A Clinicopathological Review of Adnexal Masses in a Tertiary Care Centre of Rural Haryana - A Retrospective Study

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ABSTRACT

BACKGROUND

There is a wide range of adnexal masses ranging from functional cyst to infection and even malignancy. Epithelial ovarian tumours are the most common benign ovarian lesion. The purpose of this study was to study the pattern of adnexal masses in rural area and plan the preventive steps according to the pattern.

METHODS

It was a retrospective study of patients who presented with adnexal masses in Bhagat Phool Singh Medical College (Women), Khanpur, Sonepat, Haryana, India over a period of 5.5 years from September 2012 to August 2018. The file records of the patients who underwent surgery for adnexal masse were evaluated to identify the risk factors, presenting complaints, examination findings, serological markers and radiological findings. The histopathological reports were reviewed. The cases excluded were ectopic pregnancies. Frequency distribution tables were used and data was analyzed using percentages.

RESULTS

Out of total 180 adnexal masses, 167 (92.77 %) cases were of ovarian origin. Out of these, 150 (83.33 %) cases were benign and 17 (9.44 %) were malignant. Among the benign lesions, serous cystadenoma was the most common lesion counting for 54 cases i.e., 30 %. In our study, most common symptom was vague abdominal pain- 63.88 %. Maximum adnexal masses were in the age group of 41 - 50 years i.e., 53 (29.44 %). Different types of surgeries were done. Maximum were bilateral oophorectomies with transabdominal hysterctomy 88 (48.88 %).

CONCLUSIONS

By proper education about personal and perineal hygiene, use of contraceptives, we can at least prevent some sexually transmitted diseases causing pelvic inflammatory disease (PID) and adnexal masses.

KEYWORDS

Adnexal Mass, Benign, Malignant, Serous Cystadenoma

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BACKGROUND

Anatomically the adnexa consist of ovaries, fallopian tubes, broad ligament, and the structures within it. The ovaries are paired sex glands or gonads, and the fallopian or uterine tubes are paired structures meant for reproductive function and sexual development of females.[1] The pathology associated with adnexal structures carry special interest in view of high risk of malignancy. In adnexal masses, ovary is the most frequent organ involved as it is prone to develop neoplasia. Although most of the adnexal masses are benign, the primary goal of diagnosis is to exclude malignancy.[2] Incidence of adnexal masses increases with age. It is 0.43 per one lakh women year at age of 1 year and reaches upto 152/1 lakh women year at age of 35 years.[13] Adnexal masses mainly consist of ovarian and fallopian tube masses. The incidence of ovarian masses is 6.9 % and ovarian neoplasms is 4.7 %.[4] Fallopian tube involvement as pelvic inflammatory disease is common but primary fallopian tubes carcinoma is very rare. Its incidence is 0.1 % to 1.8 %.[5]

About 2/3 of ovarian tumors are encountered in reproductive years, out of which 80 - 85 % ovarian tumors are benign. The adnexal masses have varied clinical presentation. Most tumors are asymptomatic or present with non- specific symptoms. The common symptoms include abdominal distension, abdominal pain or discomfort, lower abdominal pressure and urinary or gastrointestinal symptoms. If the tumour is hormonally active, abnormal vaginal bleeding may be the presentation.[6] Other symptoms are precocious puberty, hirsuitism, urinary complaints, bowel bladder discomfort and amenorrhea. In premenarchal and perimenopausal females, the adnexal mass should be considered abnormal and must be evaluated as soon as possible. In prepubertal girls, germ cell origin neoplasm is the most frequent cause. It requires immediate surgical exploration. They usually present with abdominal pain, which can be due to torsion. In reproductive age group, benign functional cyst is the commonest presentation. Other benign lesions are endometriotic cyst, hydrosalpinx, tubo-ovarian abscess, ectopic pregnancy and hydatidiform mole. Serous and mucinous cyst, teratomas, paraovarian cyst, pedunculated fibroids are the benign ones while fallopian tube and ovarian cancers, gastrointestinal malignancies are the malignant ones. Postmenopausal females present with epithelial tumours followed by stromal tumours and sex cord tumours. Masses that include fallopian tubes are primarily due to inflammatory causes in reproductive age group. A tubo-ovarian abscess may be present in association with PID.

