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Impact of Long-Term Cabergoline Therapy on Pain Relief, Disease Recurrence, and Quality of Life Among Women Undergoing Conservative Management of Endometriosis

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ABSTRACT

Background: Endometriosis is a chronic gynecological disorder associated with pelvic pain, infertility, reduced quality of life, and frequent disease recurrence. Cabergoline, a dopamine agonist with anti-angiogenic properties, has emerged as a potential therapeutic option for the conservative management of endometriosis.
Objective: To evaluate the impact of long-term cabergoline therapy on pain relief, disease recurrence, and quality of life among women undergoing conservative management of endometriosis.
Materials and Methods: This prospective observational study was conducted at Muzaffarnagar Medical College and Hospital over a period of 12 months. A total of 40 women diagnosed with endometriosis and managed conservatively were enrolled. Clinical characteristics, pain scores using the Visual Analog Scale (VAS), disease recurrence, and quality-of-life scores were assessed at baseline and during follow-up. Data were analyzed using appropriate statistical methods, with $p<0.05$ considered statistically significant.
Results: The mean age of participants was 31.2 ± 5.8 years. Dysmenorrhea (90%) and chronic pelvic pain (77.5%) were the most common presenting symptoms. Mean VAS pain scores significantly decreased from 7.8 ± 1.2 at baseline to 2.8 ± 1.0 at 12 months. Quality-of-life scores improved substantially during follow-up. Disease recurrence was observed in 15% of patients, while 85% remained recurrence-free. Excellent or good clinical response was achieved in 82.5% of patients. Cabergoline was generally well tolerated, with only mild adverse effects reported.
Conclusion: Long-term cabergoline therapy was associated with significant pain reduction, improved quality of life, and low disease recurrence in women undergoing conservative management of endometriosis. The treatment was safe and well tolerated, suggesting its potential role as an adjunctive therapeutic option in endometriosis management.

Keywords: *Endometriosis, Cabergoline, Pain Relief, Quality of Life, Disease Recurrence, Conservative Management, Dopamine Agonist.*

INTRODUCTION

Endometriosis is a chronic, estrogen-dependent gynecological disorder characterized by the presence of endometrial glands and stroma outside the uterine cavity. It affects approximately 10% of women of reproductive age and up to 50% of women presenting with infertility or chronic pelvic pain (1). The disease commonly manifests as dysmenorrhea, chronic pelvic pain, dyspareunia, dyschezia, and infertility, significantly impairing physical, emotional, and social well-being (2).

Although the exact pathogenesis of endometriosis remains incompletely understood, current evidence suggests that retrograde menstruation, altered immune responses, genetic predisposition, inflammation, angiogenesis, and hormonal factors contribute to disease development and progression (3). Among these mechanisms, angiogenesis is considered essential for the implantation and survival of ectopic endometrial tissue. Increased expression of vascular endothelial growth factor (VEGF) has been demonstrated in endometriotic lesions and peritoneal fluid of affected women, indicating its important role in lesion growth and maintenance (4).

Current management strategies include hormonal suppression, analgesic therapy, and surgical intervention. Commonly used medical treatments such as combined oral contraceptives, progestogens, and gonadotropin-releasing hormone (GnRH) agonists are effective in symptom control but are frequently associated with recurrence following treatment discontinuation and may produce undesirable adverse effects during prolonged use (5). Consequently, newer therapeutic approaches targeting angiogenesis have attracted increasing attention.

Cabergoline is a dopamine D2 receptor agonist that has demonstrated anti-angiogenic activity through inhibition of VEGF receptor phosphorylation. Experimental studies have shown that dopamine agonists can reduce vascular permeability and suppress neovascularization in endometriotic implants (6). Preliminary clinical studies have reported reductions in lesion size and symptom severity among women receiving cabergoline therapy (7,8). However, evidence regarding its long-term effectiveness in routine clinical practice remains limited.

Therefore, the present study was conducted to evaluate the impact of long-term cabergoline therapy on pain relief, disease recurrence, and quality of life among women undergoing conservative management of endometriosis at Muzaffarnagar Medical College and Hospital.

