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RESEARCH ARTICLE

Clinicopathological analysis of ovarian tumours: experience of 3 years in a cancer hospital

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ABSTRACT

Objective: The objective of this study was to study the distribution of ovarian tumors histopathologically in different age groups and their various clinical presentations. **Methods:** 100 patients who presented with 142 ovarian lesions on either or both sides were analyzed during a period of 3 years and a further two year follow-up of patients with malignant tumors were done in a tertiary cancer hospital**. Results:** There were 142 lesions comprising of 56% of neoplastic lesions, 30% of non-neoplastic lesions and 14% borderline lesions. Serous tumors were the commonest tumors (42%) followed by germ cell tumors. Serous cystadenoma (33.3%) was the commonest non-neoplastic lesion. The distribution of benign tumors in the reproductive age groups was more commonly seen. Malignant tumors were in the perimenopausal and postmenopausal age group (57.1%). Bilaterality of lesions was seen in 42 patients. Lump in abdomen was seen in 62.5% cases with benign lesions and vague discomfort was reported in all cases of malignant ovarian tumors. Out of 56 cases of malignant ovarian tumor, 34 patients presented in stage 1 and 10 patients presented in stage 4. **Conclusions:** Ovarian neoplasia is one of the most common and lethal malignancy in female reproductive tract in older age group. Since most of the ovarian cancer remain asymptomatic for prolong period so measures should be taken for early diagnosis for better outcome.

Keywords: Ovarian neoplasm, histopathology, clinical presentation.

Ovarian masses with diverse histopathology are common forms of neoplasms in women and form one of the most challenging cases in gynaecology. Ovarian tumors account for 30% of all cancers of female genital tract[1]. The inaccessibility of the ovaries for screening, complex nature with widely differing clinicopathological features, unpredictable behavior and prognosis poses a challenge to both gynaecologist and pathologist. Ovarian tumors that present in the reproductive age group are mostly benign while about 30% in the postmenopausal age group are malignant.

Ovarian tumors show histological heterogenecity. The classification of ovarian tumors by World Health Organization is based on the histogenesis of ovary. They are largely divided in to epithelial cell tumors, germ cell tumors, and sex cord stromal cell tumors [2]. In most of the population based cancer registries in India, ovarian cancer is the third leading site of cancer among women trailing behind cervix and breast cancer. The age adjusted incidence rates of ovarian cancer vary between 5.4 and 8 per 100,000 populations in different parts of the country [3]. In this scenario we have studied the clinical presentation and histological pattern and tumour markers of patients with ovarian neoplasm in a tertiary cancer care hospital**.**

Methods

This study was done retrospectively in the department of Gynae-oncology at Government Medical College and Cancer Hospital, Aurangabad, Maharashtra. There were 100 patients with ovarian masses on either or both sides who were admitted in the department during the period of 3 years (January 2017-January 2020). The patients who underwent surgery for ovarian mass alone or along with hysterectomy

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were included in the study. Ovarian malignancies managed with exploratory laparotomy were included in the study. Ovarian tumors managed conservatively were excluded from the study. Data regarding age, clinical symptoms, details of the mass like size, laterality, pre-operative findings and histopathology were collected and statistically studied. The histopathological reports (HPR) were based on WHO classification of ovarian tumors. Follow-up of patients with malignant tumors were done post-operatively for a further period of two years. Percentages were calculated in each category and compared.

Results

A total of 100 patients who presented with 142 ovarian masses on either and/or both sides formed the study group. Among the 100 lesions, there were 56 neoplastic tumors and 30 non-neoplastic and 14 borderline lesions.

Table 1 shows that only 12 patients are seen in age of > 45 years with benign lesions whereas 40 patients are seen with the malignant lesions. Maximum patients are seen with parity of 3 or 4 in benign cases whereas parity 1 to 2 is common in malignancy cases. 2 patients were nulliparous in malignant group. Out of 56 patients in the malignant group, 32 (57.1%) were postmenopausal. Bilaterality was more common with malignant group (46.4%).

