Original Research Article

Histopathological Spectrum of Ovarian Neoplasms and their Clinicopathological Correlation

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Abstract

Introduction: Ovary is a small organ and unique in terms of variety of lesions that arise from it. Worldwide, ovarian cancer is sixth most common cancer in women and most frequent cause of death from gynaecologic cancer. Even though immunohistochemical and chromosomal studies have made diagnosis and differentiation of tumours easier, in developing countries like India, cost effective histomorphological studies still form the backbone of diagnosis of these tumours.**Materials and Methods:** All the slides of cases in the retrospective period were reviewed. All the specimens were processed after detailed gross examination, extensive sampling was done. The processed tissue was paraffin embedded and sections were cut at 4-5µ thickness and stained with Haematoxylin and Eosin stain and thoroughly examined. Special stains were done wherever necessary. The tumors were diagnosed and classified according to World health organization histopathological classification of ovarian tumors. **Results:** Microscopic analysis showed 82 cases of surface epithelial tumors among them 78 are benign consisting of 56 Serous cystadenomas,19 Mucinous cystadenomas, 01 case of serous cystadenofibroma, 02 cases of Brenner tumor and 04 Serous cystadeno-carcinomas. There were 15 cases of Teratoma , 02 cases of Dysgerminoma and Mixed germ cell tumor. There were 01 case of each Fibroma , Thecoma and Fibrothecoma, 02 case of Granulosa cell tumor. There were 01 case each of Hemangioma and Lymphangioma. Secondaries were Adenocarcinomas from Stomach and Cervix .**Conclusion:** Ovarian tumours are one of the most researched topics in gynaecological pathology. During the present study , it was found that the incidence of ovarian neoplasms was almost the same in this region when compared with the previous data.

Keywords: Neoplasm,tumors,ovary

Introduction

Ovary is a small organ and unique in terms of variety of lesions that arise from it[1]. Ovarian cancer takes the third leading site of cancer among women next to cervix and breast cancer. Worldwide, ovarian cancer is sixth most common cancer in women and most frequent cause of death from gynaecologic cancer[2].

Ovarian cancer has the worst prognosis among gynaecological malignancies, 5year survival rate being 45%[1,2].Ovarian cancer rates increase exponentially with age. About 70% of tumours occur in the reproductive age. Low parity, genetic and environmental factors are associated with an increased risk of ovarian cancer[3,4].

The initial treatment includes abdominal exploration, staging and resection of all grossly identifiable disease. Ovarian tumours cannot be confidently distinguished from one another on the basis of their clinical, radiological or gross characteristics alone. Chemotherapy and radiotherapy may be highly specific for a single type of neoplasm. Hence, accurate histological diagnosis is critical to achieve an optimum treatment response[5]

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Even though immunohistochemical and chromosomal studies have made diagnosis and differentiation of tumours easier, in developing countries like India, cost effective histomorphological studies still form the backbone of diagnosis of these tumours[6] .

The present study is undertaken to review and study the common histomorphological types, the age distribution and frequency of occurrence of ovarian tumors in and around Kalaburagi.

Materials and Methods

Oophorectomy and hysterectomy with unilateral or bilateral salphingoophorectomy specimens received in the Department of pathology M R Medical College, Basaveshwara Teaching and General Hospital (BTGH) Kalaburgi are included in the study. The present study included the 'Histopathological study of ovarian neoplasms' over a period of 3 years with one year retrospective study i.e. from June 2015 to May 2016 and one year prospective i.e. from June 2016 to July 2018. Total of 112 cases are studied.All the specimens of tumours arising from the ovary and those metastatic to the ovary are included in the study.

Method of collection of data (including sampling procedure, if any):All the slides of cases in the retrospective period were reviewed. All the specimens were fixed in 10% buffered formalin for 24 hours; after detailed gross examination, extensive sampling was done. The processed tissue was paraffin embedded and sections were

cut at 4-5µ thickness and stained with Haematoxylin and Eosin stain and thoroughly examined. Special stains were done wherever necessary. The tumors were diagnosed and classified according to World health organization histopathological classification of ovarian tumors.

Statistics: NS= not significant, S=significant, HS=highly significant, VHS=very highly significant.

Results

Table 1: Showing the relationship between age and nature of ovarian neoplasms in the present study

Age in years	Benign No.of cases (%)	Malignant No.of cases (%)	Total no. of cases	Percentage
0-10	0	2	2	1.8
11-20	5	2	7	6.25
21-30	33	2	35	31.25
31-40	20	1	21	18.75
41-50	24	1	25	22.32
51-60	14	3	17	15.18
61-70	4	1	5	4.46
Total	100	12	112	100.0

Chi-square test & P-value :c^2_{yates} = 0.64, at 1df P>0.05, NS

Table 2:showing the distribution of clinical presentations in the present study

Symptoms	No. of cases	Percentage
Pain abdomen (PA)	4	3.57
Mass per abdomen (MPA)	49	43.75
MPA+PA	43	38.39
MPA+ pressure symptoms	13	11.60
Menstrual disturbance	1	0.89
MPA+ ascites	2	1.78
Primary infertility	0	0.0
Others	0	0.0
Total	112	100.0

