CLINICOPATHOLOGICAL SPECTRUM OF OVARIAN TUMOURS IN A TERTIARY CARE HOSPITAL

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ABSTRACT

BACKGROUND

Ovarian tumours manifest with a wide spectrum of clinical morphological and histological features. Increasing mortality rate due to ovarian cancers has been reported in recent years. Ovarian tumours are histologically defined based on the different cells or origin. Ovarian tumours in post-menopausal females have high risk of malignancy and it has a very poor outcome.

Aims and Objectives- To study the clinicopathological spectrum of ovarian tumours and to find the spectrum of benign and malignant tumours reported in a tertiary care centre.

MATERIALS AND METHODS

The study comprises of 426 ovarian tumours reported over a period of six and half years from August 2008 to July 2016, in Mahatma Gandhi Medical College and Research Institute, Pondicherry.

RESULTS

Out of 426 cases examined, 386 cases were benign (90.6%), eight cases were borderline (1.9%) and 32 cases were malignant (7.5%). Most commonly encountered benign ovarian tumour was serous cystadenoma. Most common malignant tumour reported in this study was endometrioid carcinoma of ovary. A rare case of primary carcinoid arising from mature teratoma was also reported.

CONCLUSION

A variety of benign and malignant tumours of ovary were reported in this study. Early diagnosis and appropriate treatment of ovarian neoplasms favour the good prognosis. Most common benign tumour encountered in this study was serous cystadenoma while most common malignant tumour reported in this study was endometrioid carcinoma of ovary.

KEYWORDS

Ovarian Tumours, Clinicopathological Study.

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BACKGROUND

Ovarian tumours are complex neoplasms involving variety of histological tissues such as epithelial tissues, hormone secreting cells, connective tissues to germinal and embryonal cells. Ovarian tumours are encountered in about 5% of gynaecological admissions. It occurs mainly in post-menopausal and reproductive women, uncommon in children. Ovarian tumours in post-menopausal women has high risk of malignancy and very poor outcome.[1] Their complex nature, poor prognosis makes ovarian tumour difficult for gynaecologist to treat. Differentiation between many different cystic ovarian abnormalities with non-malignant features is relevant since proper treatment depends on the histological abnormality.

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There is no reliable means for early detection except for accurate histopathological diagnosis that facilitates the effective treatment of ovarian tumours.[2] Ovarian carcinoma is fifth most common cause of cancer related deaths in western world and leading cause of death from gynaecological malignancy. The 5-year survival is only 30–40% and is due to the fact that most ovarian cancers are inoperable when first discovered. Most ovarian cancers have spread beyond the ovary by the time of diagnosis, they account for a disproportionate number of deaths from cancer of the female genital tract.[3]

MATERIALS AND METHODS

The present study is an observational study based on histomorphological evaluation of ovarian specimen received at the Department of Pathology, Mahatma Gandhi Medical College and Research institute, Pondicherry, from August 2008 to July 2016. Clinical presentation, gross and microscopic features were recorded.

RESULTS

Out of the 426 cases analysed, majority of tumours (386 cases) were benign (90.6%), 8 cases were borderline (1.8%) and 32 cases were malignant (7.5%).

The maximum number of benign tumours were found in the third decade whereas the peak occurrence of malignant tumours was reported in the fifth decade.

The youngest patients presented in this study were two 13-year-old girls. Histopathological diagnosis was serous cystadenofibroma in one patient and mature teratoma in other.

The oldest patient in this study was an 80-year-old, who had come to the Gynaecology OPD with history of foul smelling white discharge per vaginum and occasional spotting. This was a case of endometrioid carcinoma of ovary.

In the present study, more number of cases were found to have unilateral involvement 96% as compared to bilateral involvement which was seen in only 4% of tumours. In the present study, the most common symptom with which patient presented was menstrual disturbances in 220 cases (51.6%), followed by pain abdomen in 188 cases (44.1%). Around 8 (1.8%) patients had presented with the triad of symptoms of mass per abdomen, menstrual symptoms and ascites. All four cases were reported as endometrioid carcinoma.

