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Original Research Article

Clinicopathological spectrum of gynecological pelvic masses: a cross-sectional study

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ABSTRACT

Background: Pelvic mass lesions are a commonly encountered entity in gynecological practice. These masses may be uterine or adnexal, benign or malignant. Clinicians have to be aware of their differential diagnosis to triage the patients and ensure optimum therapeutic approach. The objectives of this study were to study the diverse clinical spectrum of gynecological pelvic masses and to correlate the preoperative diagnosis based on clinical examination and ultrasonography with intraoperative surgical findings and histopathological examination.
Methods: This was a cross sectional observational study on 114 patients with a diagnosis of pelvic mass who underwent laparotomy. All the patients were evaluated by a complete history, general abdominal and pelvic examination, followed by ultrasonography. These preoperative findings were then correlated with surgical findings and histopathological diagnosis.
Results: 48% 0f the patients were in the age group of 41-50 years. The most common presenting complaint was lower abdominal/ pelvic pain seen in 78% of the patients. Uterine masses mostly presented as abdominal pain, abdominopelvic mass, menstrual complaints whereas ovarian masses presented with vague G. I symptoms or were asymptomatic. 37% of all masses were leiomyomas. There were 16 uterine malignancies and 14 ovarian cancer cases. Preoperative USG correlated well with histopathological diagnosis.
Conclusions: A methodical approach consisting of a proper history, clinical examination, imaging studies and correct interpretation of diagnostic procedures is necessary for the triage and optimum management of gynecologic pelvic masses.

Keywords: Adnexal masses, Gynecological pelvic masses, Histopathological diagnosis, Ovarian masses, Ultrasonography, Uterine masses

INTRODUCTION

Pelvic mass lesions are commonly encountered in gynecological practice among women of all ages. About 20% of women develop a pelvic mass at some time in their lives.[1]

A pelvic mass may be gynecologic or non-gynecologic in origin and maybe benign or malignant in nature. Gynecologic pelvic masses are either uterine or adnexal, with leiomyomas and ovarian neoplasms being the commonest.[1,2] It is important for clinicians to be aware of the differential diagnosis of these masses. Assessing the characteristics of the masses especially with regard to the possibility of malignancy is necessary before doing a surgical intervention like laparotomy or laparoscopy.

Triage of pelvic masses is needed so that malignant or suspected malignant conditions can then be referred to a gynecologic oncologist for optimum surgical staging and thus ensure decreased morbidity, mortality and improved overall survival for such patients.[3,4]

The evaluation of pelvic masses includes a thorough history, clinical examination, imaging studies like USG, CT scan or MRI and tumour markers. Ultrasound examination is the standard diagnostic test for evaluation of a pelvic mass. USG can diagnose the possible origin of the mass- whether uterine or adnexal and delineate features suggestive of malignancy.[5] Transvaginal sonography (TVS) along with colour doppler gives better results for assessing endometrial thickness, ovarian morphology and vascularity.[6,7] Final diagnosis of pelvic masses is only reached at laparotomy or laparoscopy followed by histopathological examination of the resected specimen. The objectives of this study were to study the diverse clinical spectrum of gynecological pelvic masses during the study period, and to correlate the clinical examination and pre-operative ultrasound imaging findings with intraoperative surgical findings and histopathological examination.

METHODS

This research was a cross-sectional observational study conducted in Government Medical College, Ernakulam, a tertiary level teaching hospital in Kerala. It covered a period of one year from January 2013 to December 2013. Patients with a diagnosis of pelvic mass who subsequently underwent laparotomy were included in the study. Pregnant patients including ectopic pregnancies and those in whom no surgical intervention was done, were excluded from the study.

In this study period, 114 patients underwent laparotomy for pelvic masses and data of these 114 patients were analysed for this research work. Detailed history of all the patients included their age, parity, menstrual history, menstrual irregularities, complaints of abdominal pain, mass or distension, dyspepsia, past history and family history were taken. Examination of the patients included general, systemic, abdominal and bimanual pelvic examination to look for size, consistency, surface, mobility and tenderness of the masses.

On clinical examination masses with regular smooth surface, cystic, mobile were presumed to be benign. Hard, solid consistency masses with fixity or restricted mobility and ascites were presumed to be malignant. Transabdominal and transvaginal ultrasonography with colour doppler examination was performed by experienced sonologists in the hospital using GE LOGIQ 500MD MR.[3] Features suggestive of malignancy were masses with solid areas, multiloculated cysts with thick septae, irregular margins, papillary excrescences, abnormal colour flow patterns with R. I < 0.4 and P. I < 1.0 and ascites.[7] All cases with suspicion of malignancy were referred to the hospital Oncosurgeon for laparotomy and surgical staging. The preoperative physical examination and USG findings were correlated with intraoperative findings and confirmed with histopathological diagnosis.