MATERIALS AND METHODS

Study Design and Setting

This prospective observational study was conducted in the Department of Obstetrics and Gynecology at Muzaffarnagar Medical College and Hospital, Muzaffarnagar, Uttar Pradesh, India, over a period of 12 months. The study aimed to evaluate the impact of long-term cabergoline therapy on pain relief, disease recurrence, and quality of life among women undergoing conservative management of endometriosis.

Study Population

A total of 40 women diagnosed with endometriosis and managed conservatively were enrolled in the study after obtaining informed written consent.

Inclusion Criteria

- Women aged 18–45 years.
- Clinically, radiologically, or laparoscopically diagnosed cases of endometriosis.
- Patients opting for conservative (non-radical surgical) management.
- Patients willing to receive cabergoline therapy and comply with follow-up visits.

Exclusion Criteria

- Pregnant or lactating women.
- Women with severe hepatic, renal, or cardiovascular disorders.
- Patients with hypersensitivity or contraindications to cabergoline.
- Women with concurrent gynecological malignancies.
- Patients lost to follow-up during the study period.

Treatment Protocol

All enrolled patients received oral cabergoline therapy as per institutional protocol for a duration determined by the treating gynecologist. Standard supportive treatment, including analgesics and hormonal therapy when indicated, was continued as per clinical requirements.

Data Collection

Baseline demographic and clinical characteristics, including age, body mass index (BMI), duration of symptoms, stage of endometriosis, and previous treatment history, were recorded.

Patients were evaluated at baseline and during scheduled follow-up visits over the 12-month study period.

Outcome Measures

Primary Outcomes

- **Pain Relief**
  - Assessed using the Visual Analog Scale (VAS) for pelvic pain, dysmenorrhea, and dyspareunia.
  - Changes in pain scores from baseline to the end of follow-up were recorded.
- **Disease Recurrence**
  - Evaluated based on recurrence of symptoms and/or radiological evidence of endometriotic lesions during follow-up.
- **Quality of Life**
  - Assessed using the Endometriosis Health Profile (EHP-30) questionnaire or a validated quality-of-life assessment tool.
  - Changes in quality-of-life scores were compared between baseline and the end of treatment.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using Statistical Package for Social Sciences (SPSS) software version 26.0. Continuous variables were expressed as mean ± standard deviation (SD), while categorical variables were presented as frequencies and percentages. Paired t-test or Wilcoxon signed-rank test was used to compare pre- and post-treatment continuous variables. Categorical variables were analyzed using the Chi-square test or Fisher's exact test as appropriate. A p-value of <0.05 was considered statistically significant.

Ethical Considerations

The study protocol was reviewed and approved by the Institutional Ethics Committee of Muzaffarnagar Medical College and Hospital. Written informed consent was obtained from all participants prior to enrollment, and confidentiality of patient information was maintained throughout the study.

RESULTS AND OBSERVATIONS

A total of 40 women with endometriosis undergoing conservative management and receiving cabergoline therapy were included in the study. All patients completed the 12-month follow-up period.

Table 1. Age Distribution of Study Participants (n=40)

Age Group (Years)	Number of Patients	Percentage (%)
18–25	8	20.0
26–30	12	30.0
31–35	11	27.5
36–40	6	15.0
>40	3	7.5
Total	40	100.0

Observation: The majority of patients (57.5%) belonged to the 26–35 years age group.

Table 2. Baseline Clinical Characteristics

Parameter	Mean ± SD
Age (years)	31.2 ± 5.8
BMI (kg/m²)	24.8 ± 3.6
Duration of Symptoms (years)	3.9 ± 1.8
Baseline VAS Pain Score	7.8 ± 1.2
Baseline Quality of Life Score (EHP-30)	61.4 ± 9.7

Observation: Most patients presented with moderate to severe pain and impaired quality of life at baseline.

Table 3. Distribution According to Presenting Symptoms

Symptom	Number of Patients	Percentage (%)
Dysmenorrhea	36	90.0
Chronic Pelvic Pain	31	77.5
Dyspareunia	22	55.0
Infertility	18	45.0
Dyschezia	10	25.0

Observation: Dysmenorrhea was the most common presenting complaint.

Table 4. Change in Pain Scores Following Cabergoline Therapy

Follow-up Period	Mean VAS Score ± SD
Baseline	7.8 ± 1.2
3 Months	5.9 ± 1.3

6 Months	**4.3 ± 1.1**
12 Months	**2.8 ± 1.0**

Observation: A progressive and significant reduction in pain scores was observed throughout the treatment period (p<0.001).