After excluding pregnancy, a complete pelvic examination, including rectovaginal examination and pap test should be done.[6] Pelvic imaging as ultrasonography (USG), computed tomography (CT) scan or magnetic resonance imaging (MRI) can confirm the nature of adnexal mass. The role of tumour markers as CA125, CA-19, 9, CEA, LDH, AFP, etc. cannot be excluded. Masses that are unilateral, cystic, mobile and smooth are most likely to be benign, whereas bilateral, solid, fixed, irregular, associated with ascites and rapid growth are likely to be malignant. By histopathology, we can confirm our diagnosis and plan further management accordingly. Ovarian masses are a frequent finding in general gynecology. Of these masses, most are cystic. Histologically, ovarian cystic masses are often divided into ovarian cystic neoplasm and functional ovarian cysts. Functional ovarian cysts include follicular cyst, corpus luteal cyst and theca lutein cyst. All are benign and usually do not cause symptoms or require surgical management,[7] while malignant ones need surgical exploration with chemotherapy and or radiotherapy.

Adnexal mass is a common gynecological problem. The etiology can vary from simple infection to malignancy, and both have varying risk factors. This study was planned to study the pattern of various adnexal pathologies in tertiary care centers in rural perspectives. The secondary objective is to plan the preventive steps according to the pattern.

METHODS

The study design of our study was retrospective data analysis. The patients who presented with adnexal masses in Obstetrics and Gynecology Department of Bhagat Phool Singh Medical College (Women), Khanpur, Sonepat, Haryana, India over a period of 5.5 years from September 2012 to August 2018 are the target population in the study. The study population included all the patients operated for adnexal non-emergency cases excluding ectopic pregnancy and pregnancy with ovarian cysts. The file records of the patients who underwent surgery for adnexal masses were evaluated to identify the risk factors, presenting complaints, examination findings, serological markers and radiological findings like sonography or MRI or both. The histopathological reports were reviewed and patients were categorized into benign and malignant masses.

Most of the surgeries were elective, a few like ovarian torsions were elective. All cases were operated after routine investigations and proper preanesthetic check-up and with informed consent. After surgery tissue was sent for histopathological examination.

Institutional ethical certificate was taken from IEC vide letter no. BPSGMCW/RC 356/IEC/18 dated 03.11.18 before starting the study. Data collection was started after taking permission from ethical committee.

Statistical Analysis

It was a retrospective study. The Excel Software was used for data collection and analysis. Results were presented in numbers and percentages.

RESULTS

This study was done in BPSGMC, Khanpur, a tertiary care centre in rural Haryana, India. Present study was conducted by analyzing the medical records of all the patients operated for adnexal pathology from September 2012 to August 2018. A total of 1542 patients were operated during this time

period out of which 180 were operated for adnexal masses. The incidence came out to be 16.88 %.

In our study, the most common symptom was vague abdominal pain. 115 (63.88 %) patients had presented with abdominal pain, bloating sensation, and heaviness in the abdomen. The detail is depicted in Table 1. Diagnosis was confirmed by ultrasound after clinical examination. 34 cases of serous cystadenoma were reported as anechoic cyst on ultrasonography, 12 as anechoic cyst with septa and 8 with echogenic foci. Mucinous cystadenoma was reported as anechoic cyst with (22) and without septa (8) All 24 cases of mature cystic teratoma were identified as cyst with hyperechoic area and or calcification. Functional cysts were reported as simple unilocular and anechoic cysts. Malignant lesions showed irregular solid cystic changes with papillary projections. Ascites was also present in 5 cases. Tumour markers were done wherever required.

