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Original Article

Correlative Study Between Clinical, Ultrasound and Histopathological Examination Features and the Management of Hemorrhagic Cysts of Ovary

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Abstract

Background: Among the benign, conditions of the ovary hemorrhagic ovarian cysts (HOCs) are commonly encountered in gynecology practice. HOCs resolve spontaneously most of the times but a few require surgical intervention.

Aim: To correlate clinical, ultrasound features of patients diagnosed with HOCs preoperatively and with histopathological examination (HPE) findings in both surgical and medical management groups.

Materials and Methods: A total of 66 patients diagnosed with HOCs were divided into two groups. "A" group requiring surgery for treatment: 31; "B" group not requiring surgery but managed conservatively: 35. Clinical signs, pre-operative ultrasound features and post-operative HPE findings were reviewed and correlated.

Observations and Results: The patients belonged to the age group of 20-45 with a mean age of 31.87±2.25. All the 66 patients were in the reproductive age group. Among the 66 patients, 36 were multipara (54.54%) and 30 (45.45%) were Nullipara. Patients in Luteal phase were 58 (87.87%) and 08 (12.12%) were in follicular phase which was significant statistically with $P < 0.05$ at 0.032**.** The mean volume of HOCs was 118.4 ± 0.40 ml in Group A and 32.70 ± 1.25 ml in Group B patients with a range of 45.3-340.6 ml and 21.3-44.3 ml, respectively. The difference was statistically significant with p at 0.021.

Conclusions: Clinical, laboratory and ultrasound features of patients diagnosed with HOCs helps the surgeon to plan the management of HOCs in OBG practice and to avoid surgery in suitable patients.

Key words: Cysts, Hemorrhage, Ultrasound

INTRODUCTION

Following bleeding into follicular or corpus luteum hemorrhagic ovarian cyst (HOC) is formed as an adnexal mass.[1] Patients report for HOCs because of the pain caused by the bleeding into the follicle. The spectrum of clinical symptoms ranges from absence of symptoms to presentation to acute abdomen. Associated symptoms are nausea, vomiting, and in few cases fever. Occasional clinical signs include minimal guarding of the abdomen to deep tenderness. Most of the HOCs are diagnosed by regular ultrasound examination of suspected patients. The possibilities of false negative ultrasound reports are common due to their variable sonographic signs. They mimic few other organic adnexal masses. Many of the HOCs are benign, functional but a few can be neoplastic in nature.[2] Initial conservative management is the rule of treatment of HOCs because majority disappears spontaneously; surgical intervention is the second order of treatment. Hence, a confident clinical and ultrasound diagnosis should be tried and avoid unwanted surgery.[3] Definite surgical intervention is required in patients with HOCs measuring more than 5 cm, failure to resolve, chronic persistent abdominal pain. Surgery is also indicated in cases difficult to be diagnosed by ultrasound and those presenting with complications.[4]

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Aim

To correlate clinical, ultrasound features of patients diagnosed with HOCs preoperatively and with histopathological examination (HPE) findings in both surgical and medical management groups.

Design of the Study

The study is retrospective comparative study.

Duration of the Study

This study was conducted August 2011 to July 2016 (5 years).