The most common symptom for both benign and malignant tumours is mass per abdomen. Acute pain in benign tumour was mostly associated with torsion, and chronic pain was associated with large tumours with increased chance of malignancy. (Refer Table 1).

The surface epithelial tumour is the commonest tumour reported with total of 340 cases (79.8%) during this study period and second most common tumour reported was germ cell tumour accounting for 34 cases (15.9%) (Refer Table 2). Three hundred and forty cases of surface epithelial tumours have been reported in this study (Refer Table 3). Out of 340 cases, 184 cases were histopathologically diagnosed as serous tumours. Mucinous tumours and endometrioid tumours were second most common tumours encountered in this study. (Refer Table 4).

Two hundred and forty two benign surface epithelial tumours were found in this study out of which serous cystadenoma was the most common accounting for 47.05% cases followed by serous cystadenofibroma 18 (5.2%) cases and mucinous cystadenoma 64 (18.8%).

Serous cystadenoma was the most common tumour encountered in this study. All cases were grossly unilocular and cystic. Cut section of cyst contained clear to yellowish serous fluid with varying diameter. (Figure 1) The cyst wall was lined by low columnar epithelium while few cases showed flattened epithelium. No nuclear atypia or stromal invasion has been seen in any of the cases.

Serous cystadenofibroma constituted around 5.2% of benign surface epithelial tumours. All tumours were unilocular and cut section showed abundant fibrous stroma and some showed tiny papillary projections.

The second most common surface epithelial tumour reported in this study was Mucinous Cystadenoma, 64 (18.8%) cases have been reported. They were large and multiloculated. Cut surface showed thick mucinous material. (Figure 2). The cyst wall was lined by tall columnar cell with basally placed nuclei. (Figure 3).

Two serous borderline cases and ten mucinous borderline tumours have been reported in this study. They constituted 0.5% and 2.9% respectively. The cut section of borderline tumours were solid to cystic and they showed multiple papillary excrescences. In mucinous borderline tumours, thick mucin was seen on cut section.

In endometrioid tumours, a subcategory of endometriotic cyst (newly added WHO entity) has been reported which includes 60 cases (17.6%). (Figure 4).

Most common malignant tumour reported was endometrioid adenocarcinoma. Sixteen cases have been reported which comprises 4.70% in surface epithelial tumours. Four cases have been reported in the third decade which was quite unusual.

Four cases of serous cyst adenocarcinoma have been reported and two cases of mucinous cystadenocarcinoma has been reported. Microscopically, serous cystadenocarcinoma showed confluent growth with stromal invasion. Complex branching pattern and atypia were also seen. Mucinous cystadenocarcinoma showed an expansile pattern with crowded glands and little stroma admixed with cribriform architecture.

Two cases of benign Brenner were also reported. Grossly, they were grey white and homogeneous on cut section. Microscopically nests of transitional cells surrounded by abundant fibrous stroma seen with areas of calcification. (Refer Table 3).

Mature teratoma is the third most common ovarian tumour in this study. And it is the most common case reported in germ cell tumour, 63 cases (91.2%). Four cases of dysgerminoma have been reported. These tumours were solid. Cut sections were soft, fleshy and lobulated, microscopic sheets of polygonal cells resembling primordial germ cells, with abundant cytoplasm seen. The nucleus was round with central prominent nucleoli. (Refer Table 5)

A rare case of Primary carcinoid arising from a Mature teratoma was reported (Figure 5). This patient was a 49-year-old woman who presented with abdominal mass and abnormal uterine bleeding. Physical examination revealed a smooth, non-painful, 18-15 cm diameter mass in the right anterior pelvis which was diagnosed histologically as carcinoid tumour arising in a mature cystic teratoma. The patient underwent a total abdominal hysterectomy with bilateral salpingo-oophorectomy and was scheduled for surveillance CT of the abdomen and pelvis at 3-monthly intervals. Grossly the cyst was 20 x17x10 cm with derivatives of all three germ layers seen. Cut section showed predominantly cystic area with solid areas and also few areas showed fatty change. Microscopically multiple areas showed Carcinoid pattern along with features of mature cystic teratoma. So the final diagnosis was given as Mature teratoma with Primary carcinoid. Malignant transformation of mature teratoma is an uncommon complication occurring in approximately 1-3% of patients with Mature teratoma.

