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Study of Clinicopathological Pattern and Outcome of Adnexal Masses in Females from Puberty to Perimenopause at LD Hospital

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ABSTRACT

Background: An adnexal mass, which refers to a mass located in the ovary, fallopian tube, or surrounding connective tissues, is a common problem in gynecology. A significant number of females present with adnexal masses, and the clinicopathological pattern and outcome of these masses are not well characterized. Therefore, a study was undertaken to evaluate the clinicopathological features and outcomes of adnexal masses in females from puberty to perimenopause.

Methods: This study was a prospective observational study that was conducted over a period of one and a half years in the postgraduate department of Obstetrics and Gynaecology at Lalla Ded Hospital, GMC Srinagar. Ethical clearance was obtained from the Institution Ethics Committee (IEC) prior to conducting the study.

Results: For patients aged 12-20, the chief complaints were pain abdomen (66.7%) and menorrhagia (33.3%). For patients aged 21-30, the chief complaints were pain abdomen (70.3%), dysmenorrhea (11.1%), secondary infertility (7.4%), and incidental finding during LSCS (11.1%). For patients aged 31-40, the chief complaints were pain abdomen (96%) and incidental finding during LSCS (4%). For patients aged 41-50, the chief complaints were distension and menorrhagia (both 50%). The chief complaints associated with these masses include Pain abdomen, Dysmenorrhea, Secondary infertility, Menorrhagia, Distension, Polymenorrhea, and Incidental finding. The percentage of patients associated with each type of adnexal mass varies from 1% to 100%, depending on the type and chief complaint.

Conclusion: The study found that adnexal masses were more prevalent in married women aged 21 to 40 years, with abdominal pain being the primary presenting symptom. Most of the masses were less than 100cc, and the majority of neoplastic lesions were surface epithelial tumors. The study also showed that non-neoplastic lesions were more common than neoplastic lesions, with only one malignant tumor found among the neoplastic lesions.

Keywords: Adnexal mass, ovarian cancer, clinical presentation, histopathology

INTRODUCTION

An adnexal mass, which refers to a mass located in the ovary, fallopian tube, or surrounding connective tissues, is a common problem in gynecology. Adnexal masses are common gynecological findings in females from puberty to perimenopause stage. These masses can be benign, borderline, or malignant, and their clinicopathological pattern and outcome can vary greatly depending on various factors, such as age, size, location, and histology. The diagnosis and management of adnexal masses pose a challenge to clinicians, as the majority of these masses are asymptomatic and may require careful monitoring or surgical intervention. The majority of ovarian cancers are detected at advanced stages, resulting in low 5-year survival rates, with early diagnosis leading to 5-year

survival rates of up to 90%.[1] In perimenopausal and menopausal women, malignancy must be considered as a potential cause. Diagnosis of an adnexal mass is typically based on symptoms, such as reverse renal colic and palpable mass. However, it can be challenging to diagnose when there is torsion of normal adnexa, or pelvic examination is not possible in unmarried women. Cystectomy is recommended in young women, while hysterectomy with the removal of the adnexa is possible in perimenopausal and postmenopausal women.[2] Ultrasound is the most common initial diagnostic approach for adnexal masses, and Doppler flow is used to rule out torsion. However, computerized tomography (CT) may not always be available in emergency situations, or it may be contraindicated in pregnant women, making it challenging to make an optimal diagnosis and plan the appropriate surgery. Although there are several reports on the role of various imaging modalities, such as ultrasound, CT, and magnetic resonance imaging, in the diagnosis and management of acute adnexal pathologies, such as torsion, hemorrhage, and cyst rupture, few studies have investigated the clinicopathological aspects of these masses.[3] Overall, the clinicopathological pattern and outcome of adnexal masses in females from puberty to perimenopause stage can vary greatly and require careful evaluation and management. At LD Hospital, a significant number of females present with adnexal masses, and the clinicopathological pattern and outcome of these masses are not well characterized. Therefore, a study was undertaken to evaluate the clinicopathological features and outcomes of adnexal masses in females from puberty to perimenopause. The findings of this study will provide valuable insights into the diagnosis and management of adnexal masses, leading to improved patient outcomes.

METHODS

This study was a prospective observational study that was conducted over a period of one and a half years in the postgraduate department of Obstetrics and Gynaecology at Lalla Ded Hospital, GMC Srinagar. Ethical clearance was obtained from the Institution Ethics Committee (IEC) prior to conducting the study. A total of 114 patients were included in the study. The study group consisted of patients from puberty to menopause age group who were admitted electively or as an emergency and had ovarian masses in association with pregnancy which were managed surgically. However; patients who were postmenopausal with adnexal mass, women with non-gynecologic abdominal or pelvic mass, diagnosed cases of ectopic pregnancy, patients managed conservatively, and patients who did not have adnexal mass intraoperatively were excluded from the study. The recorded data was compiled and entered into a spreadsheet using Microsoft Excel and then exported to the data editor of SPSS version 20.0 for statistical analysis. The data was represented graphically using column charts.