RESULTS

Table 1 shows the age wise distribution of the subjects in the study- majority being in the age group of 41-50. Only 2 patients were older than 70 years.

Table 1: Age wise distribution of pelvic masses.

Age group (years)	No. of patients	Percentage (%)
21-30	8	7.01
31-40	26	22.80
41-50	55	48.24
51-60	16	14.03
61-70	7	6.14
> 71	2	1.75
Total	114	100

Table 2: Distribution of subjects by menstrual status.

Menstrual status	No. of patients	Percentage (%)
Premenopausal	83	72.80
Postmenopausal	31	27.20

As shown in Tables 3a and 3b, out of the total 114 patients in the study, the most common presenting complaint in 75 (65.79%) patients were lower abdominal or pelvic pain and 98 (85.96%) of the patients had a pelvic or abdominopelvic mass on examination.

Table 3(a): Clinical presentation-symptoms.

Symptoms	No. of patients	Percentage (%)
Lower abdominal/pelvic pain	75	65.79
Mass per abdomen	63	55.26
Abnormal uterine bleeding/postmenopausal bleeding	29	25.43
Abdominal distension, bloating	12	10.52
GI symptoms-dyspepsia, flatulence	11	9.64
Abdominal pain + GI symptoms	16	14.03
Asymptomatic	17	14.91
Infertility	11	9.64

Table 3(b): Clinical presentation: signs.

Signs	No. of patients	Percentage (%)
Pelvic or abdomino pelvic mass	98	85.96
Adnexal fullness	18	15.78
Tenderness	10	8.77
Ascites	8	7.01

In the present study, fibroid uterus was the commonest ultrasonographic finding in 42 out of the 114 subjects followed by benign ovarian masses in 23 patients (Table 4).

Table 4: Distribution of pelvic masses based on pre-operative ultrasonography.

USG diagnosis	No. of patients	Percentage (%)
Fibroid	42	36.84
Adenomyosis	8	7.01
Endometrial polyp	2	1.75
Endometrial carcinoma	12	10.52
Carcinoma cervix	5	4.38
Benign ovarian masses	23	20.17
Malignant ovarian masses	16	14.03
Hydrosalpinx	2	1.75
Tubo0varian mass	2	1.75
Torsion ovary	2	1.75

Table 5: Distribution of pelvic masses according to the site of the lesion.

Site of the lesion	No. of cases	Percentage (%)
Uterine	69	60.52
Ovarian	41	35.96
Adnexal	4	3.50

Table 6: Histopathological diagnosis of the pelvic masses in the study.

Histopathological diagnosis	No. of patients	Percentage (%)
Leiomyoma	44	38.60
Adenomyosis	6	5.26
Benign endometrial polyp	2	1.75
Cervical degenerated polyp	1	0.87
Adenocarcinoma of endometrium	10	8.77
Malignant mixed mullerian tumour	1	0.87
Endometrial stromal sarcoma	1	0.87
Carcinoma cervix	4	3.50
Fibroma of ovary	2	1.75
Mature cystic teratoma	4	3.50
Serous cystadenoma	11	9.64
Mucinous cystadenoma	3	2.63
Endometriosis	5	4.38
Torsion ovary	2	1.75
Hydrosalpinx	2	1.75
Tubo Ovarian mass	2	1.75
Serous Cystadenocarcinoma	9	7.89
Mucinous cystadenocarcinoma	3	2.63
Kruckenberg tumour	1	0.87
Clear cell carcinoma	1	0.87

Two cases of hydrosalpinx and 2 cases of complex tubo-ovarian masses made up the 4 adnexal masses in the study (Table 5).

On histopathological examination, the most common finding was leiomyoma. Study also had 1 each of the rare cases like malignant mixed mullerian tumour and endometrial stromal sarcoma. Serous cystadenocarcinoma was the most common ovarian malignancy. There was one case of Kruckenberg's tumour (Table 6).

There were 16 cases of uterine malignancy and 14 cases of ovarian malignancy. All these cases were in patients over the age of 40. In the present study, there were no cases of malignant germ cell tumours (Table 7).

Table 7: Distribution of benign and malignant pelvic masses.

Pelvic mass	Benign number, percentage (%)	Malignant number, percentage (%)
Uterine	53 (76 %)	16 (23%)
Ovarian	27 (66%)	14 (34%)
Adnexal	4 (100%)	0

Two cases diagnosed as adenomyosis on USG were found to be leiomyomas on HPE. 16 cases of ovarian malignancy were reported on USG, however only 14 cases were confirmed to be malignant on HPE. One case reported as carcinoma cervix on TVS, was confirmed as a degenerated cervical polyp on HPE (Table 8).

Table 8: Correlation between preoperative USG diagnosis and Histopathological diagnosis.

