

# Massive ovarian edema: A case report

**K. Bildirici<sup>1</sup>, M.D., Lecturer; S. Kabukcuoglu<sup>1</sup>, M.D., Asso. Prof.; S.S. Ozalp<sup>2</sup>, M.D., Prof.;  
Ö.T. Yalçın<sup>2</sup>, M.D., Asso. Prof.; H. Ozden<sup>3</sup>, M.D., Assist. Prof.**

*Department of Pathology<sup>1</sup>, Department of Obstetrics and Gynecology, Gynecologic Oncology Unit<sup>2</sup>, Department of Anatomy<sup>3</sup>  
Osmangazi University School of Medicine, Eskisehir (Turkey)*

## Summary

Massive ovarian edema is considered a non-neoplastic lesion characterized by a tumor-like enlargement of one or occasionally both ovaries secondary to an accumulation of edema fluid within the stroma. It is an uncommon entity that usually leads to oophorectomy as an unnecessary treatment in children, adolescents and young women. A diagnostic wedge resection with subsequent frozen section is essential. A definitive diagnosis of massive ovarian edema can not be made on preoperative imaging. In this article a case of massive ovarian edema in a 15-year-old female thought to be a solid neoplasm in the preoperative period is described.

*Key words:* Massive ovarian edema; Ovary.

## Introduction

Massive ovarian edema (MOE) is considered a non-neoplastic lesion characterized by a tumor-like enlargement of one or occasionally both ovaries secondary to an accumulation of edema fluid within the stroma [1, 2]. It has been speculated to occur as a result of partial ovarian torsion [3]. Approximately 80 cases with ages ranging from six to 33 years have been reported since it was first published by Kalstone *et al.* in 1969 [4, 5].

Conservative therapy for preservation of ovarian function should be undertaken for patients with MOE because all the cases reported in the literature are in reproductive ages or before puberty. However, it is considered to be very difficult to make a precise preoperative diagnosis of MOE because diagnostic imaging criteria for MOE has not been established. Massive ovarian edema may be mistaken for a solid neoplasms such as in our case [6, 7].

## Case Report

A 15-year-old female presented with a 5-month history of right iliac fossa pain. Her menstrual periods had been irregular after menarche. Abdominal examination revealed a large, firm, mobile mass in her pelvis at the midline. She had no virilizing features. Transabdominal sonography (Figure 1) and CT scan evaluation of the right ovary revealed a 9-cm homogeneous solid mass. CT scan showed no abdominal or pelvic lymphadenopathy. Hematological and biochemical values, coagulation tests and tumor markers [CA-125 (4.0 U/ml),  $\beta$ -hCG (1 mIU/ml),  $\alpha$ FP (1.0 IU/ml), CEA (0.61 ng/ml)] were within normal limits.

She underwent exploratory laparotomy for the pelvic mass to rule out malignant tumor. Her right ovary was 10 cm in diameter and completely torsioned including the right tube. There were adhesions surrounding the mass and omentum. The left ovary was of normal size but had a polycystic appearance while the uterus was normal in appearance. There was a small amount

of clear fluid in the pelvis. Peritoneal washings were obtained for cytological evaluation. A right salpingo-oophorectomy was performed and the specimen was submitted for frozen section and evaluated as non-malignant (thecoma or MOE).

The right ovarian mass with a grayish-white smooth external surface weighed 300 g and measured 10 x 8 x 4 cm. On cut section the mass was composed of a gelatinous substance with numerous small cystic structures and hemorrhagic areas (Figure 2). The right fallopian tube was congested. On microscopic examination, the ovarian capsule was intact. The rest of the ovary was extremely edematous. The stroma consisted of fusiform stromal cells separated by the edema fluid. Numerous blood vessels and lymphatic channels, some of them dilated, were scattered throughout the myxomatous tissue (Figure 3). In addition, there was a thickened, fibrotic cortex containing many follicles in various stages of development (Figure 4). There were also many cystically dilated follicles and follicular cysts lined by granulosa cells. Crystals of Reinke and luteinized cells were not identified. The histological picture was compatible with massive edema of the ovary with torsion.

Her postoperative period was uneventful. At the last follow-up six months after the operation she was symptom-free.



Figure 1. — Longitudinal section through the pelvis of the large solid mass.