Among 180 adnexal masses, in 167 (92.77 %) cases it was of ovarian origin. Out of these, 150 (83.33 %) were malignant. Among the benign lesions, serous cystadenoma was the most common lesion i.e. 54 (30 %) cases, mucinous cystadenoma were 30 (16.66 %) cases, while mucinous cystadenofibroma were 4 (2.22 %). Mature cystic teratoma 24 (13.33 %), endometriotic cyst 20 (11.11 %), hemorrhagic cyst 10 (5.5 %), simple follicular cyst 2(1.11 %), corpus luteal cyst 6 (3.33 %). Other than ovarian masses there were paraovarian cyst 2 (1.11 %), 3 (1.67 %) cases of hydrosalpinx, 1 (0.55 %) of tubo-ovarian abscess. We had one (0.55 %) rare case of hydatid cyst of fallopian tube and 1 (0.55 %) case of xanthogranuloma salpingooophoritis. There were 4 (2.22 %) cases of tuberculosis. Among malignant ones, serous cystadenocarcinoma cases were on the top i.e. 8 (4.44 %), followed by serous papillary carcinoma 3 cases (1.67 %). Mucinous cystadenocarcinoma cases were 3 (1.66 %), serous papillary adenocarcinoma 1 (0.55 %), poorly differentiated carcinoma was single case, i.e. 0.55 %. One adnexal mass came out to be carcinoma sigmoid (0.55 %). There was one borderline cystadenoma case also i.e. 0.55 %. There were 5 cases of PID which included TO abscess, xanthogranulomatous salpingooophoritis and hydrosalpinx. The cases according to histopathological diagnosis % is depicted in Table 2.

Symptoms	Number	%
Abdominal pain and heaviness	115	63.88
Mass per abdomen	28	15.55
Menstrual symptoms	10	5.55
Postmenopausal bleeding	7	3.88
Infertility	13	7.22
Incidental	7	3.88

Table 1. Symptomatology of Adnexal Masses

The youngest patients were of 19 years, 3 in number - ovarian torsion of serous cystadenoma, dermoid cyst and hydatid cyst of fallopian tube. Oldest patient was 74 years that was of serous cystadenoma. Mean age was 46.5 years (Table 3). Different types of surgeries were done. Maximum were bilateral oophorectomies with transabdominal hysterectomy – 88 (48.88 %), unilateral oophorectomies were 28 (15.55 %). Staging laparotomy - 23 (12.77 %), cystectomy and cyst aspiration were 38 (21.11 %) and salpingectomy were 3 (1.66 %) (Table 4).

Histopathological Diagnosis	Number	%
Serous cystadenoma	54	30
Mucinous cystadenoma	30	16.66
Mucinous cystadenofibroma	4	2.22
Mature cystic teratoma	24	13.33
Endometriotic cyst	20	11.11
Hemorrhagic cyst	10	5.5
Simple follicular cyst	2	1.11
Corpus luteal cyst	6	3.33
Paraovarian cyst	2	1.11
Haydatid cyst of fallopian tube	1	0.55
Xanthogranulomasalpingoophoritis	1	0.55
Hydrosalpinx	3	1.67
Tuboovarian abscess	1	0.55
Tuberculosis	4	2.22
Serous cystadenocarcinoma	8	4.44
Mucinous cystadenocarcinoma	3	1.66
Serous papillary carcinoma	3	1.66
Serous papillary adenocarcinoma	1	0.55
Borderline cystadenoma	1	0.55
Ca sigmoid	1	0.55
Poorly differentiated ovarian carcinoma	1	0.55

Table 2. Histopathological Findings of Adnexal Masses

HPE Type	No.	Age Group in Years						
		10-20	21-30	31-40	41-50	51-60	61-70	71-80
Serous cystadenoma	54	2	5	9	18	8	10	2
Mucinous cystadenoma	30			8	14	6	2	
Mucinous cystadenofibroma	4				2	2		
Mature cystic teratoma	24	3	7	5	6	2	1	
Endometriotic cyst	20	2	11	6	1			
Hemorrhagic cyst	10	1	4	2	2	1		
Simple follicular cyst	2				2			
Corpus luteal cyst	6		2	3	1			
Paraovarian cyst	2			2				
Haydatid cyst of fallopian tube	1	1						
Xanthogranuloma salpingoophoritis	1				1			
Hydrosalpinx	3		1	2				
Tuboovarian abscess	1		1					
Tuberculosis	4		1	1	1		1	
Serous cystadenocarcinoma	8				3	4		1
Mucinous cystadenocarcinoma	3					2	1	
Serous papillary carcinoma	3		1		1	1		
Serous papillary adenocarcinoma	1		1					
Borderline cystadenoma	1			1				
CA sigmoid	1						1	
Poorly differentiated ovarian carcinoma	1				1			
Total	**180**	**9**	**34**	**39**	**53**	**26**	**16**	**3**
Total (%)		**5**	**18.88**	**21.66**	**29.44**	**14.44**	**8.88**	**1.66**

