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Ovarian Torsion in Postmenopausal Women and risk of malignancy

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ABSTRACT

Background & aim: Ovarian torsion is one of the most common causes of emergency surgery in gynecology, with a tendency to occur in postmenopausal women. The aim of this study was to provide information concerning the clinical presentations, surgical management, pathological findings and risk of malignancy in postmenopausal women with ovarian torsion.

Methods: In this cross-sectional study, the risk of malignancy was assessed in postmenopausal women with ovarian torsion, who admitted to the Tumor Clinic of Ghaem Hospital, Mashhad, Iran in 2013. Frozen section technique was applied in patients undergoing laparotomy. The recorded data included patients' age and symptoms, tumor markers, type of surgery, radiological findings and pathological results.

Results: Among 44 menopausal patients with pelvic masses, 10 women were selected. The most common symptom was acute abdominopelvic pain (100%). In ultrasonic evaluation, complex ovarian mass was the most frequent finding. Free fluid in the pelvis was reported in 30% of cases. Moreover, serous tumor was the most common pathological finding. Malignancy was reported in 20% of cases; therefore, surgical staging was carried out for these patients.

Conclusion: Ovarian torsion is a differential diagnosis in postmenopausal women with acute symptoms of lower abdominal or pelvic pain. Risk of malignancy due to adnexal masses should be considered in these patients.

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Introduction

Ovarian torsion (OT) is the fifth most common problem, requiring emergency surgery in gynecology. OT has a bimodal age distribution, with a tendency to occur in young women (15-30 years old) and postmenopausal women. Moreover, risk of OT increases in postmenopausal women with ovarian masses (1).

Despite the unknown etiology of OT, ovarian tumors, ovarian cysts and ovulation induction, which expands the ovarian volume, can be regarded as the predisposing factors for OT (2). The increased length of ovarian ligaments and history of pelvic adhesions may facilitate twisting of ovarian ligaments and induce OT. It should be noted that OT rarely occurs in a normal adnexa (3).

In the literature, a higher prevalence of malignancy has been reported in postmenopausal women with OT (4). Benign and malignant ovarian tumors are among the risk factors for OT in postmenopausal women. Overall, malignancy may be associated with OT in 1.1-2% of adult patients. Since cancer normally leads to the adhesion of the ovary to the surrounding tissues, malignant tumors are less likely to cause torsion, compared to the benign type.

In a previous study on 135 cases of adnexal

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torsion, incidence of malignancy was estimated at 15% (n=37) in postmenopausal women with adnexal torsion. However, in other studies, incidence of malignancy was reported to be 25% in women older than 60 years of age. A retrospective study in Korea on postmenopausal woman with ovarian cysts showed that 99.5% of the masses were benign, except for one case which presented with a borderline ovarian tumor (5).

For the treatment of OT, surgical intervention is required, particularly in high-risk patients in order to reduce the complications of emergency surgery. Delayed treatment may be associated with tissue infarction and necrosis, which may be misleading for the pathologist. In some cases, delayed diagnosis leads to intra-peritoneal hemorrhage, which is a life-threatening condition (6).

Balci et al., based on their five-year experience of surgical interventions, in a retrospective study compared laparoscopy and laparotomy in patients with adnexal torsion. They noted that laparoscopy is the preferred option in young patients who are willing to preserve their fertility (7). Additionally, in 2012, Tsafrir evaluated 216 cases of adnexal torsion and recommended cystectomy for reducing the risk of re-torsion (8). The present study aimed to evaluate OT in postmenopausal women and determine the risk of malignancy in an oncology center.

Materials and Methods

This cross-sectional study was conducted at the oncology department of Ghaem Hospital, affiliated to Mashhad University of Medical Sciences during August-December 2013. Among 44 postmenopausal patients with acute pelvic masses, 10 cases with adnexal torsion were selected. The exclusion criteria were adnexal masses without torsion, non-menopausal status and inadequate data.

Emergency surgical intervention was the treatment of choice for the participants. Frozen section technique was applied for all patients undergoing laparotomy. The recorded data included patients' signs and symptoms, age, preoperative tumor markers, radiological findings, type of surgery and pathological results of adnexal torsion.

The study protocol was approved by the Ethics Committee of the Research Council of Mashhad University of Medical Sciences. Informed consents were obtained from participants prior to participation.

Results

The mean age of participants was 59±5.8 years. The mean parity was 5.3±3 and the mean duration of menopause was 15.1±7.5 years. Also, the mean body mass index (BMI) was 27.3±1.9 kg/m^2, and the mean size of ovarian masses was reported to be 13.11±2.6 cm. In addition, the mean white blood cell count was 10500±2340 µI. Anemia and ascites were reported in 20% and 30% of patients, respectively. Adnexal masses were reported in all patients. Abdominal pain and loss of appetite were the main clinical symptoms. Preoperative symptoms and signs of postmenopausal women with ovarian torsion are shown in Table 1.

The most common demographic characteristic of patients was BMI > 25 kg/m^2. Based on ultrasonography and CT scan, complex mass was a radiologic feature of OT. Titers of tumor markers including cancer antigen-125 (CA-125) and carcinoembryonic antigen (CEA) were reported to be normal in all patients. The maximum diameter of adnexal lesion was 155 cm.