Revised manuscript accepted for publication January 16, 2004

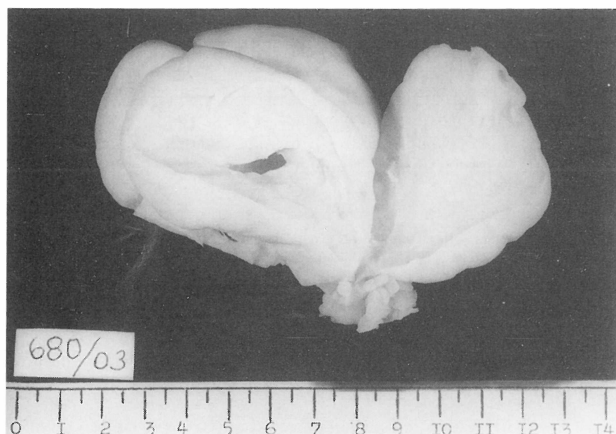


Figure 2. — The cut surface of the ovary is shown.

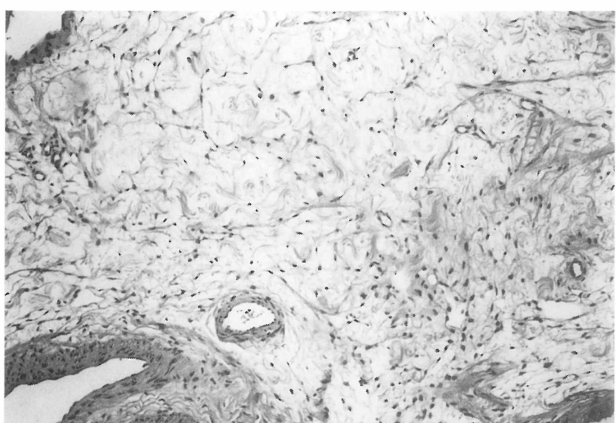


Figure 3. — Diffuse edema in the stroma and dilation of the blood vessels and lymphatic channels (H&E x 100).

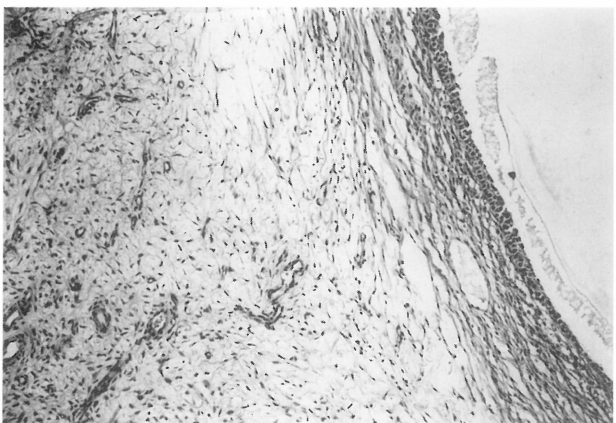


Figure 4. — Follicles in the peripheral cortex of the ovary and diffuse edema in the stroma (H&E x 50).

## Discussion

Massive ovarian edema is an unusual cause of ovarian enlargement in young patients. It primarily involves the right ovary and bilateral occurrence is rare [8, 9]. This right-side predominance may be due to elevated right ovarian vein pressure relative to the left one as it drains directly into the inferior vena cava [1, 2].

The etiology of MOE is still unclear. It is assumed to be result of partial or intermittent torsion of the ovary by blocking venous and lymphatic drainage. Partial or complete torsion of the ovarian pedicle is noted in approximately 50% of the cases [1, 2]. The other postulated mechanism in the etiopathogenesis of MOE is the development of ovarian edema secondary to a preexisting ovarian lesion [10]. Polycystic ovarian enlargement, stromal hyperthecosis and an enlarged thecoluteal cyst in the affected ovary may result in torsion. Apart from those aforementioned secondary MOE cases, one case of MOE with pulmonary lymphangitis carcinomatosa [9] and one in a women receiving clomiphene citrate [11] have been reported.

The clinical presentation of MOE varies from an acute abdomen to an incidental finding at laparotomy. Patients usually present with intermittent abdominal pain. The other signs and symptoms include pelvic mass, menstrual irregularities, abdominal distension, occasional virilization, and rarely vomiting. Patients usually have normal preoperative CA 125 levels [1, 2, 6].

The affected ovary is enlarged from 5.5 cm to 35 cm in size, soft to fluctuant in consistency, with a pearly external surface, often with visible cystic follicles under the ovarian capsule. The sectioned surface of the ovary has a typically watery, protein-rich edema fluid which readily exudes. Histological examination shows a normal cortex with islands of normal stroma surrounded by edema in the interstitium. Dilated lymphatics and venous congestion are often seen, with hemosiderin deposition being common.

