Original Research Article

Correlation between clinical presentation with USG findings and per-operative findings of ovarian tumor

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ABSTRACT

Background: Ovarian tumors present with diverse clinical symptoms and accurate diagnosis is essential for effective management. Ultrasound (USG) is a key diagnostic tool, providing insights into tumor characteristics such as size, location and morphology. However, variations may exist between clinical presentation, USG findings and intraoperative findings. This study aimed to correlate clinical, USG and preoperative findings of ovarian tumors.
Methods: This cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Bangabandhu Sheikh Mujib Medical University, Dhaka, between March and August 2014. A total of 50 women with provisional diagnoses of ovarian tumors, admitted during this period, were included. A purposive consecutive sampling technique was applied and data analysis was performed using MS Office tools.
Results: This cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Bangabandhu Sheikh Mujib Medical University, Dhaka, between March and August 2014. A total of 50 women with provisional diagnoses of ovarian tumors, admitted during this period, were included. A purposive consecutive sampling technique was applied and data analysis was performed using MS Office tools.
Conclusions: Common clinical presentations of ovarian tumors include lower abdominal lump, distension, vague discomfort, occasional pain, severe pain, appetite loss, dyspepsia and weight loss. Histopathological patterns include serous and mucinous cyst adenomas, mature teratomas, mucinous cyst adenocarcinomas and serous. Pelvic exams and transvaginal ultrasounds help detect ovarian neoplasms.

Keywords: Clinical presentation, Correlation, Ovarian tumor, Per-operative findings, Ultrasonography

INTRODUCTION

Ovarian tumors are among the most frequently encountered conditions in gynecological practice, where early differential diagnosis plays a crucial role in the medical management of each patient.[1] Transvaginal ultrasound examination is an excellent diagnostic tool for differentiating between benign and malignant ovarian masses when conducted by experienced examiners using subjective assessment.[2] The Risk of Malignancy Index (RMI), which considers ultrasound parameters, menopausal status and CA125 levels, along with the ultrasound-based risk prediction models developed by the international ovarian tumor analysis (IOTA) group, can assist less-experienced clinicians in distinguishing between benign and malignant adnexal masses.[3,4] Adnexal masses deemed benign can typically be managed with follow-up, whereas a strong suspicion of malignancy necessitates management at an oncological referral center.[5,6] The IOTA ADNEX (Assessment of Different NEoplasias in the adneXa) model not only calculates the percentage risk of an adnexal mass being benign or malignant but also assesses the likelihood that the mass is benign, borderline, Stage I primary invasive malignancy, Stage II-IV primary invasive malignancy or a metastasis in the ovary from another primary tumor.[7] European and

North American gynecologists and radiologists have developed a management system for adnexal masses based on specific ultrasound features or the risk of malignancy calculated by ADNEX.[8] This system called the Ovarian-Adnexal Reporting and Data System (O-RADS), classifies masses into different risk groups for malignancy and provides management recommendations for each risk category.[9] The IOTA group has also described the typical ultrasound appearances of various adnexal pathologies, including different histological types of malignancy.[10]

Ultrasound can also be used to assess the extent of malignant disease in the pelvis.[11] Its diagnostic performance is comparable to that of CT for evaluating pelvic and abdominal tumor spread in females with epithelial ovarian cancer.[12] However, a small percentage (8–10%) of ovarian tumors remain difficult to classify as either malignant or benign. For these cases, the use of 3D ultrasound or contrast media has been suggested, though with limited additional value.[13] MRI may play a role in further classifying masses with an unclear ultrasound diagnosis. The objective of this current study was to correlate clinical, USG and preoperative findings of ovarian tumors.

General objective

To correlate clinical, USG and preoperative findings of ovarian tumor.

Specific objective

To find out the profile of the cases. To find out various clinical presentations of the patients of ovarian tumors. To note the USG finding of all the cases. To note the per-operative findings of these patients.

