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Original Research Article

COMPARISON OF SAFETY AND EFFICACY OF ORAL PROGESTERONE WITH LEVONORGESTREL INTRAUTERINE SYSTEM IN MANAGEMENT OF DYSFUNCTIONAL UTERINE BLEEDING

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Abstract: *The retrospective study was conducted in the Department of Obstetrics and Gynaecology, Nishtar Medical Hospital, Multan, to compare the safety and efficacy of oral progesterone and levonorgestrel-releasing intrauterine system (LNG-IUS) for the management of DUB. The study was conducted on 90 patients who fulfilled the inclusion criteria. Participants were randomly divided into groups A (LNG-IUS) and B (oral progesterone). The primary outcomes were Pictorial blood loss assessment chart (PBAC) scores. Secondary outcomes were the evaluation of adverse effects and Hb levels. A comparison of the mean PBAC score showed that LNG-IUS significantly reduced PBAC scores (P< 0.0001). Comparison of post-treatment HB levels showed that LNG-IUS significantly increased Hb level, and the difference between both groups was statistically significant (P< 0.0001). After 6 months, the incidence of adverse effects in group B was 60%, while in group A was 40%. However, hypomenorrhea was more prevalent in group A. It can be concluded that LNG-IUS is a more effective and safe treatment choice for Dub compared to oral progesterone.*

Keywords: Oral Progesterone, Levonorgestrel Intrauterine System, Dysfunctional Uterine Bleeding

Introduction

Almost one-third of women of reproductive age have heavy menstrual bleeding, impacting their quality of life. (Abbas et al., 2020). Dysfunctional uterine bleeding (DUB) results in constant estrogen levels stimulating endometrial growth. Endometrium outgrows its blood supply due to constant proliferation. The tissue from the uterus tears and sloughs. It occurs because of hormonal disturbances such as reduced progesterone which causes low prostaglandin F2 alpha levels causing menorrhagia and increased tissue plasminogen activator (TPA) levels leading to fibrinolysis (Schoep et al., 2019).

Progesterone is used to manage DUB; it can be used orally or locally. Its oral forms include cyclic natural progesterone, norethindrone, norethindrone acetate, medroxyprogesterone acetate (MPA), etc. Locally it is available as a gel, vaginal suppositories, and progesterone-releasing intrauterine devices (LNG-IUS). LNG-IUS is considered the first-line protocol for managing menorrhagia (Cooper et al., 2019). Various studies have reported the superiority of progesterone-releasing intrauterine devices over conventional treatments for dysfunctional uterine bleeding (Gök et al., 2022; Joo et al., 2021; Kumari et al., 2022; Momoeda et al., 2022). However, local data on cost effectiveness and outcomes of LNG-IUS and conventional treatments are scarce. Thus, this study compares the safety and efficacy of oral progesterone and levonorgestrel-releasing intrauterine system (LNG-IUS) for managing DUB.

Methodology

The retrospective study was conducted in the Department of Obstetrics and Gynaecology, Nishtar Medical Hospital, Multan. The study included women of reproductive who had abnormal uterine bleeding. Women with pelvic pathology, bleeding disorder, systemic diseases, and pregnancy were excluded. Informed consent of the participants was taken. The ethical board of the hospital approved the study.

The study was conducted on 90 patients who fulfilled the inclusion criteria. All participants underwent detailed clinical examinations. Patients were randomly divided into two groups. Group A (n=45) contained patients in whom LNG-IUS was inserted during the first 7 days of the menstrual cycle. Group

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B (n=45) contained patients prescribed Regesterone 5 mg TDS for 7 days, reduced to BD for a week and OD for the next week during the first cycle. During the 2nd to 6th cycle, patients were prescribed medroxyprogesterone acetate 10 mg BD for maintenance therapy. Patients were followed up at 1st, 3rd, and 6th months. The primary outcome was Pictorial blood loss assessment chart (PBAC) scores. The PBAC is a diagrammatic representation of heavily, moderately, and lightly soiled tampons and sanitary pads. Reid et al. designed a scoring system to designate scores to charts(Reid et al., 2000). The subsequent decrease in score from the baseline score indicates the success of treatment. PBAC score ≥ 100 indicated menstrual blood loss≥ 80 ml.

Based on the assessment, improvement was graded as mild, marked, and no improvement with further deterioration. Secondary outcomes were the evaluation of adverse effects and Hb levels. Primary and secondary outcomes were assessed at every follow-up visit.

SPSS version 23.0 was used for data analysis. Primary and secondary outcomes in both groups were compared using a t-test. P value <0.0001 was considered statically significant.

Results

TABLE I SUMMARIZES THE mean PBAC score in both groups after 1, 3 and 6 months. In group A, the decrease in mean PBAC score was 40.31%, 55.2%, and 68.2% after the 1st, 3rd, and 6th months, respectively. In group B, the decrease in mean PBAC score was 15.9%, 32.6%, and 61.5% after the 1st, 3rd, and 6th month respectively. A comparison of mean PBAC scores showed that LNG-IUS significantly reduced PBAC scores, and the difference between both groups was statistically significant (P< 0.0001).