The diagnostic imaging criteria of MOE have not been established yet. Ultrasound findings have been reported as a solid tumor-like mass or as a solid mass containing a cystic component, which is non-specific and can mimic neoplasia [12]. Recent reports using magnetic resonance imaging of MOE have demonstrated that multiple ovarian follicles situated around the periphery of the cortex of the enlarged ovary is the most important diagnostic indicator of MOE [5].

The differential diagnosis should include edematous fibroma, ovarian myxoma, lymphangioma, lymphangiosarcoma, ovarian fibromatosis, thecoma and sclerosing stromal tumor.

Management of MOE is difficult because the definitive diagnosis is made intraoperatively only with microscopic examination. The most commonly reported surgical approach to MOE is oophorectomy since it mimics solid tumors of the ovaries or adnexal torsion. Although most of the reported cases were treated by unilateral salpingo-oophorectomy, more recently conservative treatment by wedge resection or shortening of the utero-ovarian ligament has been proposed to prevent recurrence of the torsion [13]. Ovaries can rapidly regress to normal size after wedge resection [6].

In conclusion, MOE is an uncommon benign entity that usually leads to oophorectomy as an unnecessary treatment in children, adolescents and young women. A diagnostic wedge resection with subsequent frozen section is

essential. A definitive diagnosis of MOE can not be made on preoperative imaging. It should be considered in the differential diagnosis of solid ovarian masses keeping in mind a more conservative approach.

## References

- [1] Nogales F.F., Martin-Sances L., Mendoza-Garcia E., Salamanca A., Gonzales-Nunez M.A., Mindan F.J.P.: "Massive ovarian edema". *Histopatology*, 1996, 28, 229.
- [2] Fernando S.S.E., Guibani-Bousfield E.G., Wong F.W.S.: "Massive ovarian oedema: 3 cases and clinical considerations". *Aust. NZ J. Obstet. Gynaecol.*, 1997, 37, 126.
- [3] Guvenal T., Cetin A., Tasyurt A.: "Unilateral massive ovarian edema in a woman with polycystic ovaries". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2001, 99, 129.
- [4] Kalstone C.E., Gaffe R.B., Abell M.R.: "Massive edema of ovary stimulating fibroma". *Obstet. Gynecol.*, 1969, 34, 564.
- [5] Umesaki N., Tanaka T., Miyama M., Nishimura S., Kawamura N., Ogita S.: "Successful preoperative diagnosis of massive ovarian edema aided by comparative imaging study using magnetic resonance and ultrasound". *Eur. J. Obstet. Gynecol. Reprod. Biol.*, 2000, 89, 97.
- [6] Turan C., Ugur M., Mungan T., Taner D., Aydogdu T., Cobanoglu O.: "Massive ovarian oedema: a nonneoplastic adnexal mass mistaken for a neoplasm". *Aust. NZ J. Obstet. Gynaecol.*, 1996, 36, 96.
- [7] Heiss K.F., Zwiren G.T., Winn K.: "Massive ovarian edema in the pediatric patient: A rare solid tumor". *J. Pediatr. Surg.*, 1994, 29, 1392.
- [8] Roberts C.L., Weston M.J.: "Bilateral massive ovarian edema: a case report". *Ultrasound Obstet. Gynecol.*, 1998, 11, 65.
- [9] Wong S.Y.: "Bilateral massive ovarian oedema - report of a case due to lymphangitis carcinomatosa". *Virchows Archiv. A Pathol. Anat.*, 1989, 414, 355.
- [10] Bychkov V., Kijek M.: "Massive ovarian edema: four cases and some pathogenetic considerations". *Acta Obstet. Gynecol. Scand.*, 1987, 66, 397.
- [11] Patty J.R., Galle P.C., McRae M.A.: "Massive ovarian edema in a young woman receiving clomiphene citrate: a case report". *J. Reprod. Med. Obstet. Gynecol.*, 1993, 38, 475.
- [12] Umesaki N., Tanaka T., Miyama M., Kawamura N.: "Sonographic characteristics of massive ovarian edema". *Ultrasound Obstet. Gynecol.*, 2000, 16, 479.
- [13] Kocak M., Caliskan E., Haberal A.: "Laparoscopic conservation of the ovaries in cases with massive ovarian oedema". *Gynecol. Obstet. Invest.*, 2002, 53, 129.

Address reprint requests to:  
K. BILDIRICI, M.D.  
Akarbaşı Mah. Arısoy Sok.  
Ayşe Ana Siteşi  
No: 19 B Blok D: 8  
Eskisehir (Turkey)