METHODS

Study type

This cross-sectional observational study.

Study place

The study was conducted in the Department of Obstetrics and Gynaecology at Bangabandhu Sheikh Mujib Medical University, Dhaka, Bangladesh.

Study duration

The study was conducted over six months from March 2014 to August 2014.

The study population comprised patients clinically diagnosed with ovarian tumors and confirmed by ultrasonography (USG). Due to time constraints, a purposive consecutive sampling method was employed, resulting in a sample size of 50 patients.

Inclusion criteria

The inclusion criteria were pelvic masses diagnosed as ovarian tumors,

Exclusion criteria

Other pelvic masses were excluded.

Data collection

Data were collected using a pre-designed data collection sheet and analyzed using the MS Office tools, with descriptive statistics and Chi-square analyses applied to relevant variables.

Ethical approval

Ethical approval was obtained from the Bangladesh College of Physicians and Surgeons and informed verbal consent was secured from all participants after explaining the study's aims, procedures, alternatives, risks and benefits in the local language, ensuring confidentiality and the study's contribution to improved patient care.

RESULTS

In this study, Figure 1 shows the age distribution of the study patients. The highest number of patients (32%) were in the 31-40 years' age group, with a mean age of 38.2 years. Figure 2 illustrates the menstrual cycle patterns of the study patients.

Among the 50 cases, 37 (74%) had a regular cycle with average blood flow, 3 (6%) had an irregular cycle, 8 (16%) were menopausal and 2 (4%) were prepubertal. The clinical presentation of the 50 patients revealed that 80% presented with a lump in the lower abdomen, while 30% experienced feelings of abdominal distension.
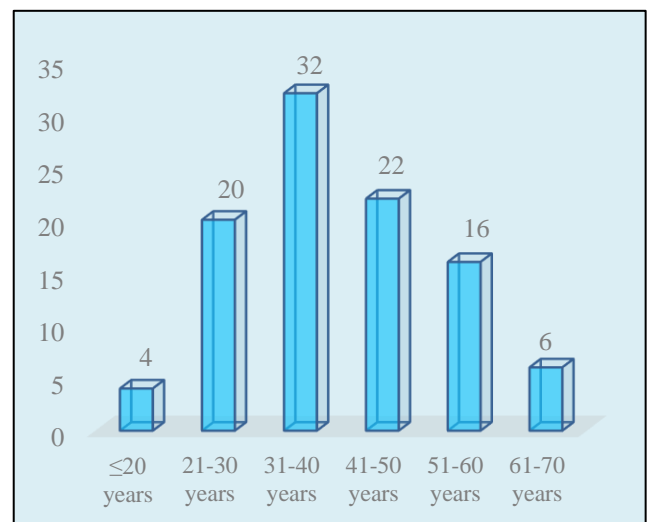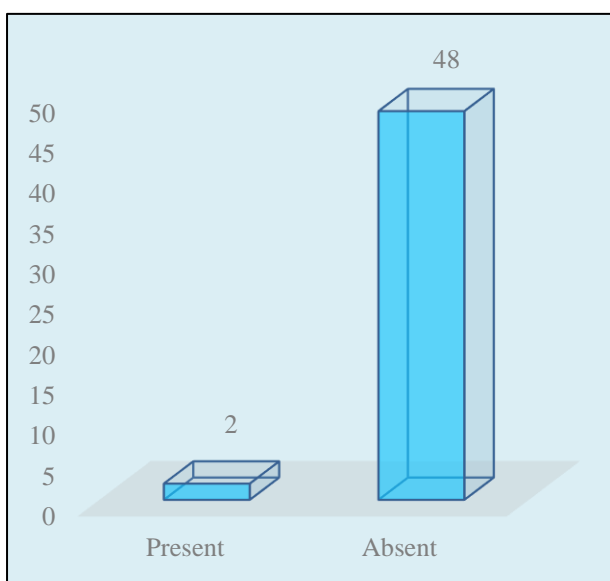