RESULTS

In the study of clinicopathological pattern and outcome of adnexal masses in females from puberty to perimenopause conducted at Lalla Ded Hospital, a total of 114 patients were included. The patients were categorized according to age, with 6 patients (5.3%) falling in the 12-20 years category, 54 patients (4.7%) in the 21-30 years category, 50 patients (4.4%) in the 31-40 years category, and 4 patients (3.5%) in the 41-50 years category. Out of the 114 patients, 91 patients (79.8%) were married and 23 patients (20.2%) were unmarried.

Table 1: Clinical presentation-symptoms

Chief complaint	Number of patients presenting	Percentage
Pain abdomen	90	78.9
Dysmenorrhea	6	5.3
Secondary infertility	4	3.5
Polymenorrhea	2	1.8
Menorrhagia	2	1.8
Distension	2	1.8
Incidental finding	8	7

The majority of patients (90 patients, 78.9%) presented with pain abdomen. Other less common chief complaints were dysmenorrhea (6 patients, 5.3%), secondary infertility (4 patients, 3.5%), polymenorrhea (2 patients, 1.8%), menorrhagia (2 patients, 1.8%), distension (2 patients, 1.8%), and incidental finding (8 patients, 7%). Most patients (43%) had symptoms for less than 7 days, while 11.4%, 28.9%, and 9.6% had symptoms for 7-30 days, 31-365 days, and more than 365 days, respectively. A total of 20 patients (17.5%) had abdominal swelling while 94 patients (82.5%) did not have any abdominal swelling. Abdominal tenderness was present in 36 patients (31.6%) while 78 patients (68.4%) did not have any abdominal tenderness. The distribution of side involvement of a certain condition was found to be as follows: 50 patients (43.9%) had the condition on their right side, 50 patients (43.9%) had it on their left side, and 14 patients (12.3%) had the condition on both sides (bilateral). Around 55 patients (48.2%) had masses that were smaller than 100 cc, 39 patients (34.2%) had masses that ranged from 101-400 cc, 13 patients (11.4%) had masses that ranged from 401-800 cc, and 7 patients (6.1%) had masses that ranged from 801-1200 cc.

Table 2: Distribution of patients according histopathological type of mass

Histopathological type of adnexal masses	Number of patients	Percentage
Endometrioma	32	28.1
Serous cystadenoma	18	15.8
Mature cyst teratoma	16	14
Mucinous cystadenoma	12	10.5
Acute on chronic salpingo-oophoritis	12	10.5
Corpus luteal cyst	9	7.9
Benign functional cyst	6	5.3
Benign ovarian cyst with torsion	3	2.6
Ovarian torsion	2	1.8
Serous cystadenoma with atypia	1	0.9
Serous cystadenoma with salpingitis	1	0.9
Adenocarcinoma	1	0.9
Brenners tumour	1	0.9

The histopathological types of adnexal masses in a group of patients were as follows: Endometrioma (28.1%), Serous cystadenoma (15.8%), Mature cyst teratoma (14%), Mucinous cystadenoma (10.5%), Acute on chronic salpingo-oophoritis (10.5%), Corpus luteal cyst (7.9%), Benign functional cyst (5.3%), Benign ovarian cyst with torsion (2.6%), Ovarian torsion (1.8%), Serous cystadenoma with atypia (0.9%), Serous cystadenoma with salpingitis (0.9%), Adenocarcinoma (0.9%), and Brenners tumour (0.9%).

Table 3: Distribution of patients according to clinical presentation in different age groups

Age categories(years)	Chief complaint	Number of patients	Percentage
12-20	Pain abdomen	4	66.7
	Menorrhagia	2	33.3
21-30	Pain abdomen	38	70.3
	Dysmenorrhea	6	11.1
	Secondary infertility	4	7.4
	Incidental finding during LSCS	6	11.1
31-40	Pain abdomen	48	96
	Incidental finding during LSCS	2	4
41-50	Distension	2	50
	Menorrhagia	2	50

For patients aged 12-20, the chief complaints were pain abdomen (66.7%) and menorrhagia (33.3%). For patients aged 21-30, the chief complaints were pain abdomen (70.3%), dysmenorrhea (11.1%), secondary infertility (7.4%), and incidental finding during LSCS (11.1%). For patients aged 31-40, the chief complaints were pain abdomen

(96%) and incidental finding during LSCS (4%). For patients aged 41-50, the chief complaints were distension and menorrhagia (both 50%).