Only sixteen cases of sex cord stromal tumours has been reported in this case study. Grossly, Granulosa tumours were yellow to tan with solid and cystic areas. Microscopically bland nuclei were seen with nuclear grooves and low mitotic rate. Two cases of fibrothecoma is also reported in this study who presented to OPD with mass abdomen. Tumour was solid on cut section with microscopy showing sheets of spindle cells and ovoid cells with fine dispersed chromatin.

Two cases of ovarian metastasis has been reported. Out of 426 cases, fluid cytology had been done in 24 cases. Fluid cytology was positive for malignant cells in only one case. (4.1%). It was a case of Endometrioid adenocarcinoma in a 58 years old patient.

Clinical Presentation	Number of Cases	Percentage
Mass per abdomen	10	2.3%
Menstrual disturbances	220	51.6%
Pain abdomen	188	44.1%
Mass per abdomen + menstrual symptoms + ascites	8	1.8%

Table 1. Clinical Presentation in Ovarian Tumours

Histological Group	Number	Percentage
Surface epithelial tumour	340	79.8%
Sex cord stromal tumour	16	3.75%
Germ cell tumour	68	15.9%
Metastasis to ovary	2	0.5%

Table 2. Histological Types of Ovarian Tumours

I	Surface Epithelial Tumours	No. of Cases (N=340)	Percentage
1	Serous Cystadenoma	160	47.05 %
2	Serous cystadenofibroma	18	5.2 %
3	Serous cystadenoma of borderline malignancy	2	0.5%
4	Serous cystadenocarcinoma	4	1.1%
5	Mucinous cystadenoma	64	18.8%
6	Mucinous cystadenoma of borderline malignancy	10	2.9%
7	Mucinous cystadenocarcinoma	2	0.5%
8	Brenner tumour	4	1.1%
9	Endometriotic cyst*	60	17.6%
10	Endometrioid Carcinoma	16	4.70%
	Total	**340**	**100%**

Table 3. Histological Subtypes of Surface Epithelial Tumours

Sl. No.	Tumour Type	No. of Cases	Percentage
1	Serous	184	54.1%
2	Mucinous	76	22.3%
3	Brenner	4	1.17%
4	Endometrioid	76	22.3%
	Total	**340**	**100%**

Table 4. Frequency of Histological Subtypes of Surface Epithelial Tumours

II	Germ Cell Tumour	No. of Cases (N=68)	Percentage
1	Mature teratoma	61	88.2%
2	Dysgerminoma	4	5.8%
3	Mixed germ cell tumour	2	2.94%
4	Mature teratoma with primary carcinoid	2	2.94%
	Total	**68**	**100%**

