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COMPARISON OF CABERGOLINE AND DIENOGEST IN OVARIAN ENDOMETRIOMA

Physiology

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ABSTRACT

Background: Ovarian endometrioma, also known as "chocolate cyst of ovary," is a sign of endometriosis, usually presenting with chronic pelvic pain and infertility. This study aimed to compare the effects of cabergoline versus dienogest in reducing the size and symptoms in patients of ovarian endometrioma. **Methods:** The study was conducted over 5 years, from January 2018 to December 2022, on patients presenting to the Obstetrics & Gynecology outpatient department, DMCH, with an ultrasound diagnosis of ovarian endometrioma. The patients were randomly assigned to two groups: group A (n =168) received cabergoline while group B (n=152) received dienogest for three months. The two groups were followed up for six months and the effects of the two drugs on the size of endometriomas and the symptomatic relief were compared using statistical analysis. **Results:** The percentage reduction in endometrioma size in women who were given dienogest was more than that compared to the women given cabergoline. The incidence of palpitations, vomiting, and headache were more in cabergoline group. There was seen irregular periods/spotting in the cabergoline group and bloating in the dienogest group. **Conclusions:** Reduction of the size of endometrioma is less apparent with cabergoline than dienogest after 3 months of treatment. Cabergoline yields better results in decreasing abdominal pain as compared to dienogest.

KEYWORDS

ovarian endometrioma, cabergoline, dienogest

INTRODUCTION:

Endometriosis is the presence of endometrial tissue outside the uterus associated with chronic pelvic pain along with infertility, which has remained an enigmatic disease both in terms of diagnosis and treatment. Endometriosis affects about 10% of all women of reproductive age.[1] The prevalence rate of endometriosis in infertile women is estimated to be 25%–40%.[2] The most easily recognized endometriotic lesion is an ovarian endometrioma, which gets readily picked up on ultrasonography. New vessel formation or neovascularization has been recognized as a feature of endometriosis.[3] It has been found that treatment with cabergoline suppresses cell proliferation and VEGF-mediated angiogenesis, thereby helping the regression of endometriotic lesions.[3] Vascular endothelial growth factor (VEGF) appears to be released by macrophages in the peritoneal fluid of women with endometriosis. Binding of VEGF to its type-2 receptor (VEGFR-2) appears to be the main regulator of vasculogenesis, angiogenesis, and vascular permeability.[4] There is a positive correlation between the severity of the disease and the secretion of VEGF in the peritoneal fluid.[5]

Cabergoline can be used as a new drug for treating endometrioma and pelvic pain. It was also demonstrated that administration of dienogest for a year is highly effective in preventing recurrence after surgery, reducing endometriosis-associated pain, and decreasing the size of recurrent endometrioma.[6] The growth of endometriosis lesions is supported by angiogenesis, the formation of new blood vessels. This theory suggests that after endometrial cells implant in the peritoneal cavity (often through retrograde menstruation), they stimulate the growth of new blood vessels to supply the lesion with nutrients and oxygen, facilitating its survival and development.[7]

Moreover, in peritoneal fluid taken from patients with endometriosis, the concentrations of various angiogenic growth factors are high, while the concentrations of antiangiogenic compounds are decreased.[7] Experimental studies of several antiangiogenic agents demonstrated the regression of endometriotic lesions by reducing their blood supply.[8] It is characterized by pelvic pain, dysmenorrhea, dyspareunia, and infertility.[9] Angiogenesis is the main biological mechanism underlying the development of endometriosis [10] Analgesics and hormonal therapy have been used for the treatment of symptomatic endometriosis with limited success.[11] The newer drugs that inhibit angiogenesis, Dienogest and Cabergoline[12] are commonly prescribed for outpatient treatment. Dienogest, a progestin and a 19-nortestosterone derivative, has good oral bioavailability and is highly selective for progesterone receptors. It is suitable for long-term applications because it does not induce hypoestrogenism like GnRH agonists.[12] Thus, Dienogest is commonly used to treat endometriosis due to its strong endometrial efficacy. It has antiproliferative and anti-inflammatory effects on endometriotic lesions.[13] Large endometriomas are commonly managed by surgical excision, which is expensive, invasive, and requires expertise. Surgical removal can affect future fertility by decreasing ovarian reserve. We carried out a prospective longitudinal study to compare the effects of cabergoline versus dienogest for the treatment of ovarian endometriomas diagnosed on ultrasonography.

