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Original Article

Histomorphological Spectrum of Ovarian Tumours in a Tertiary Care Centre in North India

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Abstract

Background: *Ovarian tumours are a heterogeneous group of neoplasms with variable clinical, morphological and histological features. Malignant epithelial tumours are the commonest ovarian cancers and have high mortality rate. This study was undertaken to analyse histomorphological spectrum of ovarian neoplasm in women of different age groups*

Aim & Objectives: *To evaluate the frequency, distribution and the histomorphological spectrum of various ovarian tumours.*

Material and Methods: *This retrospective study was carried out in the Department of Pathology over a period of three years. All the ovarian tumour specimens received and fixed in 10% formalin formed the study material. 4-5 micrometer thick sections were cut and stained with H&E stain for Histopathological Evaluation.*

Results: *Age range of patients in our study was 21-76 years. Abdominal pain and lump were the commonest presenting symptoms. Majority of the tumours (86.6%) were benign tumours. Malignancy was seen in 9.8 % cases while borderline tumours were seen in 3.6 % cases. Epithelial tumours were the commonest tumours (69.6%) followed by germ cell tumours (25.8%). Serous cystadenoma was the commonest benign tumour and serous cystadenocarcinoma was the commonest malignant ovarian tumour.*

Conclusions: *Ovary is a common site of tumours in the female genital tract and usually presents with a variety of clinicomorphological and histological features. The prognosis and varying therapeutic strategies for ovarian tumours necessitate an accurate pathological evaluation. Newer techniques like IHC have made the diagnosis easier and more precise. However in institutes with limited resources, histopathological study is the gold standard in diagnosis and prognostic evaluation of these tumours.*

Keywords: *Histopathology; Ovarian; Malignancy; Cystadenoma.*

Introduction

Ovarian malignancy accounts for approximately 3% of all malignancies in women[1]. Ovarian malignancy is the second commonest cancer of the female genital tract and is the leading cause of death from gynaecologic malignancy[2,3]. The age adjusted incidence rates of ovarian cancer vary between 5.4 and 8 per 100,000 populations in different parts of the country[4]. Ovarian tumours include a wide spectrum of neoplasms with a variety of histological patterns arising from epithelial tissues, connective tissues, specialized hormone secreting germinal and embryonal cells [5].

Ovarian malignancy has poor survival as they clinically don't manifest in early stages and approximately 60-70% of the neoplasms present as either stage III or stage IV[5,6]. Benign ovarian tumours are commonest lesions comprising about 80% of ovarian tumours and occur in young women between the ages of 20-40 years[7]. Borderline tumours occur at slightly older age whereas the malignant tumours are common in older women between the ages of 40-65 years[5].

Majority of ovarian tumours cannot be confidently distinguished on the basis of their clinical or gross characteristics alone[1]. Most important clinical feature is the age of the patient[8]. Laterality of the tumour also provides an indirect clue to the nature. Gross features may also help in differential diagnosis and represent the integral behaviour of tumour, like most benign tumours of epithelial category are cystic, on the other hand, the finding of solid element and papillary projections make malignancy more likely[8]. However accurate diagnosis depends on the microscopic features exhibited by the tumour[6]. So the present study was undertaken to analyse the frequency and the diverse histomorphological spectrum of ovarian tumours.

Material and Methods

This retrospective study was conducted for a period of 3 years (January 2015 to December 2018) in Post Graduate Department of Pathology, Government Medical College, Jammu, which is tertiary care centre in North India. The study included all ovarian specimens that were received in the department of pathology. Specimens sent in 10% formalin were routinely processed with paraffin embedding after adequate fixation. Paraffin sections and slides from the blocks were stained with H&E. Special stains like PAS and Reticulin were done whenever required. The slides were then reviewed microscopically in detail and tumours were classified according to the WHO classification of ovarian tumours and results tabulated.

Results

One Hundred and Ninety Four patients formed the material of the study. Majority of the patients were seen in 5th decade of life with age range of 21-76 years. On Histopathological evaluation, out of 194 cases, 86.6% were benign, 3.6% borderline and 9.8% malignant (Table 1). Surface Epithelial tumours were the commonest tumour (69.6%) followed by germ cell tumours (GCT) (25.8) and sex cord stromal tumours (4.1%) (Table 1). Among surface Epithelial Tumours (ET), Serous tumours (82.2%) were commonest followed by Mucinous tumours (14.1%). Serous cystadenoma was the commonest epithelial tumour followed by Mucinous cystadenoma and Serous cystadenocarcinoma and Serous cystadenofibroma. Among Germ cell tumours (GCT), mature cystic teratoma was the commonest tumour. Single case each of immature teratoma, dysgerminoma and yolk sac tumour was also seen. Eight cases of sex-cord stromal tumours (SST) were seen, including 4 cases of granulosa cell tumour and 2 cases each of fibroma and fibrothecoma. All the sex cord tumours were benign.