Figure 1: Age distribution of the patients (n=50).
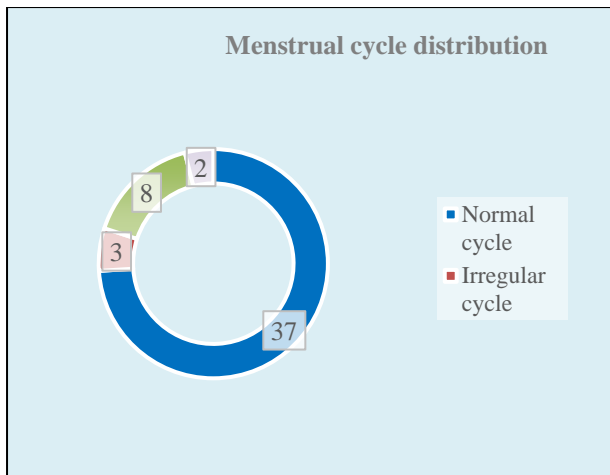
Figure 2: Menstrual cycle of the patients (n=50).
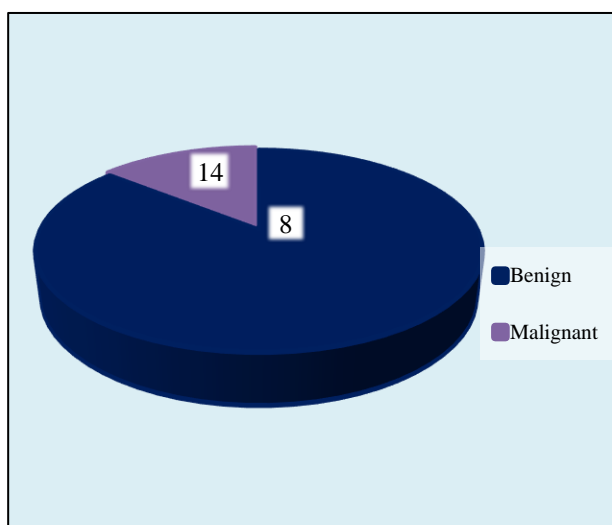
Figure 3: Nature of tumour among patients (n=50).

Figure 4: Family history of ovarian neoplasm (n=50).

Vague abdominal discomfort and occasional pain in the lower abdomen were reported by 24% and 10% presented with sudden severe lower abdominal pain accompanied by nausea and vomiting.

Additionally, 20% reported loss of body weight and 10% had symptoms such as loss of appetite and dyspepsia. Incidental diagnoses were noted in 8% of the patients. Upon physical examination, 48% had mild anemia, 42% moderate anemia and 10% severe anemia.

Abdominal masses were detected in 86% of cases, with 50% cystic, 20% solid and 16% mixed in consistency.

Regarding mass size, 66% were between 8-10 cm and 20% exceeded 10 cm. Mass mobility was reported in 56% as mobile and 30% as restricted, while 66% had regular and 20% irregular surface characteristics.

Tenderness was noted in 14% of the cases and 10% had ascites (Table 1). On vaginal examination of the patients, 82% had a normal uterine size, while 10% exhibited a bulky uterus and 8% had an atrophic uterus. The majority, 86%, presented with fullness in the fornix, while 10% had a free fornix.

A nodule in the pouch of Douglas was detected in 4% of the patients. Furthermore, 86% had a mass separated from the uterus, whereas in 14% of cases, the mass was not separated from the uterus (Table 2).

Transabdominal ultrasonographic features of the patients revealed that 82% had unilateral masses, while 18% had bilateral involvement. In terms of consistency, 64% of the masses were cystic, 20% were solid and 16% were partly solid and cystic.

Additionally, septations were observed in 38% of the cases, papillae in 40% and ascites in 12% (Table 3). Table 4 shows laparotomy findings, with 41 cases (82%) presenting with unilateral neoplasms and 9 cases (18%) with bilateral neoplasms.