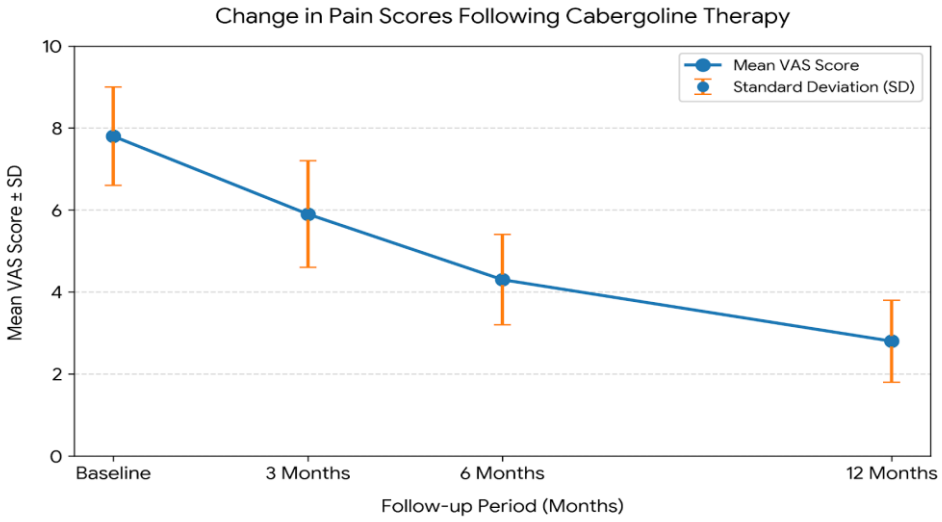

Table 5. Improvement in Quality of Life

Time Point	Mean EHP-30 Score ± SD
Baseline	**61.4 ± 9.7**
6 Months	**44.8 ± 8.5**
12 Months	**31.6 ± 7.2**

Observation: Quality-of-life scores improved significantly after cabergoline therapy (p<0.001).

Table 6. Disease Recurrence During Follow-Up

Recurrence Status	Number of Patients	Percentage (%)
No Recurrence	**34**	**85.0**
Recurrence Present	**6**	**15.0**
Total	**40**	**100.0**

Observation: Disease recurrence was observed in only 15% of patients during the 12-month follow-up period.

Table 7. Overall Clinical Outcome at 12 Months

Outcome	Number of Patients	Percentage (%)
Excellent Response (>70% pain reduction)	**22**	**55.0**
Good Response (50–70% pain reduction)	**11**	**27.5**
Moderate Response (25–49% pain reduction)	**5**	**12.5**
Poor Response (<25% pain reduction)	**2**	**5.0**

Observation: Excellent or good clinical response was achieved in 82.5% of patients receiving cabergoline therapy.

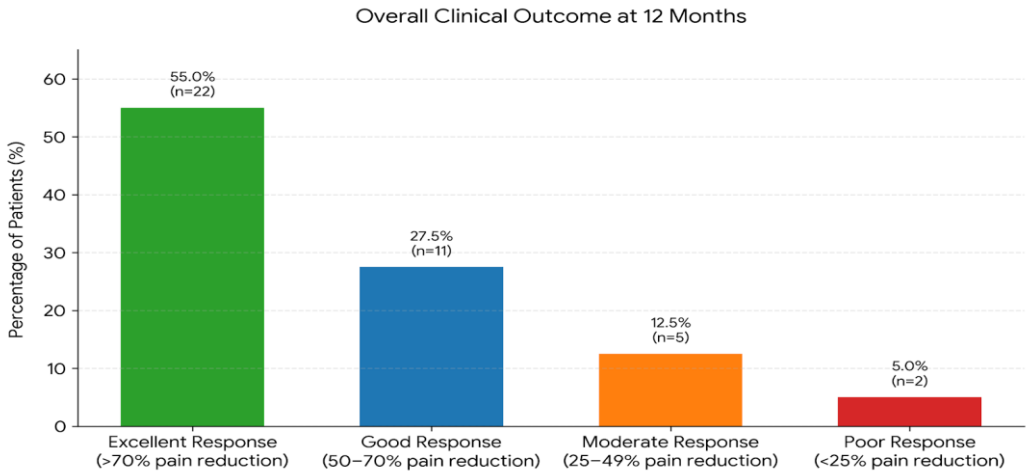

Table 8. Adverse Effects Associated with Cabergoline

Adverse Effect	Number of Patients	Percentage (%)
Nausea	**5**	**12.5**
Headache	**4**	**10.0**
Dizziness	**3**	**7.5**
Fatigue	**2**	**5.0**
No Adverse Effects	**26**	**65.0**

