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Triple Steps Method in Managing Ovarian Endometrioma

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Abstract: ***Aims: Describe the principles and outcomes of duplex endometrioma management by the triple step method (TUGA, GnRH agonist, laparoscopic cystectomy). Method: A case report of a woman with duplex endometrioma who underwent a triple step procedure. Results: A 24-year-old female patient, P0, with a duplex endometrioma found on transvaginal ultrasonography. Right endometrioma size is 3,3x3,2 cm and left endometrioma is 3,7x2,6 cm and 4,9x5,2 cm. The patient's AMH level was 3,770 ng/ml. In this patient, a triple step was carried out, namely ultrasound-guided aspiration cyst fluid (TUGA), followed by three cycles of GnRH agonist, then laparoscopic cystectomy. Right endometrioma fluid aspiration was 36 cc and the left endometrioma search was 108 cc. Therapy was continued by giving GnRH agonist (leuprolide acetate) 3.75 mg for three cycles of administration. Then proceed with the laparoscopic cystectomy procedure. Post aspiration cyst size and administration three cycles of GnRH : right endometrioma 2.12x2.5 cm and left endometrioma size 1.9x1.5 and 2.7 cm x 3.1 cm, aspiration fluid was examined with the results of brown fluid with an image of endometrial glands containing hemosiderin-laden macrophages. During laparoscopic, cystic masses was found with fibrotic walls, smooth surface of the ovary. A pathology study was performed after laparoscopic cystectomy, showing images of endometrium and stroma with hemosiderin infiltration. An AMH examination was performed after 3 months to obtain AMH levels of 1.75 ng/ml. Conclusion: The triple step method is an effective method for maintaining ovarian reserve in patients with endometrioma.***

Keywords: Endometrioma, TUGA, GnRH agonist

1. Introduction

Endometriosis is a common inflammantory condition affecting women mostly during reproductive years. it can be asymptomatic or associated with dysmenorrhea (62.2.%), infertility (14 %) and chronic pelvic pain (13.3%). Endometriosis has a significant impact on the lives of millions women and their families and associated with an enormous socioeconomic burden.[1,2]

It is generally accepted that endometriosis presents in three different types, which are: peritoneal lessions, deep endometriosis and ovarian endometriotic cysts (endometriomas).[3] Endometriomas are the most commonly diagnosed form because of the relative ease and accuracy of ultrasound diagnosis. Although their exact prevalence and incidence are not known, they have been reported in 17-44% women with endometriosis.[1]

Ovarian endometriomas are cysts with thick walls and chocolate colored content and the presence of ovarian endometriosis is associated with a two or three fold increase in the risk of concomitant intestinal involvement.[1] The pathogenesis remains unclear with a variety of theories including invagination and subsequent collection of menstrual debris from endometriotic implants which are located on the ovarian surface and adherent peritoneum, colonization of functional ovarian cyst by endometriotic cells, metaplasia of the invaginated epithelial inclusion.[5]

Transvaginal ultrasonographyis highly sensitive (84-100%) and specific (90-100%) in the differential diagnosis of ovarian endometriomas.[5,6] These lesion presents as homogeneous hypoechoic content cysts. The management currently avaible options include estrogen suppression, progestins, surgery or combination of these. It has been shown that surgical treatment is associated with unintentional removal and destruction of ovarian follicles and reducing ovarian reserve which can objectified by measurable post operative reduction of AMH and AFC on ultrasound.[1,8]

The aim of this review was to establish the principles and outocomes management of endometriomas with triple step (ultrasonography guided transvaginal aspiration, GnRH agonist, and laparoscopic cystectomy) is a safe and effective method for treatment

2. Case Description

A 24-year-old female patient, P0, with a duplex endometrioma found on transvaginal ultrasonography. Right endometrioma size is 3,3x3,2 cm and left endometrioma is 3,7x2,6 cm and 4,9x5,2 cm. The patient's AMH level was 3,770 ng/ml. In this patient, a triple step was carried out, namely ultrasound-guided aspiration cyst fluid (TUGA), followed by three cycles of GnRH agonist, then laparoscopic cystectomy. Right endometrioma fluid aspiration was 36 cc and the left endometrioma search was 108 cc. Therapy was continued by giving GnRH agonist (leuprolide acetate) 3.75 mg for three cycles of administration. Then proceed with the laparoscopic cystectomy procedure. Post aspiration cyst size and administration three cycles of GnRH : right endometrioma 2.12x2.5 cm and left endometrioma size 1.9x1.5 and 2.7 cm x 3.1 cm, aspiration fluid was examined with the results of brown fluid with an image of endometrial glands containing hemosiderin-laden macrophages. During laparoscopic, cystic masses was found with fibrotic walls, smooth surface of the ovary. A pathology study was performed after laparoscopic cystectomy, showing images of endometrium and stroma with hemosiderin infiltration. An AMH examination was performed after 3 months to obtain

