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STUDY OF CLINICOPATHOLOGICAL SPECTRUM OF OVARIAN NEOPLASMS WITH SPECIAL REFERENCE TO EXPRESSION OF ER AND PR IN MALIGNANT LESIONS

Pathology

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ABSTRACT

Ovarian carcinoma is the second most common carcinoma of the female reproductive system .It is the leading cause of death from gynaecological malignancy .The purpose of this study is to observe the clinicopathological spectrum of ovarian neoplasms with the expression of ER and PR in the different malignant lesions .A total of 156 cases of ovarian tumours were included in this study, and surface epithelial tumours were found to be the commonest neoplasm followed by germ cell tumours. Expression of ER and PR was found to be highest in Serous and Endometrioid tumours. PR Negative cases showed a higher grade and stage.

KEYWORDS

Ovarian neoplasms ,Clinicopathological spectrum ,Immunohistochemistry

AIMS AND OBJECTIVES

To evaluate the clinicopathological profile in the study group.

To study the spectrum of ovarian tumours in the study population.

To assess the tissue expression of ER and PR in different malignant lesions of ovary.

To corroborate the histopathological types with the IHC markers.

MATERIALS AND METHODS

Type Of Study : Cross sectional hospital based study
Study Period : July 2015 to June 2017
Study Area :Department of Pathology, Calcutta National Medical College

All cases diagnosed clinically and radiologically to be suffering from ovarian tumours and operated in the department of Obstetrics and Gynaecology were included .Detailed clinical history along with radiological/relevant investigations were recorded Formalin fixed, paraffin embedded sections obtained from the operated specimens were stained with H&E stain and histopathological diagnosis was made including tumour type, grade and stage.

IHC for ER and PR was performed in malignant cases on representative sections.

RESULT ANALYSIS

A total of 156 cases of ovarian tumours were studied during this period.The age of the patients ranged from 16 to 65 years. Among the 156 cases,115(73.7%) cases were benign,3(1.9%) cases were borderline and 38 (24.4%) cases were reported as malignant.

Surface epithelial cell tumours were the most common followed by germ cell tumours. Among the 156 cases,73.7% cases were benign,24.4% were reported as malignant and 1.9% were reported as borderline.

Table 1

Table 1: Shows The Distribution Of Benign And Malignant Ovarian Neoplasms In Different Age Groups

AGE	BENIGN NEOPLASMS	%	BORDERLINE NEOPLASMS	%	MALIGNANT NEOPLASMS	%	TOTAL NEOPLASMS	%
<20	10	6.4%	_	_	1	0.64%	11	7.1%
21-30	48	30.8%	1	0.64%	2	1.2%	51	32.7%
31-40	39	25.1%	1	0.64%	3	1.9%	43	27.6%
41-50	13	8.3%	1	0.64%	20	12.8%	34	21.8%
51-60	4	2.5%	_	_	11	7.1%	15	9.6%
>60	1	0.06%	_	_	1	0.64%	2	1.2%
TOTAL	115	73.7%	3	1.9%	38	24.3%	156	100%

Table 2

Table 2 : Shows The Distribution Of Various Ovarian Neoplasms ,their Frequency And Age Distribution

	SURFACE EPITHELIAL	GERM CELL TUMOURS	SEX CORD STROMAL TUMOURS	METASTATIC AND OTHERS
Total No.of Cases 156	112	34	6	4
Overall Frequency(%)	71.8%	21.7%	3.8%	2.6%
No.of Malignant Cases	24	9	1	4
Proportion Of Malignant Lesions	63.2%	23.7%	1.6%	10.5%
Bilaterality(%)	14.6%	7.6%	11.1%	58.1%
Age Group	16-35 Years	0-25 years	All ages	variable

Different Histologic Types Of Neoplastic Lesions:

The Different Histologic Types Of The Neoplastic Lesions Are Depicted In Table 3 And Table 4

Table 3

SURFACE EPITHELIAL TUMOURS		
VARIETY	TOTAL NO	OVERALL %
SEROUS	75	48.07%
BENIGN	59	37.8%
BORDERLINE	2	1.2%
MALIGNANT	14	8.9%
MUCINOUS	31	19.8%
BENIGN	25	16.02%
BORDERLINE	1	0.64%
MALIGNANT	5	3.2%

ENDOMETRIOID(MALIGNANT)	2	1.2%
CLEAR CELL (MALIGNANT)	2	1.2%
BRENNER(BENIGN)	2	1.2%

Table 4

VARIETY	TOTAL NO	OVERALL PERCENTAGE
GERM CELL TUMOURS		
TERATOMA	29	18.5%
BENIGN	26	16.6%
MALIGNANT	3	1.9%
YOLK SAC TUMOUR	3	1.9%
DYSGERMINOMA	2	1.2%
SCT		
GRANULOSA CELL TUMOUR	2	1.2%
FIBROMA	3	1.9%
SERTOLI LEYDIG CELL	1	0.6%
OTHERS		
MMMT	1	0.6%
METASTASIS	4	2.5%

Correlation Of Er And Pr Expression In Different Types Of Malignant Tumours

The correlation between the ER and PR expression in the different types of malignant lesions are depicted in Table 5.