MATERIALS AND METHODS

Medical records of 66 patients admitted to the Department of OBG of Kannur Medical College, Anjarakandy; we included in this study. The study was cleared by the Ethical Committee of the college, and consent letter was not used as the study is a retrospective one. The patients were classified into two groups. Group (A) consisted of 31 patients who presented with acute symptoms; pain in the abdomen, nausea, vomiting, and fainting. These patients were hospitalized and further evaluation done by thorough history taking, clinical examination including per abdomen, and vaginal examination. These patients were subsequently underwent surgery. Group (B) included 35 patients without acute symptoms and were managed conservatively with weekly follow-up by ultrasound. Clinical, laboratory, ultrasound findings of both groups were analyzed and compared. Age, parity, menopausal status, presence of current pregnancy, detection phase of the menstrual cycle, follicular or luteal, body mass index, white blood cells (WBCs) count, hemoglobin level (Hb), and duration of persistent abdominal pain were recorded. Ultrasound examination focused on the maximum diameter of the cyst, volume, and morphological pattern being classified into one of three patterns (solid type, sponge like type, and mixed cystic-solid type).[5] Wherever required the color Doppler was used to assess the vascularity of the lesion. A subjective semi-quantitative assessment of the amount of blood flow within the examined lesion (color score) was used.[6] The reporting was done as amount of blood flow within the cyst was scored as follows: Score of 1: If there is no blood flow detected. Score of 2: Minimal blood flow. Score of 3: Moderate flow was present. Score of 4: If the mass lesion is highly vascular. Patients were treated according to their clinical condition, i.e., Group A: Surgery was done in patients with large HOCs, complicated HOCs, clinical symptoms and signs of acute abdomen with imminent shock. Group B: Patients undergoing conservative medical management. Surgery consisted of laparotomy or laparoscopy approach with cystectomy or ovarectomy or combination of both. Excised specimens were sent for histopathological studies (HPE). The remaining patients were treated with antispasmodics, I.V. fluids and analgesics; follow-up with ultrasound examination at weekly intervals; changes in the diameter of the cyst, appearance, development of torsion, rupture were kept in mind. Total disappearance of the cysts was also noted. All the data were analyzed using standard statistical methods.

OBSERVATIONS AND RESULTS

A total of 66 patients attending the Department of OBG with the clinical diagnosis of HOCs were included in the study after going through thoroughly the medical records of 5 years. Among them, those who underwent surgery were labeled as Group A (31-46.96%) and those treated conservatively were named as Group B (35-53.03%). The patients belonged to the age group of 20-45 with a mean age of 31.87 ± 2.25. All the 66 patients were in the reproductive age group. There was no statistical significance between the two groups in regards with mean age, their parity and Body Mass Index (*P* was more than 0.05; *P* taken significant at <0.05), (Table 1). Among the 66 patients, 36 were multipara (54.54%) and 30 (45.45%) were nullipara (Table 1). Patients in luteal phase were 58 (87.87%) and 8 (12.12%) were in follicular phase which was significant statistically with $P < 0.05$ at 0.032, (Table 1). The mean WBCs count for group B was significantly lower than that for Group A with *P* value at 0.013 (*P* significant at < 0.05) while the mean Hb level for Group A was significantly lower than that for Group B with *P* value at 0.048 ($P < 0.05$), (Table 1).

Ultrasound findings of 66 patients showed that the mean volume of HOCs was 118.4 ± 0.40 ml in Group A and 32.70 ± 1.25 ml in Group B patients with a range of 45.3-340.6 ml and 21.3-44.3 ml, respectively. The difference was statistically significant with *P* at 0.021. The mean diameter of the cyst was 7.1 cm in Group A and 3.8 cm in Group B patients with a range of 3.4-11.2 cm and 2.1-4.2 cm, respectively. The difference was statistically

Table 1: The comparison of clinical and Laboratory data in patients with HOCs (*n*=66)

Observation	Group A-31	Group B-35	*P* value
Mean age	33.10±1.0	30.65±1.25	0.832
Parity	1.4±1.8	1.3±2.0	0.712
Nullipara- 30 (45.45)	14 (41.93)	16 (45.71)	
Multipara- 36 (54.54)	17 (58.06)	19 (54.28)	
BMI	26.2±2.4	23.3±2.50	0.532
Detection time pregnancy			
Follicular phase-8 (12.12%)	3 (9.67)	5 (14.28)	0.032
Luteal phase-58 (87.87%)	28 (90.32)	30 (85.71)	
Pregnancy	0 (0)	11 (31.42)	
WBCs (mm^3)	9500±1065	7823±1087	0.013
Hb level (g/dl)	9.7±0.7	11.7±0.8	0.048

HOC: Hemorrhagic ovarian cysts

significant with p at 0.038. Score 1 blood flow was found in cysts of 07 patients (10.60%) and 59 patients (89.39%) had cysts with score two blood flow which was significant statistically with *P* at 0.461 (Table 2).