Table 1: Histopathological Spectrum of Ovarian Tumours

Histopathology		No	%
Surface Epithelial Tumours (135)	1. Benign		
	-Serous Cystadenoma	82	42.7
	-Serous Cystadenofibroma	12	6.2
	-Mucinous Cystadenoma	15	7.7
	-Brenner Tumour	3	1.5
	2. Borderline		
	-Serous Cystadenoma	5	2.6
	-Mucinous Cystadenoma	1	0.5
	-Brenner	1	0.5
	3. Malignant		
	-Serous Cystadenocarcinoma	12	6.2
	-Mucinous Cystadenocarcinoma	3	1.5
	-Malignant Brenner	1	0.5
Germ Cell Tumour (50)	1. Benign		
	-Mature Cystic Teratoma	47	24.2
	2. Malignant		
	-Immature Teratoma	1	0.5
	-Yolk Sac Tumour	1	0.5
	-Dysgerminoma	1	0.5
Sex Cord Stromal Tumour (8)	Benign		
	-Fibroma	2	1.0
	-Fibrothecoma	2	1.0
	-Granulosa cell tumour	4	2.1
	-Sertoli Cell Tumour	-	
Luteoma		1	0.5

Discussion

Ovarian tumours may remain undiagnosed for a long period because of their anatomical location and cause abdominal pain and abdominal distension in majority of the cases. These are considered to be one of the most complex tumours in women in terms of histiogenesis, clinical behaviour and malignant potential. They represent the sixth most common female cancer and the fourth leading cause of death due to cancers in women[2,9]. Repeated ovulatory rupture and repair theoretically creates opportunities for malignant gene mutations and might explain the apparent protective effect of oral contraceptives, late menarche, early menopause, multiparity and breast feeding[10]. Though no age group is free from the tumours, different tumours tend to involve different age groups preferentially. The complex anatomy of the ovary and its peculiar physiology with the constant cyclical changes from puberty to menopause give rise to number of cell types which is capable of giving rise to tumours[10]. Nulliparity, family history and genetic mutations are some of the known risk factors associated with the development of ovarian neoplasms.

Exact nature of the ovarian neoplasm cannot be confirmed preoperatively by clinical examination. National Institute of Health has advocated the use of Transvaginal ultrasonography for the diagnosis of ovarian tumours[11]. Though ultrasonography is quite useful in the detection and evaluation of ovarian neoplasms, its value in the detection of early stage epithelial ovarian cancer in women of increased risk is uncertain[12]. The microscopic appearance of the tumour is the most essential part in the evaluation of ovarian neoplasms to find the histopathological pattern and to guide the clinician regarding appropriate management.

194 cases of ovarian tumours were included in our study. Majority of cases were seen in 5th decade of life with an age range of 21-76 years. The results were comparable to previously published studies [13]. Majority of tumours in our study were benign tumours (86.6%) followed malignant tumours (9.8%). Borderline tumours were seen in approx. 3.6% cases. Results were similar to previously published studies[14,15].

Most of the primary ovarian tumours belonged to ET Category (69.6%) which was comparable to the previous studies[16]. GCT and SST accounted for 25.8% and 4.1% respectively in our study. Among ET, majority of the lesions were Benign (82.3%), followed by malignant Tumours (11.9%) and rest were borderline (5.2%). The findings were comparable to the studies conducted by Kuladeepa AVK et al[15] and Sharma I et al[17]. Among ET tumours, Serous tumours (82.2%) were the most common, followed by Mucinous tumours (14.1%). Serous cystadenoma was the commonest epithelial tumour followed by Mucinous cystadenoma and Serous cyst adenocarcinoma and Serous cystadenofibroma (Table 1).

Majority of the GCT were benign and included mature cystic teratoma, similar to previous studies [18]. Single case each of Immature Teratoma, Dysgerminoma and Yolk sac tumour were also seen. Granulosa cell tumour was the commonest SST seen in our study followed by fibroma and fibrothecoma. All the sex cord tumours observed in our study were benign in nature.

Evidences suggest that mucinous epithelial ovarian cancers develop through a sequence from benign tumour, through borderline tumour to invasive cancer and potential preventability of borderline and invasive mucinous ovarian cancer by surgical excision of identifiable precursor lesions[19]. Histopathological type of ovarian tumour correlates with the prognosis of the tumours. Histopathology is essential in recognizing the distinct patterns of ovarian tumours including epidemiological and genetic risk factors, precursor lesion, patterns of spread, response to chemotherapy and prognosis[13].

Conclusions

Ovary is a common site of neoplasm in the female genital tract and presents with a variety of clinicomorphological and histological features. Histomorphologically, majority of the ovarian tumours are benign and among the malignant tumours, surface epithelial is the commonest variety. Accurate diagnosis of ovarian tumours can be rendered in almost all of cases by correlating the clinical presentation, radiographic appearance and histomorphological features, which remains the gold standard. Early diagnosis is crucial to decrease morbidity and mortality among these patients and so efforts must be made to identify the risk factors for malignancy.

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