Table 5

ER/PR EXPRESSION	SURFACE EPITHELIAL TUMOURS (n=23)				GCT n=9	SCST n=1	OTHER n=4
ER	SEROUS (n=14)	MUCINOUS (n=5)	ENDOMETRIOID (n=2)	CLEAR CELL (n=2)			
POSITIVE	11	1	2		_	1	_
NEGATIVE	3	4	_	2	9	_	4
PR							
POSITIVE	8	1	2		_	_	2
NEGATIVE	6	4	_	2	9	1	2

Table 6

VARIETY	ER+/PR+	ER+/PR-	ER-/PR+	ER-/PR-
SEROUS (n=14)				
NO. OF CASES	5	6	3	1
MUCINOUS(n=5)				
	1	_	_	4
ENDOMETRIOID(n=2)				
	2	_	_	_
CLEAR CELL(n=2)				
	_	_	_	2

Combined Patterns Of Er And Pr Expression In Malignant Surface Epithelial Lesions

The combined patterns of ER and PR expression are depicted above in Table 6

Correlation Of Er And Pr Expression With Clinicopathological Factors In Malignant Surface Epithelial Lesions(n=23)

The correlation of ER and PR expression with clinicopathological factors is depicted in Table **7**

Table 7

PARAMETERS	ESTROGEN RECEPTOR POSITIVITY	PROGESTERONE RECEPTOR POSITIVITY
AGE		
<40	7	7
>40	7	4
MENOPAUSAL STATUS		
PREMENOPAUSAL	8	8
POSTMENOPAUSAL	6	3

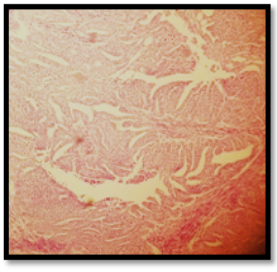
Correlation Of Er And Pr Expression With Clinicopatho logical Factors In Malignant Surface Epithelial Lesions (n=23) -as Depicted In Table 8

Table 8

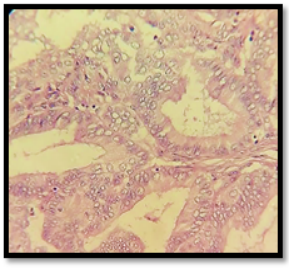
PARAMETERS	ESTROGEN RECEPTOR POSITIVITY	PROGESTERONE RECEPTOR POSITIVITY
WHO GRADE		
LOW GRADE(n=12)	8	9
HIGH GRADE(n=11)	6	2
FIGO STAGE		
STAGE 1(n=4)	3	3
STAGE 2(n=10)	6	8
STAGE 3(n=5)	3	0
STAGE 4 (n=4)	2	0

Correlation Of Combined Patterns Of Er And Pr Expression With Clinicopathological Factors In Malignant Surface Epithelial Lesions (n=23)-as Depicted In Table 9

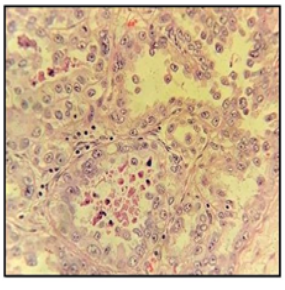
PARAMETER	ER+/PR+	ER+/PR-	ER-/PR+	ER-/PR-
WHO GRADE				
LOW GRADE(n=12)	6	2	3	1
HIGH GRADE(n=11)	1	5	1	4
FIGO STAGE				
STAGE 1(n=4)	2	1	1	-
STAGE 2(n=10)	4	2	4	-
STAGE 3(n=5)	-	3	-	2
STAGE 4(n=4)	-	1	-	3