The mean Hb level in both groups is summarized in Table II. In group A, the increase in mean Hb level was 9.8%, 20.1%, and 30.1% after the 1st, 3rd, and 6th month respectively. In group B, the increase in mean Hb level was 4.6%, 7.1%, and 10.8% after the 1st, 3rd, and 6th months respectively. Comparison of post-treatment HB levels showed that LNG-IUS significantly increased Hb level, and the difference between both groups was statistically significant (P< 0.0001).

In group A, before treatment, endometrial thickness was 10.896 ±1.89 mm which reduced to 8.25 ± 1.81 mm after treatment, mean reduction was 2.43 mm. In group B, endometrial thickness was 11.12 ± 2.29 mm before treatment, which reduced to 9.37 ± 2.43mm after treatment, and the mean reduction was 1.75 mm. The comparison showed that LNG-IUS significantly reduced endometrial thickness, and the difference between both groups was statistically significant (P<0.0001).

In group A, 10 (22.2%) patients showed improvement after 1st month, 28 (62.2%) after 3rd month, and 40 (88.8%) after 6th month. In group B, 5(11.1%) patients showed improvement after 1st month, 10 (22.2%) after 3rd, and 28 (62.2%) after 6th month. After 6 months, the incidence of adverse effects in group B was 60%, while in group A was 40%. However, hypomenorrhea was more prevalent in group A (28.8%) compared to group B (8.8%).

Table I Intergroup comparison of PBAC score

	Mean PBAC score			
	Pre-treatment	At 1st month	At 3rd month	At 6th month
Group A	242.9±93.63	145.2± 79.34	108.7± 70.76	77.3 ± 44.67
Group B	246.6 ± 89.85	206.4 ±84.78	166.3 ± 77.98	132 ± 61.67

Table II Intergroup comparison of Hb levels

	Mean Hb level			
	Pre-treatment	At 1st month	At 3rd month	At 6th month
Group A	7.56 ± 0.87	8.26± 0.88	8.76 ± 0.87	9.50± 0.98
Group B	7.56 ± 1.67	7.77± 1.11	7.88 ± 1.01	8.87± 1.05

Discussion

Dysfunctional uterine bleeding is a common disorder. The current study compared the safety and efficacy of oral progesterone and levonorgestrel-releasing intrauterine system (LNG-IUS) in women with DUB. We compared the mean PBAC score, an accurate and simple tool for assessing blood loss during menstruation that can be applied clinically for treatment. In the current study, the PBAC score was greater than 100 in both groups before treatment. A previous study showed a PBAC score greater than 120 in subjects with menorrhagia (Beelen et al., 2021). In group A, the decrease in mean PBAC score was 40.31%, 55.2%, and 68.2% after the 1st, 3rd, and 6th month respectively, while in group B decrease in mean, PBAC score was 15.9%, 32.6%, and 61.5% after 1st, 3rd and 6th month respectively. The comparison showed that the difference between both groups was statistically significant. This was in line

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with the findings of previous studies, which reported a significant reduction in PBAC score post-LNG-IUS treatment (Guerin et al., 2022; Malik et al., 2020; Somasundar and Shanmugam, 2022). These studies reported that compared to low-dose oral contraceptives or MDPA, LNG-IUS more effectively reduces PBAC scores. In the current study, 88.8% of patients in group A showed marked improvement after 6 months of treatment, compared to 62.2% of patients in group B. These results are comparable to a previous study that reported a 74% improvement in the LNG-IUS group (Depes et al., 2023).

In group A, the increase in mean Hb level was 9.8%,20.1%, and 30.1% after 1st, 3rd, and 6th month respectively, while in group B, the increase in mean Hb level was 4.6%, 7.1%, and 10.8% after 1st, 3rd and 6th month respectively. In the current study, all patients showed improved Hb levels, but Group A had significantly better results. A study by Bafna et al. also showed that LNG-IUS significantly improved Hb levels in DUB patients (Bafna and Bafna, 2021).

A comparison of adverse effects showed that after 6 months, the incidence of adverse effects in group B was 60%, while in group A was 40%. However, hypomenorrhea was more prevalent in group A (28.8%) compared to group B (8.8%). A study by Kaitala et al. reported a 28% incidence of amenorrhoea after a year of LNG-IUS treatment (Kaitala et al.). Another study by Otgontuya et al. reported a 34.1% incidence of amenorrhoea after LNG-IUS treatment (Otgontuya et al., 2023). The limitation of this study is the small sample size; a larger multicenter study is required for detailed analysis.

Conclusion

LNG-IUS is a more effective and safe treatment choice for Dub than oral progesterone.

Conflict of interest

The authors declared absence of conflict of interest.

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