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Pathology

CLINICOPATHOLOGICAL PROFILE OF TORSION OF OVARY IN A TERTIARY CARE CENTRE.

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ABSTRACT Torsion of the ovary is an emergency gynaecological condition. Early diagnosis prevents complications and preserves the ovarian and tubal function. In this study, we retrospectively evaluated the clinical and histological findings of ovarian torsion. The study was conducted in the Department of Pathology, VSSIMSAR, Burla from January 2016 to December 2019. Ovarian torsion occurred most commonly in the reproductive age group (21 – 30 years). Right ovary was most commonly involved. Symptoms included sudden abdominal or pelvic pain (86.11%), also associated with fever (8.33%) and vomiting (5.55%). Histopathology revealed haemorrhagic necrosis in 52.77% cases. Among ovarian tumors, benign serous cystadenoma (22.22%) was the most common tumor. Two cases of malignancy were recorded. Awareness regarding clinical and histopathological findings helps in the management of this acute emergency condition.

KEYWORDS : Ovarian Tumor, Acute Abdomen, Torsion, Haemorrhagic Necrosis.

INTRODUCTION

Ovarian torsion refers to complete or partial rotation of the adnexal supporting system, resulting in ischemic changes in the ovary. [1] It may be associated with torsion of fallopian tube as well.[1] It is the fifth most common gynaecological emergency.[2] It constitutes 2 -15% of all patients who had undergone surgical treatment for adnexal masses.[1] It occurs predominantly in the reproductive age groups.[3,4] The symptoms of ovarian torsion are often nonspecific. Sometimes it is very difficult to differentiate it from other causes of acute abdominal pain such as ectopic pregnancy, acute appendicitis, pelvic inflammatory diseases, renal colic etc. The classic presentation of ovariantorsion includes unilateral pelvic pain, a palpable mass, and signs of peritoneal irritation. [5]

In general, when ovarian torsion develops, venous blood flow to the ovary is first blocked, followed by abrupt onset of abdominal pain, and then, the arterial blood flow is blocked, then in some cases the ovary becomes necrotic over time.[6] If necrosis has occurred it is often difficult to save the ovary and oophorectomy is required. Failure to establish the diagnosis early may lead thrombophlebitis and peritonitis, rupture of tumor, disseminated intravascular coagulation and even death in some cases.[6,7]

The exact etiology is unknown, common predisposing factors include moderate size cyst, free mobility and long pedicle.[7] Ultrasound is most commonly used method to detect the ovarian torsion preoperatively. The definite diagnosis is made on the basis of laparoscopy, surgical findings and histopathological findings. In this study, we retrospectively examined data of patients with ovarian torsion who had undergone surgery at our hospital, and evaluated their histopathological reports.

METHODS:

Total 487 ovarian masses were received in the Department of Pathology, VSSIMSAR, Burla from January 2016 to December 2019. The clinical details, and histological findings of ovarian torsion were retrieved from the histopathological record file. The subclassification of ovarian mass was done based on WHO classification system. Tumors with haemorrhage, congestion and necrosis were noted and compared with other studies.

RESULTS:

Torsion of ovary was diagnosed in 72 (14.78%) cases out of 487 ovarian masses received in our department. The youngest patient was 13 years old. The oldest one was 70 yrs old. Most common age group was 21-30 years (36.11%) followed by 31-40 years (27.77%). (Table 1) Symptoms include abdominal pain, fever and vomiting. (Table 2) Tumour size varied from 3 – 20 cm. In 38 cases (52.77%), the definite diagnosis could not be made because of presence of haemorrhage and necrosis. In 34 cases (47.22%) histopathogical diagnosis could be made. Serous cystadenoma was the most common tumour (22.22%), followed by dermoid cyst (9.72%) and mucinous cystadenoma (8.33%). Malignancy was observed in 2 cases. (Table 3)

Table 1: Age-wise distribution.