Table 1. Preoperative symptoms and signs of postmenopausal women with ovarian torsion

Signs & symptoms	Number (%)
Nausea and vomiting	4 (40)
Fever	2 (20)
Ovarian or adnexal mass	10 (100)
Pelvic pain	10 (100)
Loss of appetite	9 (90)
Peritoneal irritation	6 (60)
↑CA-125	0 (0)
↑CEA	0 (0)

Delayed diagnosis in one patient resulted in intra-peritoneal hemorrhage and shock. In laparotomy, a case of OT, along with infarction and necrotic material of ovarian mass, was reported. Emergency surgical intervention was the treatment of choice in these patients by applying the frozen section technique. The majority of patients (70%) underwent bilateral salpingo-oophorectomy, given their postmenopausal status. Total abdominal hysterectomy was performed in 10% of cases.

Regarding malignancy in the pathological evaluation of frozen section specimens, surgical staging was performed in only 20% of patients. Surgical staging included pelvic washing forcytology, hysterectomy, bilateral salpingo-oophorectomy, omentectomy and lymph-node sampling of the pelvis and para-aortic nodes. Also, the incidence of malignancy in pathologic specimens was estimated at 20%. Serous tumor was identified as the most common histological diagnosis.

Discussion

In this study, the incidence of malignancy in postmenopausal women with OT was estimated at 20%. OT accounts for 2-3% of all gynecological emergencies. In the current study, the incidence of OT in postmenopausal woman was approximately 22.6%, highlighting the need for great clinical attention. Regarding the importance of this emergency condition, early diagnosis can prevent further adverse events (10).

The most common demographic characteristic of patients in our study was BMI > 25 kg/m^2. To determine the role of increased BMI as a predisposing factor for ovarian pathology and OT, further investigations are required. The clinical presentations of OT are often non-specific, although symptoms and signs such as abdominal pain, nausea, vomiting and rarely fever have been reported. In these cases, all patients (100%) suffered from abdominal and pelvic pain.

Clinical features of adnexal torsion are similar to other causes of acute abdominal pain such as urinary tract infection, appendicitis, pelvic inflammatory disease, diverticulitis, large bowel obstruction, mesenteric ischemia and ovarian and colon carcinoma (9). Once OT occurs, the blood flow is initially compromised, resulting in the congestion of the ovary and consequently lymphatic engorgement, edema, hemorrhage and finally infarction.

In case of persistent black color of the adnexa (6-8 hours in some studies), functional recovery is unfeasible and early diagnosis is critical (4). In this study, emergency surgical intervention, along with frozen section technique, was performed for all patients and the surgery was not delayed. However, considering the emergency nature of OT, one of the main concerns in treatment is unavailability of frozen section technique; therefore, surgeons should more rely on clinical evaluations.

Diagnosis of OT can be challenging, owing to the need for access to patients' clinical history, clinical examination and laboratory findings. Ultrasound is regarded as the imaging modality of choice for the diagnosis of OT. On the other hand, ultrasound alone often leads to misdiagnosis; therefore, it is important to detect normal blood flow by Doppler ultrasound. Even if abnormal blood flow is not confirmed, we cannot exclude the diagnosis of OT (10).

Although CT scan findings are non-specific in OT, this modality may be helpful in ruling out this condition. The definite diagnosis of adnexal torsion can be established via surgery, laparoscopy or laparotomy, which can play both diagnostic and therapeutic roles (11).

In a review study on 135 cases of adnexal torsion, the incidence of malignancy was estimated at 15%, which increased to 25% in women older than 60 years of age (12). This finding was in line with the current study (20%), indicating the need for great attention in postmenopausal women with OT.

Treatment of OT is essential and ovarian removal is dependent on the time of surgery. According to the literature, surgery within eight hours after diagnosis results in the best outcomes if the ovary is detoured; therefore, emergency surgery is highly recommended (13). In the current study, all patients underwent ovarian removal, despite the immediate arrangements, based on their postmenopausal status.

If possible the ovary must be untwisted to restore ovarian function. Delayed diagnosis may lead to tissue necrosis, inaccurate pathologic diagnosis, rupture of ovarian necrotic material and endangering the patient's life. Unfortunately, in the present study, rupture of the ovarian mass occurred in one case, despite the emergency surgery due to delayed diagnosis in another healthcare center.

Risk of thromboembolic events should be considered in OT cases. However, the incidence of pulmonary embolism in case of adnexal torsion is the same before and after untwisting (14). Cystectomy significantly reduces the risk

of re-torsion by 50-75%, compared to de-torsion. In recurrent cases, ovariopexy is preferred in order to reduce the risk of recurrence (15). In the current study, based on the postmenopausal status of patients, bilateral salpingo-oophorectomy was performed in nine cases.

According to the findings of the present study, given the possibility of neoplastic changes in post-menopausal patients with OT, frozen section technique should be available; if not possible, clinical and imaging procedures can be helpful. However, surgeons must note that extensive necrotic tissues in adnexal masses may result in the misdiagnosis of malignancy in frozen section technique. Therefore, optimal treatment can be achieved via surgical staging in suspicious macroscopic cases.

Unfortunately, the data related to some patients went missing in the present study, which is the main limitation of this study.

Conclusion

As the results indicated, adnexal torsion should be considered as an emergency condition. Moreover, malignancy may be a result of OT in postmenopausal women.

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Conflict of Interest

There were no conflicts of interest.

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