Table 4: Distribution of patients according to histopathological type in different age groups

Age categories (years)	Histopathological type of adnexal masses	Number of patients	Percentage of patients
12-20	Endometrioma	2	33.3
	Serous cystadenoma	2	33.3
	Mature cyst teratoma	2	33.3
		6	
21-30	Endometrioma	20	37
	Serous cystadenoma	8	14.8
	Mature cyst teratoma	8	14.8
	Corpus luteal cyst	5	9.2
	Mucinous cystadenoma	4	7.4
	Acute on chronicsal pingoophoritis	4	7.4
	Benign functional cyst	2	3.7
	Serous cystadenoma with atypia	1	1.8
	Adenocarcinoma	1	1.8
	Brenners tumour	1	1.8
		54	
31-40	Endometrioma	10	20
	Serous cystadenoma	8	16
	Acute on chronical salpingo-oophoritis	8	16
	Mature cyst teratoma	6	12
	Corpus luteal cyst	4	8
	Mucinous cystadenoma	4	8
	Benign functional cyst	4	8
	Benign ovarian cyst with torsion	3	6
	Ovarian torsion	2	4
	Serous cystadenoma with salpingitis	1	2
		50	
41-50	Mucinous cystadenoma	4	100

The adnexal masses of patients were categorized by age and histopathological type. For patients aged 12-20, the adnexal masses were Endometrioma (33.3%), Serous cystadenoma (33.3%), and Mature cyst teratoma (33.3%). For patients aged 21-30, the adnexal masses were Endometrioma (37%), Serous cystadenoma (14.8%), Mature cyst teratoma (14.8%), Corpus luteal cyst (9.2%), Mucinous cystadenoma (7.4%), Acute on chronic salpingo-oophoritis (7.4%), Benign functional cyst (3.7%), Serous cystadenoma with atypia (1.8%), Adenocarcinoma (1.8%), and Brenners tumor (1.8%). For patients aged 31-40, the adnexal masses were Endometrioma (20%), Serous cystadenoma (16%), Acute on chronic salpingo-oophoritis (16%), Mature cyst teratoma (12%), Corpus luteal cyst (8%), Mucinous cystadenoma (8%), Benign functional cyst (8%), Benign ovarian cyst with torsion (6%), Ovarian torsion (4%), and Serous cystadenoma with salpingitis (2%). For patients aged 41-50, the adnexal masses were Mucinous cystadenoma (100%).

Table 5: Distribution of patients according to the type of complaint in histopathological type of adnexal masses

Histopathological type of adnexal masses	Chief complaint	Number of patients	Percentage
Endometrioma	Pain abdomen	24	75
	Dysmenorrhea	4	12.5
	Secondary infertility	2	6.25
	Incidental finding	2	6.25
Serous cystadenoma	Pain abdomen	14	77.8
	Dysmenorrhea	2	11.1
	Incidental finding	2	11.1
Mature cyst teratoma	Pain abdomen	12	75
	Menorrhagia	2	12.5
	Secondary infertility	2	12.5
Mucinous cystadenoma	Pain abdomen	8	66.7
	Distension	2	16.7
	Polymenorrhea	2	16.7

Table 5 To Be Continued…			
Acute on chronic salpingooophoritis	Pain abdomen	12	100
Corpus luteal cyst	Pain abdomen	7	77.8
	Incidental finding	2	22.2
Benign functional cyst	Pain abdomen	4	66.7
	Incidental finding	2	33.3
Benign ovarian cyst with torsion	Pain abdomen	3	100
Ovarian torsion	Pain abdomen	2	100
Serous cystadenoma with atypia	Pain abdomen	1	100
Serous cystadenoma with salpingitis	Pain abdomen	1	100
Adenocarcinoma	Pain abdomen	1	100
Brenners tumour	Pain abdomen	1	100

The table provided shows the histopathological types of adnexal masses and the chief complaint associated with each type, along with the number of patients and percentage. The table includes the following types of adnexal masses: Endometrioma, Serous cystadenoma, Mature cyst teratoma, Mucinous cystadenoma, Acute on chronic salpingooophoritis, Corpus luteal cyst, Benign functional cyst, Benign ovarian cyst with torsion, Ovarian torsion, Serous cystadenoma with atypia, Serous cystadenoma with salpingitis, Adenocarcinoma, and Brenners tumour. The chief complaints associated with these masses include Pain abdomen, Dysmenorrhea, Secondary infertility, Menorrhagia, Distension, Polymenorrhea, and Incidental finding. The percentage of patients associated with each type of adnexal mass varies from 1% to 100%, depending on the type and chief complaint.