Table 5. Frequency of Germ Cell Tumour

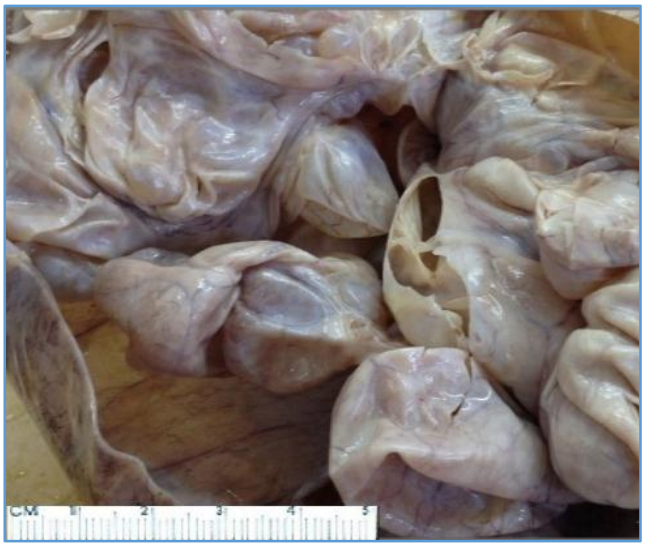

Figure 1. Gross of Serous Cystadenoma Showing Multiloculation

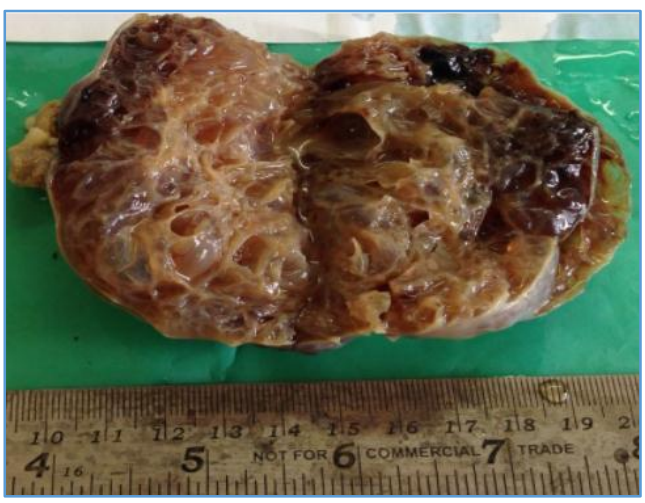

Figure 2. Gross of Mucinous Borderline Tumour Showing Multiloculation

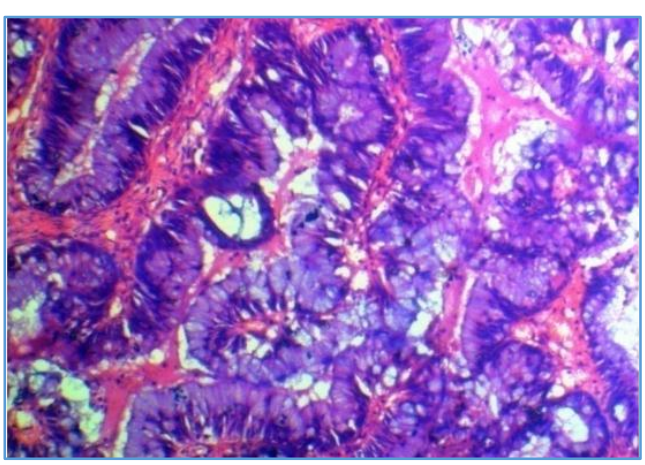

Figure 3. Microscopy of Borderline Mucinous Tumour showing Complex Pattern of Glands (H&E, 20x)

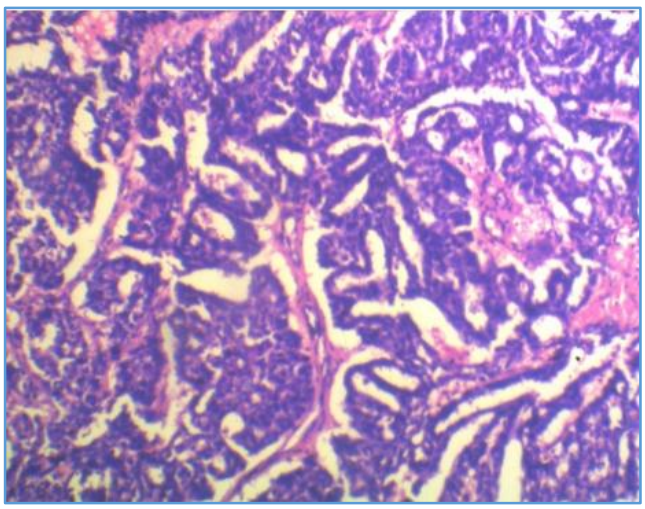

Figure 4. Microscopy of Endometrioid Carcinoma of Ovary (H & E, 20x)