METHODS:

The prospective comparative study was carried out in Dayanand medical college and hospital, Ludhiana from January 2018 to December 2022, on the patients presenting to obstetrics and gynaecology, outpatient department.. The study population included patients with ultrasound-diagnosed endometriomas and pelvic pain. 320 women were recruited for the study. Inclusion criteria were women aged between 20 and 50 years, with an endometrioma diagnosed by ultrasound, with endometrioma size upto 5cm, endometrioma with pain and endometrioma recurrent after surgery. Exclusion criteria included women with known pulmonary, cardiac, renal or hepatic disease, psychiatric illness, undiagnosed vaginal bleeding and a history of any hormonal treatment including contraceptives over the past 6 months.

The patients were counselled regarding the drugs and expected side effects.Informed written consent was taken. The subjects were randomly divided into group I (cabergoline), n=168 and group II (dienogest) , n=152. Treatment started from the 1st day of menstruation after the first visit and investigations. Cabergoline, 0.5mg tablet twice weekly, was given to group I for 3 months. Dienogest , 2mg tablet daily, was given to group II for the same duration. Follow up was scheduled at the end of the first month, third month and continued till six months. The assessment of endometrioma sizes before and after the treatment was performed using the same transvaginal ultrasonography machine. All patients were evaluated for various symptoms including dysmenorrhea, dyspareunia, back pain and non-menstrual abdominal pain. The participant was asked to put a tick mark on a point that best described her pain anywhere between 0 indicating "no pain" and 10 indicating "worst possible pain". This provided an overall pelvic pain score ranging from 0 to 10. Pain score and size of endometrioma were recorded prior to treatment and at end of the first and third months of treatment. The patients were also evaluated for the side effects following the treatment.

RESULTS:

There were 320 patients for analysis. The baseline demographic characteristics of the participants are described in Table 1 and clin Table 2. Table 3 describes the relief in symptoms by medical treatment. There were no significant differences between the groups regarding demographic and clinical variables.

Table 1. Baseline Demographics Characteristics Of Study Participants

Age Group	Cabergoline	Dienogest	Total	P value
20-30	65 (53.7%)	56 (46.3%)	121 (100%)	0.77
30-40	80 (50.6%)	78 (49.4%)	158 (100%)	
>40	23 (56.1%)	18 (43.9%)	41 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Marital Status	**Cabergoline**	**Dienogest**	**Total**	0.26
Married	116 (54.7%)	96 (45.3%)	212 (100%)	
Unmarried	52 (48.1%)	56 (51.9%)	108 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Parity	**Cabergoline**	**Dienogest**	**Total**	0.97
P0	48 (52.2%)	44 (47.8%)	92 (100%)	
P1	71 (52.6%)	64 (47.4%)	135 (100%)	
P2	37 (51.4%)	35 (48.6%)	72 (100%)	
P3	12 (57.1%)	9 (42.9%)	21 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Table 2 - Size of endometrioma before and after 3 months of treatment				
Size of Endometrioma	**Cabergoline**	**Dienogest**	**Total**	0.57
<3 cm	12 (42.9%)	16 (57.1%)	28 (100%)	
3-4 cm	100 (53.2%)	88 (46.8%)	188 (100%)	
>4 cm	56 (53.8%)	48 (46.2%)	104 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Side	**Cabergoline**	**Dienogest**	**Total**	0.8
Bilateral	64 (51.6%)	60 (48.4%)	124 (100%)	
Unilateral	104 (53.1%)	92 (46.9%)	196 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Size of Endometrioma (after 3 months R_x)	**Cabergoline**	**Dienogest**	**Total**	
<3 cm	48 (46.2%)	56 (53.8%)	104 (100%)	0.28
3-4 cm	100 (55.6%)	80 (44.4%)	180 (100%)	
>4 cm	20 (55.6%)	16 (44.4%)	36 (100%)	
Total	168 (52.5%)	152 (47.5%)	320 (100%)	
Side	**Cabergoline**	**Dienogest**	**Total**	
Unilateral	120 (51.7%)	112 (48.3%)	232 (100%)	0.006
Bilateral	48 (70.6%)	20 (29.4%)	68 (100%)	
Total	168 (56.0%)	132 (44.0%)	300 (100%)	
Table 3: Relief in symptoms after 3 months of medical treatment of study participants.				
Relief in Symptom	**Cabergoline**	**Dienogest**	**Total**	0.005
Back Pain	64 (47.1%)	72 (52.9%)	136 (100%)	
Dysmenorrhea	68 (58.6%)	48 (41.4%)	116 (100%)	
Dyspareunia	32 (50.0%)	32 (50.0%)	64 (100%)	
Infertility	36 (45.0%)	44 (55.0%)	80 (100%)	
Pain Abdomen	56 (70.0%)	24 (30.0%)	80 (100%)	
Total	256 (53.8%)	220 (46.2%)	476 (100%)	
Table 4. Distribution of study participants by clinical characteristics.				
Symptoms	Cabergoline	Dienogest	Total	0.09
Back Pain	72 (39.1%)	112 (60.9%)	184 (100%)	
Dysmenorrhea	88 (45.8%)	104 (54.2%)	192 (100%)	
Dyspareunia	36 (42.9%)	48 (57.1%)	84 (100%)	
Infertility	48 (52.2%)	44 (47.8%)	92 (100%)	
Pain Abdomen	80 (52.6%)	72 (47.4%)	152 (100%)	
Total	324 (46.0%)	380 (54.0%)	704 (100%)	
Table 5 : Side effects of cabergoline and dienogest respectively.				
Side Effects	**Cabergoline**	**Dienogest**	**Total**	0.001
Amenorrhea	0 (0.0%)	80 (100.0%)	80 (100%)	
Bloating	48 (30.0%)	112 (70.0%)	160 (100%)	
Chills, Cold, Sweats	12 (20.0%)	48 (80.0%)	60 (100%)	
Headache	72 (81.8%)	16 (18.2%)	88 (100%)	
Irregular Periods/Spotting	28 (58.3%)	20 (41.7%)	48 (100%)	
Palpitations	56 (87.5%)	8 (12.5%)	64 (100%)	
Pins and Needles Sensation	8 (7.7%)	96 (92.3%)	104 (100%)	
Vomiting	20 (71.4%)	8 (28.6%)	28 (100%)	
Total	244 (38.6%)	388 (61.4%)	632 (100%)	

