Original Research

Clinicopathological Study of Ovarian Tumours

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Abstract
This is a prospective study conducted in the Department of Obstetrics and Gynaecology. 87 cases of ovarian tumors were diagnosed during the 2 year study group. The incidence of ovarian tumors in the present study was 4.4%. Majority of women (68.8%) were in the age group 20-45 years with mean age (±SD) (39.1±9.88yrs). Malignant ovarian tumors were more common in multipara (71.4%).Commonest clinical presentation in ovarian tumors were pain abdomen (51.3% benign, 42.9% malignant) followed by mass per abdomen (25% benign, 28.7% malignant), dysmenorrhea (7.5% benign, 14.2% malignant) and urinary disturbances (7.5% benign, 14.2% malignant).Benign ovarian tumors were more common in premenopausal women (90%) and malignant ovarian tumors were seen in postmenopausal women (71.4%). In the present study USG findings revealed, 77.5% of benign ovarian tumors were 10 cms of size. Septal thickness >3 mm seen in 3.6% of benign ovarian tumors and 57.1% in malignant tumors. Solid component was seen in 12.5% of benign ovarian tumors and 71.4% in malignant tumors. Ascites was seen in 57.1% of malignant ovarian tumors. The mean value of serum CA-125 is 37.2 U/ml among benign ovarian tumors and 119.14 U/ml among malignant tumors. The mean RMI value is 46.55 among benign ovarian tumors and 776.57 among malignant tumors. In benign ovarian tumors 57.5% were serous cyst adenoma and 27.5% were mucinous cyst adenoma. In malignant ovarian tumor 28.6% were serous cyst adenocarcinoma and 28.6% were granulosa cell tumor. Raised CA125 value in postmenopausal women will suggest malignancy. RMI is calculated based on USG findings, CA-125 levels in postmenopausal women, which is a simple method to assess the risk of malignancy and to guide the patient to gynaecological oncologist for further management.
Keywords: Septal thickness, ovarian tumors, malignant tumors.

Introduction

Pelvic mass is often confronted by the gynaecologist with the dilemma of differentiating malignant tumors from benign. When evaluating on pelvic mass, ovarian cancer should be considered as an differential diagnosis which is the most frequent indication for referral [1, 2] . Ovarian cancer is accepted as a “silent killer” as it is believed that majority of patients are diagnosed in late stage [3] and is the favourite site to get metastatic deposits from other cancers [4] . About 30% of female genital cancers are of ovarian origin. It is the fourth leading cause of death among cancer deaths in females and is the second most common gynaecological cancer in the developed countries [4, 5] . Ovarian cancer is an important cause of morbidity and mortality, especially in the middle aged women. About 80% are benign, and occur mostly in younger women between the ages 20 and 45 years, whereas 20% are malignant seen in postmenopausal women [6] . 37. Ovarian tumors are generally difficult to detect until they are advanced in stage, as the symptoms are vague and manifests late [2] . With increasing age, the incidence of malignancy rises. The overall risk of a primary ovarian neoplasm being malignant increases from 13 percent in premenopausal women to 45 percent in postmenopausal women [7] . Ovarian cancer has an age-adjusted incidence of 12.5 per 100,000 women and there is a 1.6 percent lifetime risk of dying from ovarian cancer [8, 9] . The standard evaluation of ovarian masses include history, clinical examination, ultrasound, tumor markers and calculating risk of malignancy index. Other imaging techniques used are Color Doppler, Computerized Tomography (CT) and Magnetic Resonance Imaging (MRI) Final diagnosis is attained by laparoscopy or laparotomy and final confirmation is only with histopathology [1] . The aim of the present study is to know the prevalence of various ovarian tumors and their clinical presentations. Standard management for patients with tumor clinically localized to the ovary includes comprehensive surgical staging to guide subsequent need for further adjuvant treatment and to provide prognostic information. For patients with metastatic disease, numerous retrospective and prospective studies have shown that the extent of residual disease after surgical debulking is a significant predictor of

both progression free and overall survival. More recently, intraperitoneal chemotherapy has shown significant survival benefits over standard intravenous chemotherapy in metastatic disease that has been optimally debulked at time of initial surgical exploration, confirming the importance of aggressive surgical tumor resection at the time of initial diagnosis [10] .