Table 1: Shows the distribution of ovarian mass cases according to the epidemiology

Variables	N(100)	Benign		Borderline		Malignant	
		N(30)	%	N(14)	%	N(56)	%
Age							
25-34yrs	16	8	26.6%	2	14.2%	6	10.7%
35-44yrs	24	10	33.3%	4	28.5%	10	17.8%
45-54yrs	30	6	20%	2	14.2%	22	39.2%
55-64yrs	16	2	6.6%	4	28.5%	10	17.8%
>65yrs	14	4	13.3%	2	14.2%	8	14.2%
Total	100	30		14		56	
Parity							
Nulliparous	2	0	0%	0	0%	2	3.5%
P1-2	44	14	46.6%	2	14.2%	28	50%
P3-4	46	16	53.35	12	85.8%	18	32.1%
>P5	8	0	%	0	0%	8	14.2%
Total	100	30	0%	14		56	
Menstrual status							
Premenopausal	40	18	60%	2	14.2%	20	35.7%
Postmenopausal	56	12	40%	12	85.8%	32	57.1%
Post hysterectomy	04	0	0%	0	0%	4	7.1%
Total	100	30		14		56	
Laterality							
Left	30	12	40%	2	14.2%	16	28.5%
Right	28	12	40%	2	14.2%	14	25%
Bilateral	42	6	20%	10	71.4%	26	46.4%
Total	100	30		14		56	

Table 2 shows the different presentation of ovarian tumors. Pain in abdomen is the commonest complaint present in 38 cases (38%). Lump in abdomen is seen in 32 cases; out of which 20 cases are benign (62.5%) and 12 cases are malignant (37.5%)**.** Postmenopausal bleeding and vague discomfort is seen in 100% cases of malignancy. Burning in micturation was commonly found in both the groups of patients.

Table 2: Shows the different presentation of ovarian tumors

Symptoms	N	Benign		Malignant		Total
	(100)	N	%	N	%	
Asymptomatic	18	6	30	12	60	18
Lump in abdomen	32	20	62.5	12	37.5	32
Pain in abdomen	38	10	26.35	28	73.6	38
Nausea, vomiting	14	10	71.45	4	28.5	14
Vague discomfort	4	0	0	4	100	4
Burning in micturation	4	2	50	2	50%	4
Postmenopausal bleeding	4	0	5	4	100%	4

Table 3 shows the distribution of FIGO stage in ovarian cancer. Most of the cancer in advanced stage i.e. in FIGO stage 1, 2, 3 and 4 are 60.7%, 10.7%, 10.7% and 17.8% respectively. 50% cases received neoadjuvant therapy. Stage 3 and stage 4 patients received therapy in almost 80 – 100% where as only 29.4% cases in first stage and 66.65 cases in second stage received therapy.

Table 4 shows that 33.3% cases were serous cystadenoma and 26.6% cases were mucinous cystadenoma. Others cases comprised of haemorrhagic luteal cyst**,** endometroid tumor and fibroma of ovary and paraovarian masses.

Table 5 shows that there were 26 cases of serous cystadenocarcinoma and 10 cases of germ cell tumor (immature) and 6 cases of granulosa cell tumor. There were 14 cases of borderline malignancy. Others comprised of metastatic adenocarcinoma, tiny focus of malignancy found and Krukenberg tumor.

Table 6 shows that Ca125 was the most commonly done tumor marker which was diagnostic in the type of the tumor. CEA and CA19.9 were also commonly done in cases of ovarian tumors. AFP and LDH were significantly raised in germ cell tumors and sex cord tumors.

Table 3: Shows the distribution of FIGO stage in ovarian cancer and neoadjuvant therapy received

Stage	Neoadjuvant CT received		Neoadjuvant not CT received		Total
	N(28)	%	N(28)	%	
I	10	29.4%	24	70.5%	34(60.7%)
II	4	66.6%	2	33.3%	6(10.7%)
III	6	100%	0	0%	6(10.7%)
IV	8	80%	2	20%	10(17.8%)

Table 4: Shows the histopathological distribution of benign ovarian tumors

Types	N(30)	%
Simple ovarian cyst	4	13.3%
Serous cystadenoma	10	33.3%
Mucinous cystadenoma	8	26.6%
Others	8	26.6%
Total	30	