DISCUSSION

This prospective comparative study was carried out to compare the effects of cabergoline and dienogest on patients with endometrioma. The reduction in the size of endometrioma with cabergoline treatment was much less than that achieved with dienogest. There was statistically significant reduction in pain in both cabergoline and dienogest groups (p>0.005). There are a few studies investigating the effects of cabergoline and dienogest in women with endometriosis. A prospective, randomized study including 140 women with endometrioma, divided into two groups as follows. One group comprised 71 patients, all of them receiving cabergoline 0.5 mg tablets, twice per week for 12 weeks. The other group comprised 69 patients and all of them received LHRH agonist, decapeptyl 3.75 mg subcutaneous, single injection, once a month for 3 months. They enrolled 140 women, age range 18–40 years, mean age of cabergoline group was 31.10 ± 2 years and of LHRH group was 29.06 ± 3 years, not very different from ours 27.4 ± 4.1 years in cabergoline group and 28.1 ± 5.3 years in dienogest group)[2]. Primary infertility was more frequent with cabergoline as compared to dienogest as also in our study. If the mean size of endometrioma was reduced by more than 25% of its

original size, at the end of the treatment, it was considered to be significant. A study reported significant reduction in the size of endometrioma in 64.1% of women having cabergoline compared to 21.7% in women having LHRH agonist and showed that cabergoline can reduce severe pain equally well as GnRH agonist.[2] Our study showed that there was significant decrease in pain score and 5.1% percentage reduction in the size of endometrioma in women having dienogest. The findings are supported by other studies. [13] Another study showed that the size of endometrioma was significantly reduced at 12 months (30.9 mm vs 20.8 mm) and 18 months (20.5 mm vs 14.7 mm) of dienogest treatment. It appears that larger decrease in size is associated with longer duration of treatment.[6] A 12-week randomized, double-blind, placebo-controlled study aimed at investigating the efficacy and safety of oral dienogest 2 mg in the treatment of endometriosis-associated pelvic pain. Dienogest 2 mg or a placebo was administered orally once daily.[14] pain was significantly reduced at 12 months after treatment with dienogest[6]. A study also showed that after 24 weeks of treatment by dienogest, mean reduction in pelvic pain score was statistically significant for dienogest over placebo.[15] These results are consistent with our study. Another study where they implanted human endometrial fragments in peritoneum of mice and used cabergoline to control the spread of endometriosis. The results showed a significant inhibitory effect of cabergoline on endometriosis spread. [16]The side effects including amenorrhoea and bloating were less with cabergoline as compared to dienogest as per our study. Headache and palpitations were more commonly reported in Cabergoline group whereas amenorrhoea, bloating and pins and needles sensation was more common in Dienogest group.