Table 6: Distribution of patients according to the side involved in each histopathological type of adnexal mass

Histopathological type of adnexal masses	**Side involved**		
	Histopathological type of adnexal masses Right (No./%)	**Left (No./%)**	**Bilateral (No./%)**
Endometrioma	**20 (62.5)**	**6 (18.8)**	**6 (18.8)**
Serous cystadenoma	4(22.2)	10 (55.6)	4(22.2)
Mature cyst teratoma	6 (37.5)	10 (62.5)	0
Mucinous cystadenoma	4(33.3)	8(66.7)	0
Acute on chronic salpingooophoritis	6 (50)	6 (50)	0
Corpus luteal cyst	2 (22.2)	4 (44.4)	3 (33.3)
Benign functional cyst	4 (66.7)	2 (33.3)	0
Benign ovarian cyst with torsion	3 (100)	0	0
Ovarian torsion	0	2 (100)	0
Serous cystadenoma with atypia	0	0	1 (100)
Serous cystadenoma with salpingitis	1(100)	0	0
Adenocarcinoma	0	1(100)	0
Brenners tumour	0	1(100)	0

The side involvement of adnexal masses was analyzed for various histopathological types. Endometrioma was predominantly found on the right side. Serous cystadenoma had equal occurrence on both sides. Mature cyst teratoma had more cases on the left side. Mucinous cystadenoma was more common on the left side. Acute on chronic salpingo-oophoritis had equal incidence on both sides. Benign functional cyst was more frequent on the right side. Benign ovarian cyst with torsion occurred only on the right side. Ovarian torsion was exclusive to the left side. Serous cystadenoma with atypia was bilateral. Adenocarcinoma and Brenners tumour were only on the left side. The most frequent surgical procedure performed for all adnexal masses was cystectomy after laparotomy. Staging laparotomy was conducted in cases of mucinous cystadenoma and Brenner's tumor. For mucinous cystadenoma and

acute on chronic salpingo-oophoritis, total abdominal hysterectomy and oophorectomy were performed.

DISCUSSION

In the present study, we observed that the age range of our participants was between 12 and 50 years. Our findings suggest that the highest occurrence of ovarian masses was among individuals aged between 21 to 40 years, which is consistent with the studies conducted by Randhawa et al, as well as Pilli et al.[4, 5] Moreover, our study revealed that adnexal masses were more prevalent in married women, with 79.8% (91 out of 114) of our patients being married. Histopathological types were commonly observed in married patients, except for Brenners tumour, which was only detected in an unmarried woman. These results are similar to those reported by Maharjan, who found that 10.7% of patients were unmarried, 5.33% were nulliparous, 35.55% had 1 to 2 children, 4% were pregnant, and 20% were postmenopausal women.[6] Abdominal pain (78.9%) was the primary presenting symptom among the patients, followed by menstrual abnormalities (8.9%). Similar findings were reported in the study conducted by Hermans et al, where 60.4% of patients presented with pain abdomen.[7] This study also concurred with other research by Pilli et al, Shobha S. Pillai, Batool et al, Sharma et al, and Bhagde et al, where abdominal pain was the most common symptom.[5,8-12] However, the present study had fewer cases presenting as mass per abdomen compared to other studies. Pain abdomen was the most common symptom across all age groups except for women over 40 years of age, who presented with distension (50%) or menstrual abnormalities (50%). Out of 114 patients, 8 (7%) presented to the OPD with acute abdomen, with twisted ovarian cyst (2.6%) being the most frequent cause, followed by ovarian torsion (1.8%), ruptured endometrioma (1.8%), and ruptured corpus luteal cyst (0.9%). In addition, 11 (9.6%) patients experienced pain abdomen for more than a year, and most serous cystadenomas presented with symptoms lasting for over a month. Per abdomen examination did not reveal any signs in most patients. In 20 patients (17.5%), a mass was felt per abdomen, and abdominal tenderness was present in 36 patients (31.6%). Our study revealed that adnexal masses were unilateral in 100 (87.9%) patients, with 43.9% located on each side, and 12.3% being bilateral. In a similar study by Ramachandran G et al, 46.04% of all ovarian tumors were detected on the right side, 38.5% on the left side, and the remaining 15.5% were bilateral.[13]