Age group (in years)	Number of cases (Total = 72)	Percentage (%)
11-20	11	15.27
21-30	26	36.11
31-40	20	27.77
41-50	07	9.72
51-60	05	6.94
61-70	3	4.16

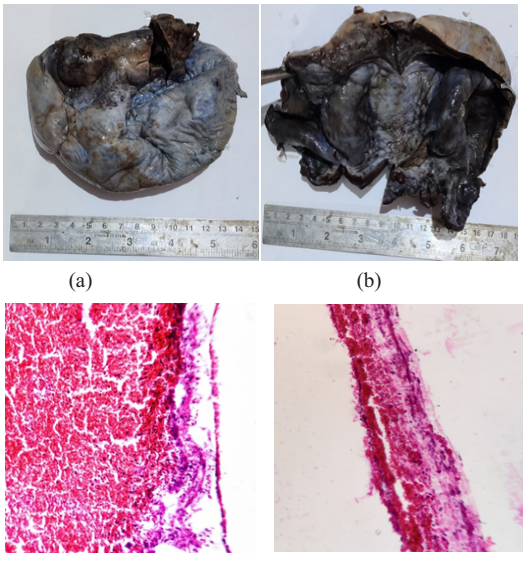
Table 2: Clinical presentation of torsion ovary.

Symptoms	Frequency	Percentage (%)
Abdominal / pelvic pain	62	86.11
Abdominal pain with fever	06	8.33
Abdominal pain, vomiting with fever	04	5.55
Total	72	100

Table 3: Histopathological distribution of torsion ovary.

Histopathological types	Number of cases	Percentage %	Tumour size (cm)	UL/BL
Serous cystadenoma	16	22.22	3 - 12	UL=15 BL=1
Mucinous cystadenomas	06	8.33	6 - 18	UL=5 BL=1
Dermoid cysts	07	9.72	6.5 - 11	UL=7
Dysgerminoma	01	1.38	10	UL=1
Malignant deposits	01	1.38	6	UL=1
Endometriotic cyst	02	2.77	5 - 6	UL=2
Corpus luteal cyst	01	1.38	7	UL=1
Haemorrhagic necrosis	38	52.77	3 - 20	UL=34 BL=1
Total	72	100	-	UL=66 BL=6

(UL= unilateral, BL= bilateral)



(a) (b)

(c) (d)

Figure 1: a. Gross picture of ovarian mass showing gray – white outer surface with focal blackish and bluish patches. b. Cut section

showing congested and swollen cyst wall. c. Microsection shows areas of ischemic necrosis in the wall and cuboidal lining epithelium in the viable areas (H & E x 400). d. Microsection of ovarian cystwall shows extensive haemorrhage, necrosis and no lining epithelium. (H &E x 400)

DISCUSSION:

Ovarian torsion is a relatively rare condition with an incidence varying from 2 to 15%.[1] We found it in 14.78% of all resected ovarian tumors. It can occur in females of all age groups. However, it occurs more commonly in reproductive age groups.[1,3,4,8,9] The most common age group in our study was 21-30 years (36.11%) followed by 31-40 years (27.77%).

Abdominal pain (86.11%) was the most common symptom in our study, also associated with fever (8.33%), and vomiting (5.55%). Other studies also showed abdominal or pelvic pain as the chief complaint.[8, 9] Study by Mohan S et al[8], showed abdominal or pelvic pain (94.74%) as the chief complaint in their study; other symptoms being vomiting, fever, nausea and dysuria. Tumors associated with fever were gangrenous.[8]

In a study by Lentz GM et al, torsion occurred more commonly on the right side than the left side with an incidence of 3:2.[10] Lee et al[4] also found 67.6% of all torsions on the right side. He proposed presence of sigmoid colon as the inhibitory factor for occurrence of torsions on the left side. We reported right side ovarian torsion in 60% of cases. However, Mohan S et al showed left side (52.63%) as the more common site.[8]

In this study, we found that unilateral presentation (91.6%) dominates over bilateral presentation (8.33%). Kandasamy et al showed 88.9% cases of unilateral ovarian torsion.[9]