Table 3. Age Distribution of Adnexal Masses

Type of Surgery	Laparoscopic	Open	Total (No.)	%
Cystectomy/Cyst drainage	24	14	38	21.11
U/L oophorectomy +- TAH	2	26	28	15.55
TAH, BSO	-	88	88	48.88
Salpingectomy	2	1	3	1.66
Staging Laparotomy	-	23	23	12.77
Total	**28 (15.55 %)**	**152 (84.44 %)**	**180**	**100**

Table 4. Types of Surgeries Performed

Risk Factors		Epithelial Ovarian Tumours			
		Benign (112)	%	Malignant (18)	%
Age (years)	<= 50	79	70.54	8	44.45
	➢ 50	33	29.46	10	55.55
Parity	Nullipara	10	8.92	1	5.56
	P1 - 4	89	79.47	14	77.78
	>= P5	13	11.61	3	16.66
OCP	Not used	89	79.47	16	88.89
	Used	23	20.53	2	11.11
Menopausal status	Premenopausal	87	77.68	11	61.12
	Postmenopausal	25	22.32	7	38.88

Table 5. Correlation of Epithelial Ovarian Tumours and Risk Factors

Both open and laparoscopic modalities were used for surgeries. Laparoscopic surgeries were 28 (15.55 %) - 24 cystectomy and cyst aspiration, 2 oopherectomy and 2

salpingectomies, while open methods were 152 (84.44 %). Open surgical approach outweighs the laparoscopic approach due to experience of surgeons, huge and complex masses, suspicion of malignancy and non-availability of instrument sometimes. In our study 81 (45 %) cases were on the left side, 52 (28.88 %) cases were on the right side, while 28 (15.55 %) cases were bilateral. Maximum adnexal masses were in the age group of 41 - 50 years i.e., 53 (29.44 %). Postoperatively, we had given ATT (antitubercular treatment) to 4 patients of tuberculosis, lupreolide injection (GnRH analogue) to one patient of endometriosis, chemotherapy to 8 patients. We lost one patient, 23 years old, of papillary serous adenocarcinoma. A correlation of various risk factors with epithelial ovarian tumours is shown in Table 5.

Figure 1. Serous Cystadenoma as an Adnexal Mass

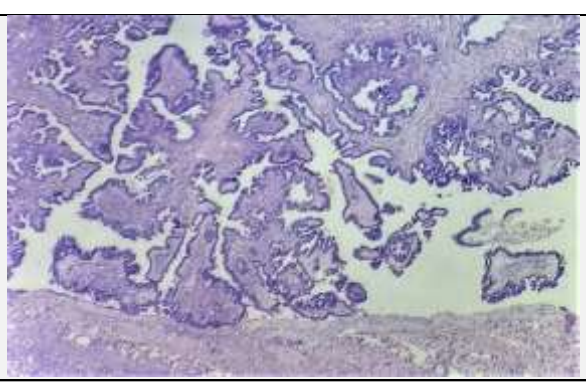

Figure 2. Histopathological Slide of Serous Cyst

DISCUSSION

According to literature adnexal masses mainly consist of ovarian lesions. The present study was a retrospective data analysis done to see the varied pattern of adnexal masses in rural areas of Haryana. A total of 180 cases were included in the study over 5.5 years who were operated for adnexal masses after clinical diagnosis and confirmed by radiological investigations. The incidence came out to be 16.88 %. Out of 180 cases, the ovarian masses are 92.7 %, while fallopian tube involvement is 3.33 %, rest were others.