Materials and Methods

Study Design This is a hospital based prospective study conducted in the Department of Gynaecology.

Inclusion criteria

- Ovarian tumors in women >15 years of age.
- All the cases of ovarian tumors diagnosed incidentally during the various gynaecological surgeries.
- Pregnancy with ovarian tumors.

Exclusion criteria

- Non-neoplastic cystic lesions like endometriotic cysts, follicular cysts and Corpus luteal cysts .
- Specimens without the desired information.

Methodology

87 randomly selected women with presumptive diagnosis of ovarian mass fulfilling the inclusion criteria were taken for the study. Evaluation was based on detailed history, like mass per abdomen, pelvic pain, abdominal pain, urinary urgency, frequency and abdominal bloating. General clinical examination and pelvic examination was done. Transabdominal or Transvaginal ultrasound examination as part of initial workup of ovarian mass was done. Colour Doppler, if needed CT/MRI was done depending upon necessity. CA125 is a preliminary marker which is done in all cases, if required other tumor markers are considered depending on the age and USG findings (Beta-HCG, CEA, AFP, LDH). Risk of malignancy index is numeric score calculated based on tumor marker CA125, multiplied by menopausal score and ultrasound morphology score. The formula used was RMI=U x M x CA125 and threshold probability of malignancy taken here is 200. U derives 5 ultrasound features suggestive of malignancy including multilocularity, presence of solid areas, bilaterality, presence of ascites, and extra ovarian tumors /evidence of metastases. U of 1 if none or one of these findings was detected and score of 3 if two or more of these features were present.

CA125 = Serum CA125 in U/ml.

M = 1 if premenopausal, 3 if postmenopausal.

The patients who were symptomatic or asymptomatic with size less than 6 cms, with RMI either clinically or in ultrasound were followed up for 3 to 6 months. Follow up was done for any increase in symptoms or new symptoms suggestive of malignancy, transabdominal or transvaginal scan for size of mass and vascularity, and any lymph node enlargement. Elevated CA 125 and RMI were planned for surgical management. For patients with high risk of malignancy, comprehensive surgical staging was done. Final confirmation of diagnosis was done with histopathology and further management was planned, accordingly which included hysterectomy, chemotherapy and radiation therapy.

Statistical analysis

1. The results were subjected to appropriate statistical analysis.
2. Data was collected, analyzed and tabulated.
3. Statistical analysis was done using Microsoft Excel.
4. Chi square test was used to find significance among study parameters.
5. Chi-Square test is applied to compare proportions between groups, if the expected cell frequencies is less than five then Fisher's Exact Chi-Square test is used. SPSS Version 22.0 is used to analyze the data.

Results

A total of 1995 women were operated for various gynaecological problems. Out of which 87 women fulfilling inclusion criteria were included as study group, giving an incidence of 4.4%. Out of 87 women with ovarian tumors, 80 were benign tumors and 7 were malignant tumors In the present study, 68.8% of benign ovarian tumor seen in 20-45 yrs age group, 27.4% were seen in women >45 yrs age. Whereas 71.4% of malignant tumor were seen in women >45 yrs age, 14.3% were seen in 20-45 and < 20 yrs of age group each. P value < 0.0141, hence there is statistically significant correlation between age group and ovarian masses. In the present study, 66.3% of benign tumor were seen in multipara, 21.3% were seen in primipara and 12.4% were seen in nulliparous women. Whereas 71.4% of malignant tumor were seen in multipara, 14.3% of tumors is seen in primipara and nulliparous each. Most common (80%) clinical presentation for benign tumors was pain abdomen, 25% presented with mass per abdomen, menstrual disturbances were seen in 7.5%, dysmenorrhea in 7.5% and urinary disturbance were seen in 7.5% of women. 42.9% of malignant ovarian tumors were presented with pain abdomen, 28.7% with mass per abdomen, dysmenorrhea was seen in 14.2% and urinary disturbances were seen in 14.2% of women. In the present study, 90% of benign tumors were seen in reproductive age group, 10% were seen in postmenopausal women. Whereas 28.6% were seen in reproductive age women, 71.4% of malignant tumors were seen in postmenopausal women. In the present study, 87.5% of benign tumors were unilateral, 12.5% were bilateral. Whereas 71.4% of malignant tumors were unilateral, 28.6% were bilateral. In the present study, 27.5% of benign tumors were 10 cms in size. Whereas 71.4% of malignant tumor were >10 cms, 28.6% were 7-10 cms in size. In