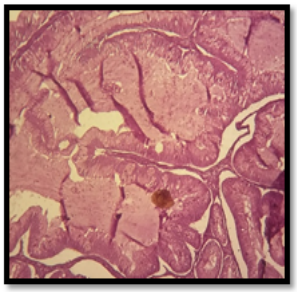
Papillary serous carcinoma; H/E;100X



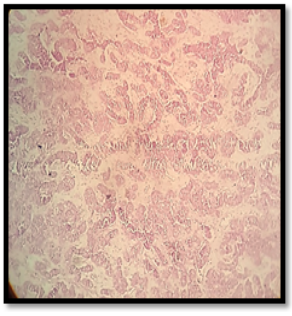
Endometrioid carcinoma; H/E;400X



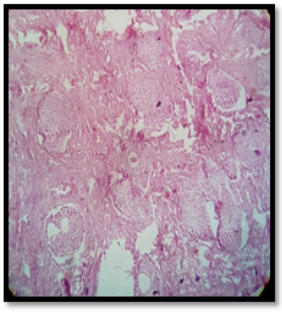
Clear cell carcinoma ;H/E ; 400X



Mucinous Adenocarcinoma ;H/E ;400X



Sertoli Leydig cell tumour ; H/E ;100X



Brenner tumour ; H/E ; 100X

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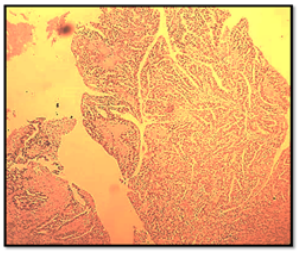
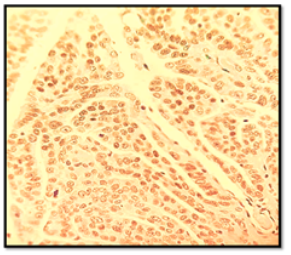
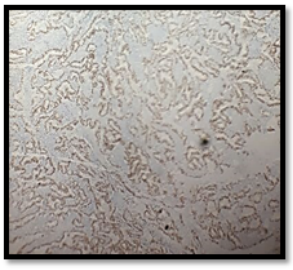


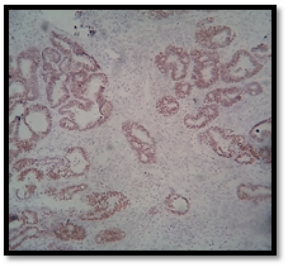
ER positivity in serous carcinoma ; 100X



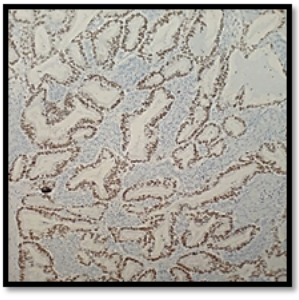
ER positivity in serous carcinoma ; 400X



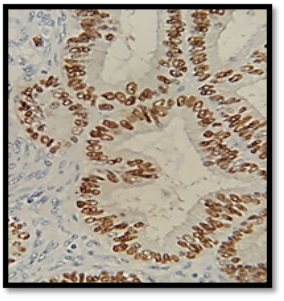
PR Positivity in serous carcinoma; 100x



ER positivity in Endometrioid Carcinoma ; 100X



PR positivity in Endometrioid Carcinoma ;100X



PR positivity in Endometrioid Carcinoma ;400X

DISCUSSION

Surface epithelial cell tumours were the most common .This is similar to the study conducted by Jha .R et al [1] .Germ cell tumours were the second major group in this study(21.7%).This is similar to the study conducted by Pachori G et al [2].Among the 156 cases, 73.7% cases were benign ,followed by 24.4% cases reported as malignant ;and 1.9% were borderline .In a similar study ,Gupta et al reported such findings [3].ER and PR showed higher expression in malignancies of serous morphology .Similar findings were noted by Bhagyalakshmi Atla et al in their study of malignant ovarian tumours [4]Endometrioid carcinoma comprises 10-15% of all primary ovarian carcinomas in the western part of the world [5].In a study from Eastern India ,the endometrioid tumours were found to be only 5% of all malignant tumours [6]. In our study ,endometrioid tumours comprised 1.2% of all malignant ovarian tumours .Our study revealed significantly higher PR expression in stage 1 tumours; all cases in stage 3 and stage 4 were PR negative .However the expression of ER was variable. This was similar to the study conducted by Buchynska et al [7].This was also in concordance with the study by Naik Pooja et al who found that ER was expressed in all high and low grade tumours; while PR positivity was more in low grade tumours than in high grade ones [8].This was also similar to the study conducted by Ayadhi Lobna et al who concluded that ER expression did not correlate with any clinicopathological parameter while PR expression was associated with an early FIGO stage and low tumour grade[9].PR negative patterns such as ER+/PR- or ER-/PR-were present in tumours with higher stage and grade. This finding was concordant with the study conducted by Garg et al[10]

CONCLUSION

Study of the spectrum of ovarian neoplasms revealed surface epithelial tumours to be the commonest neoplasms, followed by germ cell tumours. The expression of ER and PR was highest in serous and endometrioid tumours. The PR negative cases showed higher grade and stage .However further studies with larger number of cases are required to substantiate our findings

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