Table 5: Shows the histopathological distribution of malignant ovarian tumors

Types	N(70)	%
Serous cystadenocarcinoma	26	37.1%
Serous high grade papillary adenocarcinoma	6	8.57%
Germ cell tumor	10	14.28%
Sex cord tumor	6	8.57%
Mucinous adenocarcinoma	2	2.85%
Others	6	8.57%
Borderline	14	20%

Table 6: Shows estimation of various tumors markers in evaluation of ovarian

Types	Ca125	Ca 19.9	CEA	AFP	LDH
Serous cystadenocarcinoma	18		2		
Serous adenocarcinoma	6				
Serous high grade papillary adenocarcinoma	6				
Mucinous adenocarcinoma	2		2		1
Sex cord tumor	6				
Germ cell tumor	4		2	2	3
Borderline	8	2			
Others	12	2			

Discussion

The clinicopathological profile of the ovarian tumors diagnosed and operated at our institution during the past three years was analyzed. The clinical parameters like age at diagnosis, association with parity, presenting symptoms, duration of symptoms, stage of the disease, and bilaterality of ovarian tumors were compared in relation to the histological type of the tumor

In the present study most of the benign tumors (30 %) were seen in age group of 24-40 years and most of the malignant tumors were seen in perimenopausal (39.2%) and menopausal (32%) age group. Borderline lesions were commonly seen in perimenopausal and menopausal age group. Ruchika Garg et al had similar findings in their study [4]. Age has a strong correlation to ovarian cancer risk and 80% cases of ovarian malignancy are diagnosed after 50 years of age. Advancing age increases the possibility of malignant transformation[5]. Saini et al in their study reported median age as 55years with mean age of 55.98±9.24 years [3].

Two nulliparous patients were seen with malignant lesions. Nulliparity is reported as a risk factor in various studies [6]. In our study lower parity was associated with malignant ovarian lesions (50%). This may be explained by multiple times injury to ovary by repeated ovulation [6]. Thus, lower parity increases the risk of malignant tumor. Para 3 and 4 were most commonly seen in benign (53.35%) and borderline cases (85.8%). Postmenopausal cases were seen in both malignant group (57.1%) and borderline tumor group (85.8%). Whereas benign ovarian lesions (60%) were mostly seen in premenopausal age group. 4 cases were referred as post-hysterectomy status with an ovarian mass. In our study, bilaterality was a feature of both malignant cases (46.4%) and borderline cases (71.4%) whereas only 20% benign ovarian tumors were bilateral. Similar observations were made by Vedpathak et al [6].

Table 2 shows that 18/100 ovarian cysts were asymptomatic and were found incidentally on routine pelvic examinations or during USGs for another indication. However pain in abdomen was the commonest complaint present in 38 cases. Pain in abdomen was seen in 73.6% of the malignant cases and only in 26.35% of the benign cases. In ovarian malignancies women noted pain due to ascites or from enlarged tumors, stretching of capsule or involvement of nerve fibers. This was also found out by Vedpathak SG et al in the study in 2018 [6]. Lump in abdomen was noticed by 32 women. Out of 32/100, 62.5% had benign lesions. Serous cystadenoma tend to be huge and painless. 37.5% malignant cases presented with a mass per abdomen. Kim SI et al [7] also reported pain in abdomen (66.92%) and mass in abdomen (28.11%) as the commonest presenting symptom. Vague discomfort (bloating, dyspepsia, and feeling of fullness) along with nausea and vomiting was also seen in 18 patients. Dyspepsia was most common complaint reported by Saini et al in 66.26% cases [3]. Patients present with dyspepsia to primary care physicians; therefore it is advisable that pelvis ultrasonography be done in elderly patients to detect disease in early stage [3].

Mclemore et al reported ovarian cancer symptom index (OCSI) consisting of bloating, pelvic or abdominal pain, feeling full quickly and urinary symptoms of urgency and frequency [8]. If any of these symptoms were reported >12 times in one month, OCSI was positive with sensitivity of 56.7% to detect early stage disease and 79.5% for detection of advanced stage disease. Post-menopausal bleeding is another symptom which warrants screening as it indicates presence of available circulating estrogen and points to granulosa cell tumor. We had 4 cases presenting as postmenopausal bleeding in our study.