Table 3: Showing the gross appearance of ovarian neoplasms in the present study

Gross finding	Benign	Malignant	Total	Percentage
Cystic	96	0	96	85.71
Solid	3	7	10	8.93
Mixed	01	5	06	5.36
Total	100	12	112	100.0
Chi-square test &P-value	c^2_{yates} = 128.2, at 1df P<0.001, VHS			

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Table 4:Showing the histological types of ovarian neoplasms in the present study

Histopathological type	Benign	Malignant	Total
1. Surface epithelial			
Serous cystadenoma	56	04	60
Mucinous cystadenoma	19	-	19
Serous cystadenofibroma	01	-	01
Brenner tumour	02	-	02
2. Germ cell tumour			
Teratoma	15	-	15
Dysgerminoma	-	02	02
Mixed germ cell tumour	-	02	02
3. Sex cord stromal tumour			
Fibroma	01		01
Thecoma	01		01
fibrothecoma	01		01
Granulosa cell tumour	-	02	02
4. Secondaries	-	02	02
5. Mesenchymal tumours	04	-	04
Total	100	12	112

Study observed that, Maximum number of malignant ovarian neoplasms were 3 (17.6%) out of 17 in the age group of 51-60 years of age and one each in 2nd, 3rd and 4th decade. Study reveals that, there was no statistical significance difference of malignant and benign ovarian neoplasm cases in relation with age(P>0.05 Table 1).

Study observed that, Maximum number of cases 49 (43.73%) presented with mass per abdomen followed by pain abdomen with mass per abdomen cases 43 (38.39%) and 13 (11.60%) cases were mass per abdomen with pressure systems (Table. 2.).

Study observed that, Maximum number of ovarian neoplasm cases 96 (85.71%) were cystic in nature ; no malignant ovarian neoplasm were cystic. There were 10 (8.93%) cases which were solid in

consistency out of which 7 (70.00%) were malignant and 6 (5.36%) were mixed(solid and cystic) in consistency, out of them 5 (83.3%) were malignant(Table .3.)

Study reveals that, there was statistically very highly significance difference of malignant and benign ovarian neoplasm cases in relation with gross findings (P<0.001). In gross findings solid and mixed type cases were significantly more of malignant cases when compared to benign ovarian neoplasms(Table .3.)

Microscopic analysis showed 82 cases of surface epithelial tumors among them 78 are benign consisting of 56 Serous cystadenomas , 19 Mucinous cystadenomas , 01 case of serous cystadenofibroma , 02 cases of Brenner tumor and 04 Serous cystadenocarcinomas. There were 15 cases of Teratoma , 02 cases of Dysgerminoma and Mixed germ cell tumor. There were 01 case of each Fibroma(FIG 01) and serous cystadenofibroma (FIG 1), Thecoma and Fibrothecoma, 02 case of Granulosa cell tumor. There were 01 case each of Hemangioma and Lymphangioma.Secondaries were Adenocarcinomas from Stomach and Cervix. (Table .4)

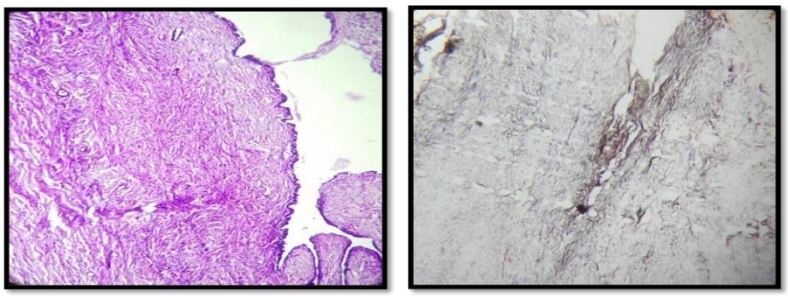

Fig. 1:A.Serous cystadenofibroma. (H &E , 40 X)B.photomicrograph showing serous cystadenofibroma- reticulin stain.

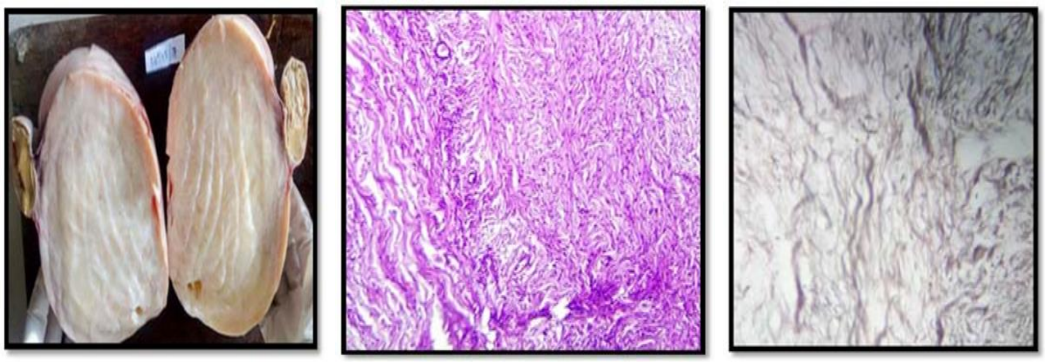

Fig. 2:Fibroma Of Ovary.A.Gross – cut section showing solid homogenous grey white areas. B.Microphotograph showing spindle cells in fascicles and in bundles (H & E, 40X), C.Reticulin stain-fibroma