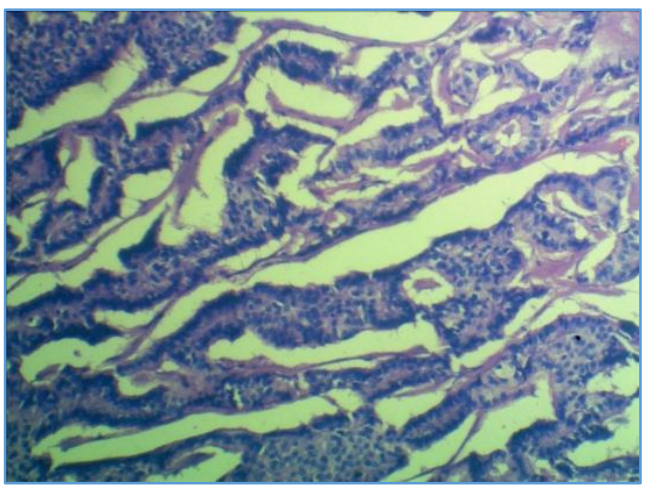

Figure 5. Microscopy of Primary Carcinoid arising in a Mature Teratoma (H & E, 20x)

DISCUSSION

Frequency of ovarian tumours in our study has been analysed based on the age, nature and histological subtypes. Totally 426 cases were received in Department of Pathology, MGMCRI during a period between August 2008 to July 2016.

Similar studies done in tertiary level hospitals in India were compared with the present study, benign tumours were more common as seen in other studies.[4,5,6,7] Unilateral tumours were more common than bilateral as seen in other studies.[5,6,8]

In present study, serous type epithelial tumours constituted the maximum number of surface epithelial tumours and similar results have been observed in other studies also.[5,6,8]

Endometrioid tumours were least common as seen in other studies. The recent WHO classification has included endometriotic cyst under endometrioid tumours.[9] In all other studies endometriotic cyst was not included. As we have included this entity as per recent WHO classification, the frequency of endometrioid tumours appears to be increased in our study when compared to other studies.

Various studies by different authors Bhudhil Gurunandini, Veena, and Bharathi showed peak age incidence of benign tumours in fourth decade.[5,6,10] In contrary to other studies, our study results depicted that benign tumours were commonly reported in third decade, a decade earlier when compared to other studies.[11] This might be due to increasing health awareness in a rural population which enforces them to seek medical attention as soon as they present with any vague symptom,[7] while malignant tumours were most commonly reported in fifth decade and it is same as that of other authors.[5]

Most common benign tumour reported in this study is serous cystadenoma and it correlates with other studies,[6,10] while most common malignant tumour reported in other studies were serous cystadenocarcinoma.[4,8,10] A study by Bharathi has reported most common malignant tumour as transitional cell carcinoma.[7] In our study, endometrioid tumour of the ovary was found to be the most common malignant tumour.

A rare case of primary carcinoid arising from mature cystic teratoma has been reported in this study. Carcinoid tumours arising from the reproductive organs, such as primary ovarian carcinoids are rare and sparsely documented. Stewart et al reported the first case of carcinoid tumour arising in an ovarian teratoma in 1939.[12,13]

Commonest presenting symptom in our study was menstrual abnormalities. However, in other studies by Bharati and Budihal, mass per abdomen was the most common presenting clinical feature.[5,7] Ours is a rural tertiary health care centre, hence patients have presented only when they have menstrual abnormalities, and the other two studies were done in an urban setup due to which mass per abdomen was the most common presenting feature.

CONCLUSION

Ovarian tumours have very complex histology and are difficult to treat. Ovarian malignancies are associated with high degree of mortality and morbidity. Histopathological diagnosis is absolutely necessary for treatment of ovarian tumours.

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