Neoplasms were solid in 10 cases (20%), cystic in 32 cases (64%) and mixed in 8 cases (16%). Additionally, 6 cases (12%) had tumors adherent to surrounding structures, free peritoneal fluid was found in 7 cases (14%) and peritoneal seeding was observed in 3 cases (6%).

Table 5 shows the distribution of tumors among the patients indicating that serous cyst adenomas were the most prevalent, accounting for 46% of cases. Mucinous cyst adenomas followed at 26%, while mature teratomas represented 10%.

Other tumor types included ovarian fibroma (2%), serous cyst adenocarcinoma (8%), mucinous cyst adenocarcinoma (4%), papillary serous cyst adenoma (2%) and dysgerminoma (2%).

Table 1: Clinical presentations.

Physical examination	N	%
Symptoms		
A lump in the lower abdomen	40	80
A feeling of abdominal distension	15	30
Occasional abdominal pain/discomfort	12	24
Sudden severe lower abdominal pain	5	10
Nausea-vomiting, loss of appetite	5	10
Loss of body weight	10	20
Incidental diagnosis	4	8
Signs anemia		
Mild	24	48
Moderate	21	42
Severe	5	10
Mass in the abdomen		
Consistency	43	86
Cystic	25	50
Solid	10	20
Mixed	8	16
Size of the mass		
8-10 cm	33	66
>10 cm	10	20
Mobility		
Mobile	28	56
Restricted	15	30
Surface		
Regular	33	66
Irregular	10	20
Tenderness	7	14
Ascites	5	10

Table 2: Findings on vaginal examination.

Findings	N	%
Uterine size		
Normal	41	82
Bulky	5	10
Atrophic	4	8
Fornix		
Full	43	86
Free	5	10
Nodule in the pouch of Douglas	2	4
Mass is separated from the uterus	43	86
Mass is not separated from the uterus	7	14

Table 3: USG (transabdominal) features.

Features	N	%
Unilateral	41	82
Bilateral	9	18
Consistency		
Solid	10	20
Partly solid & cystic	8	16
Cystic	32	64
Septation	19	38
Papillae	20	40
Ascites	6	12

Table 4: Laparotomy findings.

Features	N	%
Unilateral	41	82
Rt sided	20	40
Lt sided	21	42
Bilateral neoplasm	9	18
Hemorrhagic Peritoneal fluid	3	6
Consistency		
Solid neoplasm	10	20
Cystic	32	34
Partly solid partly cystic	8	16
Free peritoneal fluid	7	14
Peritoneal seedling	3	6
Size		
<8cm in diameter	8	16
8-10 cm in diameter	32	64
> 10 cm in diameter	10	20
Cut section		
Unilocular cystic	21	42
Multilocular cystic	9	18
Fluid		
Serous	23	46
Mucoid	12	24
Hemorrhagic	3	6
Sebum and hair	5	10

Table 5: Histological findings.

Tumors	N	%
Serous cyst adenoma	23	46
Mucinous cyst adenoma	13	26
Mature teratoma	5	10
Ovarian fibroma	1	2
Serous cyst adenocarcinoma	4	8
Mucinous cyst adenocarcinoma	2	4
Papillary serous cyst adenoma	1	2
Dysgerminoma	1	2

DISCUSSION

Ovarian tumors are more diverse than those from any other organ. Ovarian malignancy is increasingly significant, ranking as the third most common cancer in the female genital tract and the leading cause of cancer-related death among women. The lack of a standard screening method for early detection often results in patients presenting with advanced-stage ovarian cancer.

