



Case Report

Ovarian hyperstimulation syndrome

Abstract

This is a case report of a 22 year old female who presented to the emergency department with abdominal pain following ovulation induction for the purpose of transvaginal harvesting of the ovum. This article depicts the ultrasound findings in Ovarian Hyperstimulation Syndrome, a common complication of ovulation induction.

A 22-year-old woman, gravida 0 para 0 (G₀P₀), who had recently donated an ovum presented to the emergency department with abdominal pain. The patient had undergone a 3-week course of hormone therapy followed by injection of beta Human Chorionic Gonadotropin (β -hCG). Transvaginal harvesting of the ovum had occurred 7 days before presentation. The abdominal pain was described as diffuse, constant, and associated with abdominal distension. On review of systems, the patient had no fever, chills, nausea, vomiting, diarrhea, or vaginal bleeding. She had decreased urine output for 12 hours before presentation but no dysuria or hematuria. Vital signs included blood pressure of 110/78 mm Hg, heart rate of 110 beats/min, respiratory rate of 14 breaths/min, and oxygen saturation of 98% on room air, and she was afebrile. Abdominal examination revealed moderate abdominal distension with mild tenderness in the right and

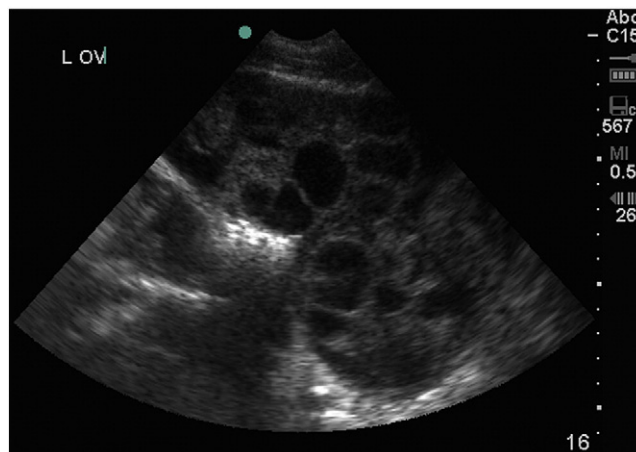


Fig. 2 Left ovary: ovarian enlargement with multiple follicles.

left lower quadrant with no rebound or guarding. Pelvic examination revealed no bleeding, a closed cervical os with no cervical motion tenderness (CMT), and palpable tender bilateral adnexal masses. A transabdominal ultrasound examination was performed (Figs. 1-4). The diagnosis was ovarian hyperstimulation syndrome.

Ovarian hyperstimulation syndrome most commonly occurs as a complication of ovulation induction. It is estimated that the incidence of significant ovarian

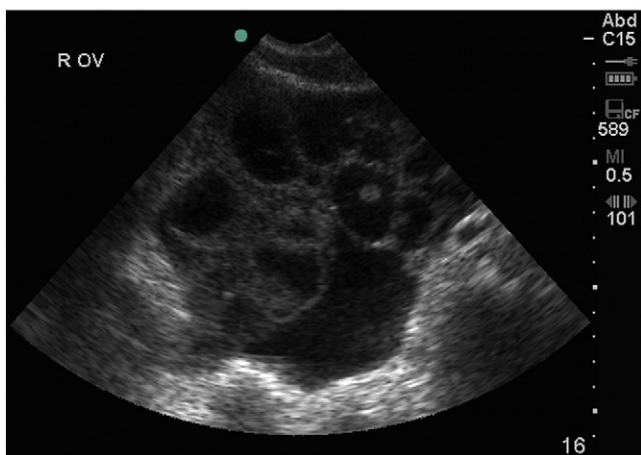


Fig. 1 Right ovary: ovarian enlargement with multiple follicles.