Group A patients reported with acute pain in abdomen lasting for a mean time of 6.4 ± 1.1 h. The mean time of hospitalization before a decision is made for surgery was 10.5 ± 35 h which included the time taken for investigations and counseling. Cystectomy was performed in 29/31 (93.54%) of Group A patients and oophorectomy was done in two patients (6.45%). Regular surgical laparotomy was done in 9/31 (29.03%) and in the remaining (70.96%) laparoscopy was done. HPE showed HOCS in 49 (74.24%), corpus luteal cysts in 11 (16.66%), follicular cyst in 5 (7.57%), and in 1 cyst the reporting could not be done as the tissue had minimal epithelium. In 35 patients, Group B abdominal pain was mild in 27 (77.14%) and controlled with antispasmodic injections. 6 patients (17.14%) were diagnosed on regular ultrasound done for other indications such as secondary sterility and endometriosis investigation. Group B patients were relieved of their symptoms in a mean time interval of 7.60 ± 2.35 h in the study. However, the disappearance of the cysts could not be followed up in all the patients. Only 12/35 patients remained in follow-up of 1 year, and among them, 6 cases had total regression, in 4 cases the size of the cyst was reduced to <2 cm and in 2 cases there was no change, and the patients were not willing for surgery.

DISCUSSION

HOC are observed on ultrasound examination I patients during routine sonography or during evaluation for acute pain in abdomen. Review of literature shows few studies giving importance to the comprehensive picture of HOCS.[5-7] The differential diagnosis of acute abdomen in women of reproductive age includes apart from HOCs, torsion of ovarian cyst, tubo-ovarian abscess, or acute appendicitis leading to needless surgery.[5] Ultrasound plays a key role being noninvasive, in the diagnosis of all diseases related to ovary and fallopian tubes. It remains a cornerstone especially in the diagnosis of HOCs.[8,9] Joshi *et al.* found HOCs to be more common in premenopausal women.[10] However, in this study, HOCs were found to be more common in young patients during their reproductive years. Such an incidence is much easier to explain and consistent with hormonal changes which are common in women of reproductive age.[5] In this study, HOCS were found more commonly in multiparous women; 36 (54.54%). HOCs were observed in Luteal phase 58 (87.87%) than in follicular phase 08 (12.12%); Nemoto *et al.*,[5] in his study, expressed identical results. The mean WBCs count was significantly higher in patients suffering from acute abdomen and surgically managed (Group A). Severe inflammatory reaction around the rapidly distended ovary may be the cause for neutrophilia. Lowered Hb concentration in the Group A patients could be explained by the larger size of HOCs formed due to rapid effusion of blood into them. The severity of abdominal pain in the patients of Group A was proportional to the size of the HOC observed during laparotomy. The pain could be due to rapid distension due to the accumulation of blood in the HOCs and local irritation of the peritoneum. The size of the HOCs in patients managed by surgery (Group A) was significantly higher than the Group B patients. The Doppler study in this study showed a score 2 in 89.89% of the patients indicating low blood flow without blood flow within the mass lesion which suggests a peripheral vascular supply in all the lesions. 7 of the lesions showed score 1 indicating avascular nature of them in the study. The absence of vascularization in the solid areas of HOCs differentiates the blood clots inside the cysts from the papillary projections in the malignant ovarian cysts. The scores would be of Grade 3 and 4 in solid masses which are malignant.[11] The management of HOCs depends on clinical symptoms.

Size of the lesion (larger than 5.0 cm) and ultrasound picture whether they are vascular and associated complications.[12] Surgery was performed in 30 patients in this study (Group A). All the criteria mentioned by the author Logsdon[12] were used in the present study. Cystectomy was performed in 29/31 (93.54%) of Group A patients and oophorectomy was done in 2 patients (6.45%). Regular surgical laparotomy was done in 9/31 (29.03%) and in the remaining (70.96%) laparoscopy was done. HPE showed HOCS in 49 (74.24%), corpus luteal cysts in 11 (16.66%), follicular cyst in 5 (7.57%), and in 1 cyst the reporting could not be done as the tissue had minimal epithelium. Group B patients were relieved of their symptoms in a mean time interval of 7.60 ± 2.35 h in the study. However, the disappearance of the cysts could not be followed up in all the patients. Only 12/35 patients remained in follow-up of 1 year, and among them, 6 cases had total regression, in 4 cases the size of the cyst was reduced to <2 cm and in 2 cases there was no change and the patients were not