Discussion

Ovarian neoplasms are one of the most fascinating tumours in women in terms of their histogenesis, clinical behaviour and malignant potentiality.Many of the ovarian neoplasms cannot be detected early in their development, they account for a disproportionate number of fatal cancers, being responsible for almost half of the deaths from cancer of the female genital tract[7]. Histomorphological classification of ovarian tumours forms an integral part of the evaluation of these neoplasms[8]. In the present study 112 ovarian neoplasms were evaluated and classified based on the histological classification of the ovary by WHO (2014). In the present study, majority 35(31.25%) cases were in the age range 21-30 years. Similar observation was made by Saxena et al[9] (1980) with majority 111 (31.2%) in age range of 21-30 years, Patil V et al[10] with 71 (39.4%)cases in the age range of 31-40 years and Bharati M [11](2009) With 56 cases in the age group of 21-30 years.In the present study majority, 33 (33.0%) benign ovarian tumors occured in the age group 21-30 years. This is similar to the studies conducted by Jagdeshwari et al (1971)[12]. The least number of benign tumors were seen in 6th decade being 4.In the present study majority 3 (25.0%) malignant ovarian tumours occurred in 51-60 years, while in the other studies by Jagadeshwari et al (1971),malignant tumours occurred in the age range 31-40 years with 28 (29.47%)and Bharati M 8 (32.0%) cases in the age range of 41-50 years. Malignant ovarian tumours are highly age dependent ranging from a low of 2.1% in the 3rd decade to nearly 50% in the 7th decade[13] . Koonings et al (1989)[13] showed that the proportion of malignant ovarian tumors increased with age peaking in the 7th decade. The overall risk that an ovarian neoplasm was malignant was 13% in premenopausal women, and 45% in post menopausal women. In the present study, majority 49 (43.75%) presented with mass per abdomen and 43 (38.39%) presented with mass per abdomen associated with pain. Similar studies by Jagadeshwari et al (1971)[12] and Bharati M [11]also encountered mass per abdomen as the common symptom with 154 (58.11%) and 76 (42.2%) cases respectively.Similar studies by Couto F et al (1993)[14]revealed mass per abdomen as the common symptom in 90.4% cases, while ascites was found along with mass per abdomen in 4.91% case with malignant tumours.In the present study majority 96 (85.71%), of the ovarian tumours showed cystic consistency which is higher than the studies by Madan et al(1978), Bhuvanesh and Logambal(1978)[15] and Bharati M [11]who observed 77 (64.1%), 52 (74.3%), 142 (78.9%) respectively. This was followed by Solid consistency in 10 (8.93%) which is similar to study by Bharati M(2009)[11] with

11(6.1%) cases and more lower than study by Bhuvanesh and Logamba[17](1978) with 18(25.7%) cases .

In the present study it is also observed that 96 (85.71%) cystic cases were benign and 7(70%) of solid tumours were malignant which is very similar to study by Sarkar R (1996)observed that cystic or partly cystic consistency was more commonly seen in benign tumours in 91.4% cases, where as among malignant tumours 52.5% were solid in a study of 190 ovarian neoplasms.

Histological Type of Ovarian neoplasms

In the present study surface epithelial tumours were the commonest, 82 (73.21%). This is similar to the other studies carried out by Sarkar R (1996) [16], Patil V[10](2005) and Bharati M(2009)[11] where the statistics were 127 (66.8%) , 143 (79.4%) and 125(69.5%) respectively.The second most common tumour was germ cell tumour with 19 (16.96%) cases which is similar to the above studies as 52 (27.4%),28 (15.6%) and 36(20%) cases respectively.The other similar studies conducted by Battacharya M et al (1980)[17]and Ahmed M et al(2004)[18]also revealed that surface epithelial tumors were the most commonly encountered ovarian neoplasms followed by germ cell tumors.

Conclusion

Ovarian tumours are one of the most researched topics in gynaecological pathology. During the present study ,it was found that the incidence of ovarian neoplasms was almost the same in this region when compared with the previous data. Surface epithelial tumours accounted for 73.21% of all ovarian tumours. Serous cystadenomas, mature cystic teratomas and mucinous cystadenomas were the common benign tumours while serous cystadenocarcinomas were the commonest primary malignant tumours. No age was exempt from these tumours. Benign tumours were common in 21-30 years of age (33%) and malignant were common in 51-60 years of age (25%). Primary ovarian malignancies were common than secondary tumours with secondary tumors being bilateral.Certain rare tumours like haemangiomas and lymphangioma were diagnosed. Histological diagnosis of such tumours is of prime importance in view of their clinical T correlations and proper management.

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