CONCLUSION

This study was done to compare the effects of cabergoline and dienogest in reducing the size of endometriomas and pelvic pain. Reduction of the size of endometrioma is less apparent with cabergoline than dienogest after 3 months of treatment. Cabergoline yields better results in decreasing the abdominal pain compared to dienogest with fewer side effects. Further, randomized controlled studies with larger sample size and longer duration are needed to establish its efficacy.

Conflict Of Interest: none

REFERENCES:

1. Khine, Y. M., Taniguchi, F., & Harada, T. (2016). Clinical management of endometriosis-associated infertility. Reproductive Medicine and Biology, 15(4), 217-225.
2. Hamid, A. M. S. A., Madkour, W. A. I., & Moawad, A. (2014). Does cabergoline help in decreasing endometrioma size compared to LHRH agonist? A prospective randomized study. Archives of Gynecology and Obstetrics, 290(4), 677-682.
3. May, K., & Becker, C. M. (2008). Endometriosis and angiogenesis. Minerva Ginecologica, 60(3), 245-254.
4. Usmani, F., Usmani, A., & Raazi, M. (2015). Dopamine agonists in treatment of endometriosis: Are they really effective, a review. International Journal of Multidisciplinary Research and Development, 2(5), 406-408.
5. Delgado-Rosas, F., Gomez, R., Ferrero, H., et al. (2011). The effects of ergot and non-ergot-derived dopamine agonists in an experimental mouse model of endometriosis. Reproduction, 142(5), 745-755.
6. Park, A., Chang, P., Ferin, M., et al. (2004). Inhibition of endometriosis development in Rhesus monkeys by blocking VEGF receptor: A novel treatment for endometriosis. Fertility and Sterility, 82, S71.
7. Healy, D. L., Rogers, P. A., Hii, L., & Wingfield, M. (1998). Angiogenesis: A new theory for endometriosis. Human Reproduction Update, 4(5), 736-740.
8. Rocha, A. L., Reis, F. M., & Taylor, R. N. (2013). Angiogenesis and endometriosis. Obstetrics and Gynecology International, 2013, 859619.
9. Ma, Y., & He, Y. L. (2014). Study of an antiangiogenesis gene therapy with endostatin on endometriosis in the nude mouse model. Clinical and Experimental Obstetrics & Gynecology, 41, 328-334.
10. Zheng, W., Cao, L., Xu, Z., Ma, Y., & Liang, X. (2018). Anti-angiogenic alternative and complementary medicines for the treatment of endometriosis: A review of potential molecular mechanisms. Evidence-Based Complementary and Alternative Medicine, 2018, 4128984.
11. Ercan, C. M., Kayaalp, O., Cengiz, M., Keskin, U., Yumusak, N., Aydogan, U., & Ergün, A. (2014). Comparison of efficacy of bromocriptine and cabergoline to GnRH agonist in a rat endometriosis model. Archives of Gynecology and Obstetrics, 291, 1103-1111.
12. McCormack, P. L. (2010). Dienogest: A review of its use in the treatment of endometriosis. Drugs, 70, 2073-2088.
13. Brosens, I., Puttemans, P., Gordts, S., Campo, R., Gordts, S., & Benagiano, G. Early stage management of ovarian endometrioma to prevent infertility.
14. Strowitzki, T., Faustmann, T., Gerlinger, C., & Seitz, C. (2010). Dienogest in the treatment of endometriosis-associated pelvic pain: A 12-week, randomized, double-blind, placebo-controlled study. European Journal of Obstetrics, Gynecology, and Reproductive Biology, 151(2), 193-198.
15. Lang, J., Yu, Q., Zhang, S., Li, H., Gude, K., von Ludwig, C., & Ren, X. (n.d.). Dienogest for treatment of endometriosis in Chinese women: A placebo-controlled, randomized, double-blind phase 3 study.