AMH levels of 1.75 ng/ml

Figure 1: (a) and (b) Endometrioma duplex in left ovary visualized from the transvaginal ultrasound

Figure 2: Endometrioma in right ovary visualized from the transvaginal ultrasound

3. Discussion

The ovarian reserve reflects the reproductive potential and oocyte function, both qualitatively and quantitatively in a patient.[10] Endometriomas can affect ovarian reserve in two ways:impairing circulation in the ovarian cortex by the compression of the cyst and thus causing follicle loss and the inflammatory setting within the cyst walls leading to follicular damage.[7,9] The most reliable and widely used quantitative ovarian reserve markers are antral follicle count (AFC) and serum anti-Mullerian hormone (AMH) levels.[9] AFC is defined as the total number of antral follicles between 2-10 mm observed in early follicular phase by transvaginal sonography.[11] AFC is a commonly used and reliable sonographic ovarian reserve marker, AFC was lower in ovaries with endometriomas compared to healthy ovaries median AFC: 3.0 (25th - 75th percentile; 1.0- 6.0) vs 5.0 (25th-75th percentile, 2.0-6.5), p=0.001, respectively. The total number of oocytes collected was similar (median:2.0, (25th-75th percentile: 0.5 - 5.0) to 2.0 (25th - 75th percentile, 0.0-4.0), p=0.60.[9,12]

Serum AMH is a reliable marker of ovarian reserve, without the limitations of ultrasound and less intercycle variations than other hormonal serum parameters, such as follicle stimulating hormone (FSH) levels. recent systematic review and meta-analysis, a total of 17 studies including a total of 968 women with endometrioma and 1874 controls were pooled together. AMH levels were significantly lower in the endometrioma group compared to women with non-endometriotic benign ovarian cysts and/or healthy ovaries (mean difference: -0.84 ng/ml; CI: -1.16 to -0.52; P<0.01).[9,13]

The already decreased ovarian reserve in the presence of an endometrioma can further decline following surgical intervention. The already decreased ovarian reserve in the presence of an endometrioma can further decline following surgical intervention. The current standard of care for endometrioma surgery is cyst excision.[9,14,15] According to working group of ESGE, ESHRE and WES for large endometrioma (>3cm) a two or three step procedure can be considered.[1] In this case report we done triple step management consists of transvaginal ultrasonography guided aspiration, followed by three cycles of GnRH agonist administration then proceed with the laparoscopic cystectomy procedure. The first transvaginal ultrasound-guided cyst aspiration was performed at the end of menstrual onset, which prevents cyst regrowth caused by menstrual onset. Then, long-acting GnRH 3.75 mg intramusculary given on day 2 of menstrual cycle for 3 month was used to allow ectopic endometrial atrophy, reduction stroma vascularization of the cyst and completely eliminating residual lesions. Laparascopic cystectomy procedure performed after 3-6 month later.

Y. Guo et al, reported long acting GnRH agonist combined with transvaginal ultrasound guided cyst aspiration indicated level of serous E2 on HCG day and the number of ovarian follicles with 14 mm or more were higher in experimental group than in control group (P<0.05).[16] Long-acting GnRH agonist inhibits the release of gonadotropin of hypothalamic pituitary axis, so estrin level is too low to maintain menstrual onset, reducing cyst recurrence and leading to invisible lesion atrophy. Transvaginal ultrasound-guided cyst aspiration can remove visible cysts without affecting ovarian function, eliminate adverse effects of inflammatory factors and improve ovarian response, so the number ofmature follicles is markedly increased. Therefore, long-acting GnRH-a combined with transvaginal ultrasound-guided cyst

aspiration can improve ovarian response, increasing the number of retrieved oocytes.[16]

4. Conclusion

Ovarian endometrioma, are common feature of endometriosis. Creating a complex situation with lower ovarian reserve leading to infertility. The current standard of care for endometrioma surgery is cyst excision, paradoxically surgical management has been shown to futher decreased ovarian reserve. Different approach management triple step (ultrasonography guided transvaginal aspiration, GnRH agonist, and laparoscopic cystectomy) yielded promising preliminary results, which is an effective method for maintaining ovarian reserve in patients with endometrioma.