Tumor ranged in size from 2 – 20 cm. This is similar to other studies. Mohan S et al[8] found tumor sizes ranging from 5 – 25 cm, and Kandasamy et al[9] 5 - 20 cm. Largest tumor of size 20 cm in our study showed haemorrhagic infarction. (Figure 1d)

Ultrasound of the pelvis (and abdomen in some cases) is the primary diagnostic modality. Doppler ultrasound also helps in the diagnosis. In a study, Doppler showed absent arterial and venous flow in 52.63% of cases.[8] According to Pena et al[11] 60% of the cases of torsion were missed by Doppler, while its positive predictive value was 100. Hence, pre-operative diagnosis still remains a challenge.

Due to the rotation of ovarian tissue axis on its vascular pedicle, there is compression of vessels followed by stromal edema, hemorrhagic infarction, and necrosis of adnexa. In our study, we found 38 (52.77%) cases of ovarian torsion with haemorrhagic necrosis; all were unilateral, only one case was bilateral. Sukkong K et al [3] found 46.2% of gangrenous ovarian tumor in their study. Mohan S et al found gangrenous cyst without identifiable histological structure in 4 cases (10.53%).[8]

Out of 72 cases, 29 (40.27%) cases were benign, 2(2.76%) were malignant, 2(2.77%) endometriosis and 1(1.38%) corpus luteal cyst. Haemorrhagic infarction was seen in 38 cases (52.77%). Other studies showed benign ovarian mass as the common cause of torsion of ovary.[4,8] Benign serous cystadenoma was the most common ovarian tumour associated with torsion (Figure 1a – c). Similar results were found by Mohan S et al.[8] These may be due to higher incidence of serous tumors in our population which needs to be evaluated by larger studies in India. However, Lee et al[4] and Libby L et al[12] found mature teratoma as the most common tumor associated with torsion and Kandasamy et al[10] found mucinous cystadenoma as the commonest tumor.

Higher incidence of haemorrhagic infarction in our study may be due to delayed management of this acute condition. Since the hospital is a tertiary care centre and patients usually come from remote areas, proper diagnosis is probably delayed. Also, timely fixation of specimen is very necessary to prevent autolysis. Shiota M et al observed occurrence of ovarian necrosis in patients undergoing surgery at ≥10 hour.[13] Delayed diagnosis causes hemorrhagic infarction resulting in non-viable ovary and sometimes leads to severe peritonitis and even death.[8] Early diagnosis can help prevent irreversible damage to adnexal structures and allow conservative ovary sparing treatment in young women.[14] Detorsion and cystectomy is the choice of management for torsion ovary; salpingooophorectomy may be needed in infarcted ovaries and older women. Mohan et al[8] and White M et al[14] had achieved detorsion in 42% and 31% cases respectively.

Corpus luteal cyst was found in 1(1.38%) case. Another study found that this was 5.26%.[8] We reported two cases of malignant tumor (dysgerminoma and malignant deposit) one case of each. Lee CH et al[4] reported malignancy in 8.7% of cases of ovarian torsion.

Limitations of this study are all the data were collected retrospectively; so many clinical features couldn't be obtained. However, the study gives insight into patterns of histopathological variation seen in our tertiary care canter. The presence of higher percentage of haemorrhagic necrosis gives into account that urgent ultrasonography, emergency surgery and immediate fixation of the excised tissue are of paramount importance and be practiced, so the ovary could be salvaged in patients of reproductive age group.

CONCLUSIONS:

Ovarian torsion is a dangerous gynaecological emergency condition. Early diagnosis helps to prevent complication and preserve the function of ovary and fallopian tube. Abdominal/pelvic pain was the most common symptom. Variable clinical features and geographical variation needs to be considered while salvaging ovary and fallopian tubes especially in younger patients. Early clinical diagnosis and timely fixation of the resected specimens are essential for histopathological diagnosis to facilitate proper patient management.

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