In our study, in adnexal masses, ovarian masses were most common - 92.7 %, and of them benign masses were 83.3 % and malignant were 9.44 %. This is similar with study done by Radhamani S - ovarian masses were 93 %, neoplastic were 84 % - 76 % benign and 9.5 % malignant. Bhagde AD study - 72 % and study by Hassan SA - 79.9 %, Rai R - 85.3 % also showed ovarian masses as commonest.[8-10,11] In this study, 21 - 50 years age group includes maximum patients, i.e., 152 (84.42 %) patients. This corresponds to the study done by Rai R - 78.7 % patients were of age group 20 - 49 years, and Badkur P - 78.93 % patients were of age group 20 - 49 years.[11,3]

The present study shows that incidence of adnexal masses increases with parity. It is contradictory to the study done by Badkur P, which shows that maximum number of adnexal masses occur in patients of low parity - 70 %.[12] This difference is because our study caters rural population while study by Badkur P includes urban population. The risk of ovarian carcinoma increases with age. There is increased risk of ovarian malignancy in females over the age of 50 years.[13] This study also supports this i.e., out of 18 malignant patients, 10 (55.55 %) were > 50 years, while 8 (44.44 %) were < 50. It is recommended that women above 50 years should be screened for ovarian malignancy when they report with suggestive symptoms as there is lifetime risk of 1 % -1.5 % of ovarian carcinoma.[6] Incidence of malignancy increases with postmenopausal status.[13] In our study, out of 18 patients with malignancy, 10 (55.55 %) patients were postmenopausal, while 8 (44.44 %) were premenopausal. It is supported by study done by Rai R which shows that 47 % malignant lesions were found in postmenopausal patients.[11]

In our study, abdominal pain was the commonest presentation i.e., 63.88 %. Similar incidence was reported by Champawat C - 79.5 %, Manivasakan J - 70.5 %, Neelgund S - 67.5 %, Bhagde AD - 92 %, Hassan SA - 58.2 %.[14,15,16,8,10] On histopathological examination (HPE) among benign ovarian lesions serous cystadenoma topped the list in our study similar to others - Manivasakan J-59.49 %, Sharadha SO – 67 %, serous cystadenoma is most common. While in Bhagde AD study mucinous cystadenoma was most common i.e., 20 % and by Rai R mature cystic teratoma were most common - 41.7 % as compared to our study. Among malignant lesions, ovarian serous carcinoma was the commonest in our study - 4.44 % similar to Rai R - 6.5 %.[15,8,4,11] In our study laparoscopic surgeries were 15.55 %, which is comparable to Champawat C - 16.9 %. Rest all cases were done by open approach - 84.44 %, similar to Champawat C - 83.1 %.[14]

How can we prevent ovarian carcinoma? Healthy lifestyle, maintained weight, low fat, fibre rich diet can curb the risk. Risk of ovarian carcinoma goes down with each full-term pregnancy and breast feeding. Oral contraceptive pills lower the risk of ovarian carcinoma, risk remains reduced long after the pills are stopped. For average risk females, these pills reduce the risk by 50 % compared with females who never used these pills. Tubal ligation and short use of intrauterine devices have been associated with decreased risk. Hysterectomy also reduces the risk by one third.

The literature suggests screening of ovarian malignancy with routine ultrasonography and CA 125, but it can't be generally applicable as PAP screening. According to literature, various modalities are designed for prevention of ovarian malignancy. These include oral contraceptive pills, prophylactic oopherectomy or total hysterectomy with

bilateral salpingo-oophorectomy (BSO). Females with family history of BRCA 1 and BRCA 2 gene mutation undergo prophylactic oophorectomy in western countries. In our scenario as the health facilities are limited and further access is limited to rural females because of sociocultural background, such preventive measures are difficult to apply. As our study revealed major involvement of females with advance age and postmenopausal status the screening with adequate history, USG screening should be done as early as 40 years of age. Females routinely attending gynecology OPD for vaginitis and PID should be screened from the possible risk feature of ovarian cancer and P/S, P/V examination. Further USG and tumour markers can be done in patient with high risk factors and the findings. With this approach, no doubt we cannot curb the disease at initial stages but definitely, we can diagnose the disease at early stage and prevent further progress.[13]

CONCLUSIONS

There is a wide range of adnexal masses ranging from functional cyst to infection and even malignancy. Functional cysts and simple infections can be managed medically while complicated masses require surgery. A proper history and clinical examination is must for the diagnosis. Investigations help and histopathology confirm the diagnosis. By proper education about personal and perineal hygiene, use of contraceptives, we can at least prevent some sexually transmitted diseases causing PID and adnexal masses. Screening by proper history and examination, USG and tumour markers can halt the disease at early stage and can aid in better prognosis of patient.

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