Table 3 shows that most of the cancer cases presented in early stage. In FIGO stage 1, 2, 3 and 4 are 60.7%, 10.7%, 10.7% and 17.8% cases respectively. This is because we have taken in to account only operated cases of ovarian neoplasm. The cases presenting in advanced stage are often inoperable and are registered for chemotherapy. Those who are chemosensitive and become operable after 3 or 4 cycles of chemotherapy were included in the study. In a study by Jindal D et al [9] 56% patients were in stage III and 31.4% were in stage IV. However stage 1 operable cases were only 35%. In our study 50% cases received neoadjuvant therapy. Stage 3 and stage 4 patients received neoadjuvant therapy in almost 80 – 100% where as only 29.4% cases in first stage and 66.65 cases in second stage received neoadjuvant therapy. Platinum based chemotherapy was used in the treatment of these patients.

Table 4 shows that surface epithelial tumors are the commonest variety of ovarian neoplasm. Serous cystadenoma is the commonest benign ovarian tumor (33.3%), followed by mucinous cystadenoma. Others cases comprised of hemorrhagic luteal cyst, endometroid tumor and fibroma of ovary and para ovarian masses. Non-neoplastic lesions are the frequent cause of ovarian enlargement with possible hormonal activity of the follicles leading to follicular and luteal cysts or inactive serous cysts as classified by Blaustein [10]. Similar findings were noted by Sharadha et al [11].

Determination of histology pattern is useful in diagnosis, treatment and prognosis in ovarian cancer. In the present study authors encountered surface epithelial tumors as the most common tumors followed by germ cell tumors**.** Malignant tumors constituted 57.1% of serous cystadenocarcinoma which was the most common tumor followed by sex cord tumors (20%). This is similar to other studies done by Wills et al and Sheikh et al [12,13]. Hormonal changes are seen with estrogen producing granulosa cell tumors or testosterone producing sertoli-leydig cell tumors. Germ cell tumors are the second most common group of ovarian neoplasms. In the present study authors found 6 cases of granulosa cell tumor. One of them was borderline variety. Immature teratoma with neurogenic component was also noted in this type of tumor. There were 14 cases with borderline histopathology report in this study. Metastases to ovaries are relatively frequent with the spread most commonly from uterus, breast, colon, stomach and cervix [14]. In present study there were 2 cases of secondary tumors, of which, one was metastatis from medullary carcinoma of thyroid and the other from breast carcinoma. Authors had 2 cases of synchronous endometriod carcinoma of ovary with endometriod carcinoma of uterus.

In the present study estimation of various tumor markers was done in evaluation of ovarian tumors. CA125 is the commonest tumors markers seen (28.75%) followed by CEA (5.83%) and LDH (4.58%). Different authors also described CA 125 is mainly raised in serous tumour and CEA is raised in mucinous tumour of ovary [15, 16].

Follow up of these cases was done till 2 years every 3 monthly. All blood investigations along with X-ray chest, USG and tumor markers were done. 2 patients presented with malignant plueral effusion and 6 patients had recurrence after 14 months. 3 patients died due to other associated morbidities

The limitation of the study is that present study is a single institution based retrospective study with a small group. Results of present study may not reflect the actual pattern and age distribution; a large multicentric approach is needed to compare present study results. Causative factors are not well analyzed. Due to limitation of the accurate data regarding survival in malignant ovarian tumors authors could not opine on prognosis.

Conclusion

Ovarian neoplasia is one of the most common and lethal malignancy in female reproductive tract in older age group. It is difficult to always differentiate between malignant and benign tumors clinically. Since most of the ovarian cancers remain asymptomatic for prolonged period so measures should be taken for early diagnosis for better outcome. Analysis of risk factors and protective factors, thorough abdomino-pelvic bimanual examination, certain features on radiological imaging, presence of ascites and bilaterality, CA125 levels, helps in increasing the accuracy of the diagnosis.

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