen in younger women.

The findings of this study based on ultra sound features was similar to the study done by Osmers R et al. [7]

Ovarian malignancies spread via direct spread, lymphatic spread and blood spread. Directly it can spread to other pelvic and intra - abdominal organs, omentum and under surface of diaphragm. Lymphatic spread can occur to the Inguinal lymph nodes, para aortic lymph nodes, mediastinal lymph nodes and cervical lymph nodes. Via blood it can spread to liver, lungs and sometimes to the bone and brain.

Ultrasound can be the primary investigation which can be employed for diagnosing any ovarian mass. If the tumour is abdominal, a Trans abdominal transducer is used. A trans vaginal ultrasound gives a clearer picture in most cases.

A benign cyst can be unilateral, unilocular or multilocular with a thin wall and septae of less than five mm in case of multilocular cyst. The cavity is non echogenic. In ninety five percent of cases, the above mentioned findings with normal CA-125 levels below 35 U/ml indicate benign nature of the tumour.

In about fifty percent of stage 1 epithelial ovarian malignant tumours, a raised level of CA-125 can be seen.

Conclusion:

USG is an ideal for diagnosing the initial and advanced cases of Ovarian Carcinoma.

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