the present study, 46.3% of benign tumors had septations on USG. All (100%) malignant tumors had septation on USG. In 53.9% of benign ovarian tumor there was no septations. Septations are present in 42.3% benign tumor with thickness of 3 mm. In 42.9%of malignant tumors the thickness of septations was 3 mm. In the present study, 87.5% of benign tumors were cystic, 71.4% of malignant tumors has solid components. In the present study, there was no ascites in women with benign tumors.

Ascites was seen in 57.1% of malignant tumors

In 78.7% of benign tumors CA-125 was < 35U/ml and in 21.3% cases it was between 35-200 U/ml. In 14.3% it was < 35U/ml in 57.1% of malignant ovarian tumors CA-125 was > 200, in 28.6% CA-125 was 35-200. In 60% of benign tumors RMI was 200. One women with 45 yrs with malignant ovarian tumor laparotomy with surgical staging followed by TAH with BSO and infracolic omentectomy was done. On Histopathological examination 2 cases were diagnosed as serous cyst adenocarcinoma with stage 1A and 1B, 1 case of mucinous cyst adenocarcinoma stage 1B and 2 cases of granulosa cell tumor stage 1 B and 1 C. Total number of ovarian tumors in the present study were 87, out of which benign ovarian tumors were 80 and malignant ovarian tumors were 7. Different Histopathological types of benign tumors showed that the commonest tumor was serous cystadenoma (57.5%) followed by mucinous cystadenoma (27.5%), mature cystic teratoma (5%), papillary serous cystadenoma (5%), granulosa cell tumor (1.25%), brennertumor (1.25%) and ovarian fibroma (2.5%) In malignant ovarian tumors 42.8% were granulosa cell tumors followed by serous cyst adenocarcinoma (28.5%), mucinous cyst adenocarcinoma (14.3%), juvenile granulosa cell tumor (14.3%), immature teratoma (14.3%).

Table 1: Malignant tumors - Histopathological analysis

Histopathological analysis	Malignant	
	n/t	%
Serous cystadenocarcinoma	2/7	28.6
Mucinous cystadenocarcinoma	1/7	14.3
Granulosa cell tumor	2/7	28.6
Juvenile granulosa cell tumor	2/7	14.3
Immature teratoma	1/7	14.3

Discussion

Incidence of ovarian tumors is approximately 5 to 8% in various studies. A total of 1995 women were operated for various gynaecological problems. Out of which 87 women with ovarian tumors fulfilling inclusion criteria were included in the study group, giving an incidence of 4.4%.