Observation: Cabergoline was generally well tolerated, with mild adverse effects reported in a minority of patients.

DISCUSSION

The present prospective study assessed the clinical outcomes of long-term cabergoline therapy in 40 women undergoing conservative management of endometriosis. The findings demonstrated significant improvement in pain symptoms, enhancement of quality of life, and a relatively low rate of disease recurrence during the 12-month follow-up period.

The mean age of participants in the present study was 31.2 ± 5.8 years, with the majority belonging to the 26–35-year age group. This observation is consistent with previous reports indicating that endometriosis predominantly affects women during their reproductive years (1,2). Dysmenorrhea and chronic pelvic pain were the most frequent presenting complaints, which is in agreement with the clinical profile described by Parasar et al. (9).

One of the most important findings of this study was the progressive reduction in pain scores following cabergoline therapy. The mean VAS score decreased from 7.8 ± 1.2 at baseline to 2.8 ± 1.0 at 12 months. Pain generation in endometriosis is closely linked to inflammatory mediators, nerve fiber proliferation, and angiogenesis within ectopic lesions (10). The anti-angiogenic effect of cabergoline may contribute to reduced lesion activity and subsequent symptom improvement. Similar observations have been reported by Novella-Maestre et al. (6), who demonstrated regression of endometriotic implants after dopamine agonist therapy. Furthermore, Gomez et al. (7) observed a reduction in lesion vascularization and pain intensity among women treated with cabergoline.

Quality-of-life assessment revealed a substantial decline in EHP-30 scores from baseline to the end of follow-up, indicating significant improvement in patient well-being. Endometriosis is known to adversely affect physical functioning, work productivity, sexual health, and psychological status (11). Improvement in quality-of-life scores in the present study is likely attributable to sustained pain reduction and improved symptom control. Similar findings have been reported by Vercellini et al. (12), who highlighted the importance of long-term symptom suppression in improving patient-reported outcomes.

Disease recurrence occurred in 15% of patients during the study period. Recurrence remains a major challenge in the management of endometriosis, with reported rates varying from 20% to 40% following conservative treatment depending on disease severity and duration of follow-up (13). Although direct comparisons should be interpreted cautiously because of differences in study design and follow-up duration, the relatively low recurrence rate observed in our study suggests a potential role of cabergoline in limiting disease progression. This finding is biologically plausible given the established role of VEGF-mediated angiogenesis in the persistence of endometriotic lesions (4,6).

The safety profile observed in the present study was favorable. Most adverse effects were mild and self-limiting, consisting primarily of nausea, headache, and dizziness. No participant discontinued therapy because of treatment-related complications. Previous studies evaluating dopamine agonists in gynecological disorders have similarly reported good tolerability and a low incidence of serious adverse events (14).

The present study has several limitations. The sample size was relatively small, the study was conducted at a single center, and there was no control or comparison group receiving standard hormonal therapy. Additionally, the follow-up period of 12 months may not fully capture long-term recurrence patterns. Larger randomized controlled trials are required to establish the comparative efficacy and safety of cabergoline and to determine its definitive role in the management of endometriosis.

Despite these limitations, the study provides clinically relevant evidence suggesting that cabergoline therapy may offer benefits in reducing pain, improving quality of life, and limiting short-term disease recurrence among women undergoing conservative management of endometriosis.

CONCLUSION

Long-term cabergoline therapy was associated with significant pain relief, improved quality of life, and low disease recurrence among women undergoing conservative management of endometriosis. The treatment was well tolerated with

minimal adverse effects. Cabergoline appears to be a promising adjunctive therapy; however, larger controlled studies are needed to confirm its long-term efficacy and safety.

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