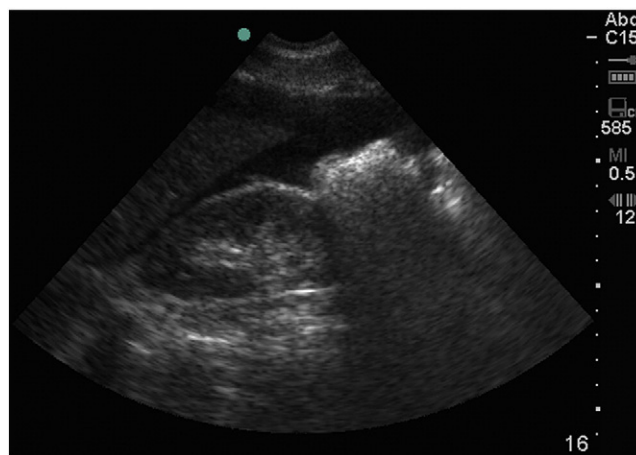


Fig. 3 Morison's pouch: fluid is seen in the hepatorenal recess and surrounding the liver.

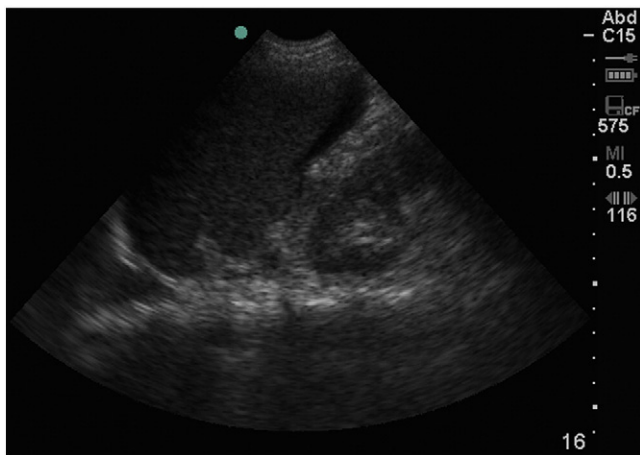


Fig. 4 Splenorenal recess: fluid is visualized surrounding the spleen.

hyperstimulation occurs in 0.5% of women undergoing ovulation induction [1]. With the recent expansion of these types of therapies, the prevalence has increased. To simulate ovulation, a medication such as clomiphene citrate or human menopausal gonadotropin is given. The ovaries produce multiple follicles, then an injection of β -hCG is given to induce final oocyte maturation [2]. Symptoms usually begin 5 to 8 days after the β -hCG is given [2]. Patients most commonly present with abdominal pain or distension.

It is unclear why hyperstimulation syndrome develops, and the pathophysiology is poorly understood [3]. The condition occurs because of disruption of capillary integrity, allowing leakage of intravascular fluid and protein into the surround tissues. It is thought that this vascular permeability is caused by increased production of vascular endothelial growth factor, which results from the increased levels of gonadotropins in the body [4]. The fluid shifts lead to electrolyte derangements, ascites, pleural and pericardial effusions, and decreased renal perfusion. The ovaries become extremely enlarged, with

significant stromal edema and multiple follicles. The ovaries can become so enlarged that ureteral obstruction occurs as a result [5]. These enlarged ovaries may be prone to torsion.

Ultrasound evaluation may reveal enlarged ovaries, sometimes greater than 10 cm, with multiple follicles and cysts. There may be areas of hemorrhage within the ovary. Free fluid may be seen surrounding the uterus or at other sites within the peritoneum. Pericardial or pleural effusion may be identified with ultrasound as well.

Ovarian hyperstimulation syndrome is usually a self-resolving condition, with mild cases requiring only supportive care. More severe cases require repletion of intravascular volume, monitoring of renal function, and prevention of thrombotic events with anticoagulation therapy.

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References

- [1] Katz VL. *Comprehensive gynecology*. 5th ed. Philadelphia: Mosby Elsevier; 2007.
- [2] Grainger RG, Allison D. *Grainger and Allison's Diagnostic Radiology: a textbook of medical imaging*. 4th ed. London: Churchill Livingstone; 2001.
- [3] Villasante A. Vascular endothelial cadherin regulates vascular permeability: implications for ovarian hyperstimulation syndrome. *J Clin Endocrinol Metabol* 2007;92(1).
- [4] Vlahos NF. Prevention and management of ovarian hyperstimulation syndrome. *Ann N Y Acad Sci* 2006;1092:247-64.
- [5] Wiygul JB, et al. Ovarian hyperstimulation causing ureteral obstruction in a pregnant woman. *Urology* 2006;67(5).