Our study revealed that the majority (48.2%) of adnexal masses, which included endometriomas (43.6%), corpus luteal cysts (12.7%), and benign functional cysts (7.2%), were less than 100cc. Most serous cystadenomas (10 out of 18) were between 401 to 800cc. The largest tumor encountered in our study was a serous cystadenoma measuring 23.3*17.4*18.6cms in size, with a volume of 7540 cc. This finding differed from Tyagi et al who reported a mucinous cystadenoma with a maximum diameter of 44.5cms in their study.[15] In terms of histopathological patterns, our study showed that non-neoplastic lesions (56.1%) were more common than neoplastic lesions (43.9%), with only one malignant tumor (2%) found among the neoplastic lesions. In contrast, Maharjan's study found that 86.67% of cases were neoplastic, and 13.33% were non-neoplastic ovarian lesions, with 93.85% benign, 5.38% malignant, and 0.77% borderline tumors.[6] Similarly, Bodal et al found that among neoplastic tumors, 75% were benign, 1.66% were borderline, and 23.34% were malignant.[15] Sudha V et al also reported that out of 92 cases of ovarian tumors, 68 were benign, 3 were borderline, and 21 were malignant, with postmenopausal women included in all of these studies. The only malignant tumor found in our study was adenocarcinoma (0.87%).[16]

In our study, the largest group of benign neoplastic lesions was the surface epithelial tumors (66%), followed by germ cell tumors (32%), while the most common non-neoplastic tumor was endometrioma (50%), followed by acute on chronic salpingo-oophoritis (18.8%), corpus luteal cyst (14.1%), and benign functional cyst (14.1%). Our findings are consistent with those of Bodal et al, who also found that non-neoplastic lesions (60%) were more common than neoplastic lesions (40%).[15] However, the most common non-neoplastic lesion differed, with luteal cyst followed by follicular cyst and endometriosis in their study. Maharjan found that 70% of non-neoplastic lesions in his study were hemorrhagic corpus luteum cysts. In our study, endometrioma was the most prevalent (28.1%) type of adnexal mass, followed by serous cystadenoma (17.5%), mature cystic teratoma (14%), and mucinous cystadenoma (10.5%).[6] These findings are consistent with several other studies, including those conducted by Bodal, Sudha et al, Batool, Maharjan, which all reported that epithelial tumors were more common than germ cell tumors.[6,10,15,16] Our study also revealed that serous tumors were more frequent than mucinous tumors (20/114 vs 12/114 cases), a result that correlates with the findings of other studies by Swamy et al, Gupta et al, and Sudha V et al.[17-19] In contrast, Bhagde et al found that in their study, the most common adnexal masses on histopathological diagnosis were mucinous cystadenoma (20%), benign and mature cystic teratoma (16% & 6%) and serous cystadenoma (10%).[12] Similarly, Koo et al reported that teratoma (26%), corpus luteal hemorrhage (16%), and endometriosis (14%) were the most common pathologies.[20] In our study, mature cystic teratoma, the most common germ cell tumor, accounted for 14% of total adnexal masses. Other studies by Tyagi et al, Gupta et al, and Couto et al reported an incidence of 18.46%, 23.13%, and 15.45%, respectively, among total neoplastic tumors.[14,19] We found that endometrioma, serous cystadenoma, and mature cystic teratoma were equally present in the 12-20 year age group. Endometrioma was common in the 21-40 year age group, while mucinous cystadenoma was more common in the 41-50 year age group.

Laparotomy followed by cystectomy was the most common surgical approach for adnexal masses in our study (36.8%). Staging laparotomy was performed in 4.4% of adnexal masses (mucinous cystadenoma and Brenner's tumor), and total abdominal hysterectomy was performed in 1.7% of adnexal masses (mucinous cystadenoma and acute on chronic salpingo-oophorectomy). Laparoscopy was performed in 20.2% of cases. In contrast, Koo et al reported that laparoscopy was the initial surgical approach in just over 50% of patients.[20]Another study by Kavitha D Yogini et al found that laparoscopy was the operative approach for all 96 patients, with the majority of adnexal masses being simple cysts (28%), followed by dermoid cysts (11.4%) and endometriotic cysts (2%). Almost half of the patients (68.7%) presented with an acute abdomen, of which 41.6% were adnexal torsions. All adnexal masses were resected laparoscopically.

CONCLUSION

The study found that adnexal masses were more prevalent in married women aged 21 to 40 years, with abdominal pain being the primary presenting symptom. Most of the masses were less than 100cc, and the majority of neoplastic lesions were surface epithelial tumors. The study also showed that non-neoplastic lesions were more common than neoplastic lesions, with only one malignant tumor found among the neoplastic lesions. Overall, the study provides insights into the epidemiology and clinical characteristics of ovarian masses in the study population.

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