References.

[1] Saridogan E, Becker C, Feki A, Grimbizis G, Hummelshoj L, Keckstein J et al. Recommendations for the surgical treatment of endometriosis—part 1: ovarian endometrioma. Gynecological Surgery. 2017;14(1).
[2] Burney R, Giudice L. Pathogenesis and pathophysiology of endometriosis. Fertility and Sterility. 2012;98(3):511-519.
[3] Nisolle M, Donnez J. Peritoneal endometriosis, ovarian endometriosis, and adenomyotic nodules of the rectovaginal septum are three different entities. Fertil Steril 1997;68:585–596
[4] J. L. Alcázar, M. LEÓn, R. Galván, and S. Guerriero, "Assessment of cyst content using mean gray value for discriminating endometrioma from other unilocular cysts in premenopausal women," *Ultrasound in Obstetrics & Gynecology*, vol. 35, no. 2, pp. 228–232, 2010.
[5] Keyhan S, Hughes C, Price T, Muasher S. An Update on Surgical versus Expectant Management of Ovarian Endometriomas in Infertile Women. BioMed Research International. 2015;2015:1-9.
[6] S. Alborzi, P. Keramati, M. Younesi, A. Samsami, and N. Dadras, "The impact of laparoscopic cystectomy on ovarian reserve in patients with unilateral and bilateral endometriomas," *Fertility and Sterility*, vol. 101, no. 2, pp. 427–434, 2014.
[7] The Effect of Surgery for Endometriomas on Fertility. BJOG: An International Journal of Obstetrics & Gynaecology. 2017;125(6):e19-e28.
[8] Somigliana E, Vigano P, Filippi F, Papaleo E, Benaglia L, Candiani M et al. Fertility preservation in women with endometriosis: for all, for some, for none?. Human Reproduction. 2015;30(6):1280-1286.
[9] Yılmaz Hanege B, Güler Çekıç S, Ata B. Endometrioma and ovarian reserve: effects of endometriomata per se and its surgical treatment on the ovarian reserve. *Facts Views Vis Obgyn*. 2019;11(2):151-157.
[10] Diagnostic evaluation of the infertile female: a committee opinion. Fertility and Sterility. 2015;103(6):e44-e50.
[11] Sanchez A, Viganò P, Somigliana E, Panina-Bordignon P, Vercellini P, Candiani M. The distinguishing cellular and molecular features of the endometriotic ovarian cyst: from pathophysiology to the potential endometrioma-mediated damage to the ovary. Human Reproduction Update. 2013; 20(2): 217-230.
[12] Lima M, Martins W, Coelho Neto M, Nastri C, Ferriani R, Navarro P. Assessment of ovarian reserve by antral follicle count in ovaries with endometrioma. Ultrasound in Obstetrics & Gynecology. 2015;46(2):239-242.
[13] Muzii L, Di Tucci C, Di Feliciantonio M, Marchetti C, Perniola G, Panici P. The effect of surgery for endometrioma on ovarian reserve evaluated by antral follicle count: a systematic review and meta-analysis. Human Reproduction. 2014;29(10):2190-2198.
[14] Hamdan M, Dunselman G, Li TC et al. The impact of endometrioma on IVF/ICSI outcomes: a systematic review and meta-analysis. Hum Reprod Update. 2015;21:809-25.
[15] Bongioanni F, Revelli A, Gennarelli G et al. Ovarian endometriomas and IVF: a retrospective case-control study. Reprod Biol Endocrinol. 2011;9:81.
[16] Guo Y, Lu N, Zhang Y, Su Y, Wang Y, Zhang Y et al. Comparative study on the pregnancy outcomes of in vitro fertilization–embryo transfer between long-acting gonadotropin-releasing hormone agonist combined with transvaginal ultrasound-guided cyst aspiration and long-acting gonadotropin-releasing hormone agonist alone. Contemporary Clinical Trials. 2012;33(6):1206-1210