Clinical condition	USG diagnosis	Histopathological diagnosis (gold standard)
Leiomyoma	42	44
Adenomyosis	8	6
Endometrial polyp	2	2
Endometrial carcinoma	12	10
Carcinoma cervix	5	4
Benign ovarian tumour	23	25
Malignant ovarian tumour	16	14
Hydrosalpinx	2	2
Tubo ovarian mass	2	2
Torsion ovary	2	2

DISCUSSION

The evaluation of pelvic masses assumes importance due to the fear and anxiety driven by the potential of missing a malignancy. This study focussed on the clinicopathological spectrum of gynecological pelvic masses - both uterine and adnexal. As given in Table 1,

48% of the patients were in the age group of 41-50, representing the maximum. During the study period, we did not have any cases of malignant germ cell tumour. 23% of the uterine masses were malignant and all these were also in patients over 40 years of age. Only 2 patients were older than 70 years and both of them had ovarian malignancy.

75% of the patients presented with lower abdominal/ pelvic pain, making it the most common presenting complaint. Menstrual abnormalities, lower abdominal pain, dysmenorrhoea were the complaints in patients with clinical diagnoses of uterine pathologies like leiomyoma, adenomyosis, endometrial polyp. Vague G. I. symptoms like bloating, gaseous distension, indigestion, changes in appetite were the common complaints in patients with clinical diagnosis of ovarian masses. A thorough abdominal and pelvic examination, including a speculum examination, cervical cytology and bimanual examination is very important in the evaluation of pelvic masses. The mass should be characterised in terms of size, contour, consistency, mobility and tenderness. Hard, irregular masses with restricted mobility increase the clinical suspicion of malignancy. Still, physical examination is not a reliable diagnostic tool. Padilla et. al showed a sensitivity of only 51% for physical examination.[8] Abdominal obesity, cooperation of the patient and experience of the examiner are variables that affect the accuracy of physical examination.[8]

It is observed the most common gynecologic pelvic mass was leiomyoma accounting for 37% of all cases and benign ovarian masses making up 20% of the cases. These findings are consistent with the study by Tripathi etal.[9]

Ultrasonography (USG), both transabdominal and transvaginal have a well-established role in the initial evaluation of a pelvic mass. USG has many advantages being easily available, relatively inexpensive and non-ionising. Leiomyomas are easily diagnosed on USG. In the present study 42 cases of leiomyomas were diagnosed preoperatively by physical examination and USG and 44 cases were confirmed by histopathological examination (HPE), showing a sensitivity of 95.5% and specificity of 61.4%. Study by Eze JC et al showed sensitivity of transvaginal scan (TVS) for diagnosis of uterine leiomyomas to be 94.5%, and specificity of 62.5%.[10]

Out of the 8 cases of adenomyosis diagnosed preoperatively, only 6 were confirmed by HPE. In 12 cases of endometrial carcinoma, TVS done revealed abnormal prominent endometrial echo, growth in the endometrial cavity which had to be confirmed by HPE. TVS with its better resolution can differentiate between a benign ovarian or adnexal mass and a complex mass. Lesions with echogenic solid areas, irregular walls, thick septations, mural nodule, papillary excrescences, bilaterality and ascites along with evidence of neoangiogenesis on colour doppler are features suggestive of a possible malignancy.[11]

Out of the total 45 ovarian and adnexal masses in the present study, the majority 31 were benign and 14 malignant. Serous cystadenocarcinoma was the commonest ovarian malignancy and serous cystadenoma, the most common benign ovarian pathology. USG diagnosed 16 ovarian masses as malignant, while HPE showed 14 as malignant. So, 2 cases were wrongly diagnosed. The low specificity of ultrasound is due to the overlap in the sonographic characteristics of benign pelvic masses like endometriomas, pedunculated leiomyomas, borderline tumours and ovarian malignancies.

CT scan is not a primary imaging modality but can provide information about peritoneal and lymphatic dissemination in cases suspected to be ovarian carcinomas. MRI scan, due to its multiplanar imaging capability is beneficial in poorly visualised, sonographically indeterminate masses and has an almost 100% sensitivity for identifying ovarian malignancy.[12]

Several combined methods for evaluating the risk of ovarian malignancy have been proposed. The risk of malignancy index (RMI) proposed by Jacob et al. uses the ultrasound features, menopausal status and CA 125. Patients with RMI score greater than 200 had 42 times greater risk of cancer.[13] Another modification of the RMI is the ROMA-risk of ovarian malignancy algorithm involving CA 125, HE 4 (Human Epididymis protein 4), and menopausal status, shown to improve the detection rate of ovarian cancers.[14]

CONCLUSION

Doppler A systematic approach is needed in the evaluation and management of gynecologic pelvic masses. A thorough history with consideration of pre-existing risk factors, evaluation of symptoms, detailed clinical examination and correct interpretation of diagnostic and imaging modalities is important to appropriately triage the patients to ones requiring either conservative management or surgery and to those with high suspicion of malignancy that need referral to a gynecologic oncologist.

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