Table 2: The ultrasound data in the study group (*n*=66)

Observation	Group A-31	Group B-35	*P* value
Mean volume of cyst- mL	118.4±0.40	32.70±1.25	0.021
Range	45.3-340.6	21.3-44.3	
Mean size of cyst- cm	7.1	3.8	0.038
Range	3.4-11.2	2.1-4.2	
Doppler score			
Score 1-07 (10.60)	3 (4.54%)	4 (6.06%)	0.461
Score 2-59 (89.39%)	28 (42.42%)	31 (46.96%)	

willing for surgery. We recommended strict follow-up on weekly ultrasound basis of the conservatively managed cases due to the liability of occurrence of other complications as torsion or rupture of the cyst leading to more damage of the remaining ovarian tissue, thus interfere with the preservation of healthy tissue if surgery is warranted after that.

CONCLUSIONS

Management of HOCs depends on clinical, sonography and natural history of the HOCs in patients. Surgical intervention becomes mandatory in patients with acute abdominal pain, size of the HOCs larger than 5.0 cm and associated complications if any. High Leukocyte count and low Hb levels are supportive lab investigations to decide surgery. Conservative medical management should be well guarded with regular sonography of abdomen until the HOCs disappear.

REFERENCES

1. Yoffe N, Bronshtein M, Brandes J, Blumenfeld Z. Hemorrhagic ovarian cyst detection by transvaginal sonography: The great imitator. Gynecol Endocrinol 1991;5:123-9.
2. Baltarowich OH, Kurtz AB, Pasto ME, Rifkin MD, Needleman L, Goldberg BB. The spectrum of sonographic findings in hemorrhagic ovarian cysts. AJR Am J Roentgenol 1987;148:901-5.
3. Patel MD, Feldstein VA, Filly RA. The likelihood ratio of sonographic findings for the diagnosis of hemorrhagic ovarian cysts. J Ultrasound Med 2005;24:607-14.
4. Balan P. Ultrasonography, computed tomography and magnetic resonance imaging in the assessment of pelvic pathology. Eur J Radiol 2006;58:147-55.
5. Nemoto Y, Ishihara K, Sekiya T, Konishi H, Araki T. Ultrasonographic and clinical appearance of hemorrhagic ovarian cyst diagnosed by transvaginal scan. J Nippon Med Sch 2003;70:243-9.
6. Timmerman D, Valentin L, Bourne TH, Collins WP, Verrelst H, Vergote I; International Ovarian Tumor Analysis (IOTA) Group. Terms, definitions and measurements to describe the sonographic features of adnexal tumors: A consensus opinion from the International Ovarian Tumor Analysis (IOTA) Group. Ultrasound Obstet Gynecol 2000;16:500-5.
7. Ishihara K, Nemoto Y. Sonographic appearance of hemorrhagic ovarian cyst with acute abdomen by transvaginal scan. Nihon Ika Daigaku Zasshi 1997;64:411-5.
8. Jain KA. Sonographic spectrum of hemorrhagic ovarian cysts. J Ultrasound Med 2002;21:879-86.
9. Okai T, Kobayashi K, Ryo E, Kagawa H, Kozuma S, Taketani Y. Transvaginal sonographic appearance of hemorrhagic functional ovarian cysts and their spontaneous regression. Int J Gynaecol Obstet 1994;44:47-52.
10. Joshi M, Ganesan K, Munshi HN, Ganesan S, Lawande A. Ultrasound of adnexal masses. Semin Ultrasound CT MR 2008;29:72-97.
11. Brown DL, Dudiak KM, Laing FC. Adnexal masses: US characterization and reporting. Radiology 2010;254:342-54.
12. Logsdon VK. Common problems in pediatric and adolescent gynecologic surgery. Curr Opin Obstet Gynecol 2001;13:453-8.

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