This study revealed that approximately 80% of ovarian neoplasms are benign, while 20% are malignant. Ovarian tumors can occur in females of all ages, with no age group being immune. Notably, about 20% of ovarian tumors in the first decade of life are malignant. The peak incidence of ovarian tumors occurs between ages 20 and 44, while malignant ovarian tumors are most common in individuals aged 45 to 65, with a mean age of 55 years. In this study, participants' ages ranged from 10 to 70 years, with the highest incidence observed in the 31–40-year age group (32%). The average age of incidence was 37.2 years, aligning with Dijmarescu et al, who reported the highest incidence in the same age range, specifically around 30 years.[14] In our study of 50 patients, 80% presented with a lump in the lower abdomen and 30% reported abdominal distension.

Vague abdominal discomfort and occasional lower abdominal pain were noted in 24%, while 10% experienced sudden severe pain with nausea and vomiting. Additionally, 20% reported weight loss and 10% had symptoms like loss of appetite and dyspepsia. Similar findings were reported in a recent study, although the frequencies differed slightly from those observed in our

participants.[15] In this study, vaginal examination revealed that 82% of patients had a normal uterine size, while 10% had a bulky uterus and 8% had an atrophic uterus. Most patients (86%) presented with fullness in the fornix and 10% had a free fornix. A nodule in the pouch of Douglas was found in 4% of cases. Additionally, 86% had a mass separate from the uterus, while 14% had a mass that was not separated. In some previous studies such features were mentioned frequently.[3,4]

In our study, the transabdominal ultrasound showed that 82% of patients had unilateral masses, while 18% had bilateral involvement. Of the masses, 64% were cystic, 20% were solid and 16% were partly solid and cystic. Septations were present in 38% of cases, papillae in 40% and ascites in 12%. Comparable findings were observed in some other studies.[16,17]

Laparotomy findings revealed that 41 cases (82%) presented with unilateral neoplasms and 9 cases (18%) with bilateral neoplasms. Among the neoplasms, 10 cases (20%) were solid, 32 cases (64%) were cystic and 8 cases (16%) were mixed. Additionally, 6 cases (12%) had tumors adherent to surrounding structures, free peritoneal fluid was found in 7 cases (14%) and peritoneal seeding was observed in 3 cases (6%).

Espada et al, reported that DWMRI exhibited a sensitivity of 75% and specificity of 76% for evaluating small and large bowel mesentery, as well as hepatic parenchyma, hepatic hilum or surface implants>2 cm.[18] The sensitivity for diaphragm involvement was 37%, with a specificity of 92%.

Additionally, DWMRI demonstrated a sensitivity of 75% and specificity of 76% for detecting miliary visceral peritoneum implants. Similarly, Michielsen et al, found that DWI/MRI showed high specificity for all peritoneal cavity parameters assessed, except for small bowel mesentery (71%).[19] The sensitivity was notably high for the right diaphragm (92%) and small bowel mesentery (100%), but lower for the left diaphragm (67%), hepatic surface (75%) and small bowel serosa (50%).

This study was a single-centered investigation with a small sample size and it was conducted over a brief period. Therefore, the findings may not accurately represent the broader situation in the entire country.

CONCLUSION

The common clinical presentations of ovarian tumors include a lump in the lower abdomen, a feeling of abdominal distension, vague abdominal discomfort, occasional lower abdominal pain, sudden severe pain, loss of appetite, dyspepsia and weight loss. Histopathological patterns of ovarian tumors often include serous cystadenoma, mucinous cystadenoma, mature teratoma, serous cystadenocarcinoma and mucinous cystadenocarcinoma. Ovarian malignancy is considered a silent killer. Raising awareness through mass media may aid in early diagnosis, improving outcomes for women. Ovarian malignancies are more common in the extremes of age, so teenage girls should undergo routine gynecological check-ups every 1-2 years. Pelvic examinations and transvaginal ultrasounds can help in the early detection of ovarian neoplasms. It is essential that every patient diagnosed with an ovarian tumor, whether benign or malignant, be carefully reevaluated through histopathological findings to ensure accurate diagnosis and treatment.

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