In present study, 92% were benign tumors, 8% were malignant. The high rate (92%) of benign tumors in this study is explained by the fact that most of patients were of reproductive and perimenopausal age. Malignant tumors are encountered mainly in postmenopausal women. Ovarian tumors can occur at any age i.e. before menarche to menopause. Majority of patients are between 20-45 yrs age group with benign tumors. Malignant tumors are commonly seen in both extremes of age. In the present study, mean age distribution is 39.1±9.88yrs which correlates with the study done by Bouzari et al (39.9±9.3yrs). In the present study group, majority of women with ovarian tumor were multigravida (71.4%). In the present study group, 51.3% of benign tumors presented with pain abdomen. 25% with mass per abdomen. 7.5% of benign ovarian tumor had history of dysmenorrhea and 7.5% had urinary disturbances In the present study group, 42.9% of malignant ovarian tumor had history of pain abdomen and 28.7% had mass per abdomen, 14.2% had dysmenorrhea, 14.2% had urinary disturbances. Majority of the patients presented with pain abdomen in both benign and malignant ovarian tumor. Benign tumors usually attain a significant size and cause vague pain and discomfort, which is the commonest clinical presentation. Malignant tumor have rapid growth, hemorrhage due to neo vascularization, and may responsible for pain abdomen. Mass per abdomen seen in both benign and malignant ovarian tumors, if it is >10 cms size. Ovarian tumor cause pressure on the bladder leading to urinary disturbance in some women. In the present study group, benign were seen among 90% of premenopausal women and 10% of postmenopausal women. In the present study, malignant were seen in 28.6% of premenopausal women and 71.4% of postmenopausal women. Malignant tumors that occur in younger women are mostly germ cell in origin. In present study, only 2 women with 10 cms. In malignant ovarian tumors 28.6% were 7-10 cms of size, 71.4% were >10 cms. In the present study, 77.5% of benign tumors are 10 cms. With increasing availability of ultrasonography many cases are diagnosed early before they attain a large size. In the present study, septal thickness >3 mm is seen in 3.6% of benign ovarian tumors and 57.1% of malignant tumor. Majority of the benign tumors are unilocular or multilocular with thin septations. Presence of thick septations on ultrasonography highly suggestive of malignancy, and it is more significant if it shows high vascularity on colour doppler. In the present study, solid components were seen in 12.5% of benign ovarian tumors and 71.4% of malignant tumors. Solid components in a benign tumor are uncommon, seen only in mature cystic teratoma. Solid components in a cyst or solid tumors with increased vascularity highly suggestive of malignancy until proved histopathologically. Presence of ascites along with other features of malignancy on ultrasonography suggest advanced disease. In the present study, the mean value of serum CA -125 is 37.2U/ml among benign ovarian tumors and 119.14 U/ml among malignant tumors. CA-125 is a

glycoprotein seen in epithelial ovarian tumor. High levels of CA-125 indicates malignant epithelial ovarian tumor and serves as a tumor marker during follow up. Raised CA-125 levels along with cyst in ovary suggest careful evaluation to rule out malignancy in a postmenopausal women. RMI values are helpful to assess the risk of malignancy and to aid in referring the patient to a cancer center for primary surgery. In the present study, among benign tumors 57.5% were serous cyst adenoma, 27.5% were mucinous cyst adenoma, 5% mature cystic teratoma, 5% were serous cyst adeno fibroma, 1.25% were brennertumor, 2.5% were ovarian fibroma and 1.25% were granulosa cell tumor. Epithelial tumors of the ovary are the most common benign ovarian tumors. 50% of epithelial ovarian tumors are serous type as quoted in the literature followed by mucinous tumors. Commonest benign germ cell tumors of ovary is mature cystic teratoma seen in all age groups of women. In the present study, among malignant ovarian tumors 28.6% were serous cystadenocarcinoma, 14.3% were mucinous cystadenocarcinoma, 28.6% were granulosa cell tumor, 14.3% were juvenile granulosa cell tumor and 14.3% were immature teratoma.

Conclusion

Most of the malignant ovarian tumors present late because of their asymptomatic nature, and lack of ideal screening method leading to high mortality rate. It is important to do pelvic examination and USG to assess ovarian volume in all postmenopausal women, presenting to OPD for various reasons. Raised CA-125 value in postmenopausal women will suggest malignancy. RMI is calculated based on USG findings, CA-125 levels in postmenopausal women, which is a simple method to assess the risk of malignancy and to guide the patient to gynaecological oncologist for further management.

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