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Bleeding patterns after use of levonorgestrel emergency contraceptive pills

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Abstract

Objective: The objective of this study was to describe bleeding after use of an emergency contraceptive pill (ECP) regimen consisting of 1.5 mg of levonorgestrel in a single dose.

Methods: We asked 120 women who had been treated with the regimen to keep daily bleeding diaries for 9 weeks. We compared bleeding patterns observed after treatment with usual patterns reported by the participants and with patterns observed in a prior study on women who had not taken ECPs.

Results: Treatment in the first 3 weeks of the menstrual cycle significantly shortened that cycle as compared both with the usual cycle length and with the cycle duration in a comparison group. The magnitude of this effect was greater the earlier the pills were taken. In contrast, the duration of the first menstrual period after treatment increased significantly with cycle week of treatment and was longer in women who used the treatment than in those who did not. Intermenstrual bleeding occurred in only 5% of women in the first cycle after treatment.

Conclusions: The effect of the single-dose levonorgestrel ECP regimen on the timing and duration of the next menstrual period depends on when during the cycle the pills are taken. Intermenstrual bleeding following treatment is uncommon.

Keywords: Emergency contraceptive pills; Vaginal bleeding; Menses; Levonorgestrel

1. Introduction

Accurate information about the effect of emergency contraceptive pills (ECPs) on vaginal bleeding is important both for counseling of women considering the use of the method and for evaluation of events that occur after use. To date, findings from clinical studies have been inconsistent (Table 1) [1–8]. No prior study was designed specifically to study bleeding after treatment, and the methods for collecting and analyzing data are varied. Furthermore, no study had assessed bleeding patterns after the first post-treatment menstrual period. Anecdotal evidence from women submitting questions to the national emergency contraception website not-2-late.com [9] suggests that treatment may have prolonged effects. Finally, no study to date has included a comparison group of women who did not use ECPs. Because bleeding abnormalities, particularly unexpected changes in cycle length, are fairly common among untreated women [10], the lack of a comparison group compromises assessment of the degree to which any apparent irregularities are a result of ECPs.

We designed a case-series study to characterize bleeding patterns prospectively for 9 weeks after use of an ECP regimen containing 1.5 mg of levonorgestrel as a single dose. This regimen differs from the regimen approved by the Food and Drug Administration in 1999 (i.e., 0.75 mg of levonorgestrel, followed by an identical second dose 12 h later). However, the single-dose regimen is supported by research that were published since the FDA approval [1,2] and is currently the regimen primarily recommended by the International Consortium for Emergency Contraception [11].

We compared the bleeding patterns observed among women in our study with patterns observed in a subset of participants in a recent large randomized trial of spermicide

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Table 1
Previous studies with data on bleeding patterns after use of levonorgestrel ECPs

	No. of given ECPs[a]	Timing of next period as compared with expected				Intermenstrual bleeding
		≥8 days early	≥4 days early	≥4 days late	≥8days late	
One dose (1.5 mg of levonorgestrel)						
von Hertzen et al. [1]	1379	~10%	~29%	~15%	5%	>17%
Arowojolu et al. [2] and Arowojolu and Okewole [3]	600	20%	34%	30%	20%	37%
Two doses (0.75 mg of levonorgestrel, repeated in 12 h)						
von Hertzen et al. [1]	1377	~13%	~31%	~16%	5%	>16%
Arowojolu et al. [2] and Arowojolu and Okewole [3]	560	30%	45%		15%	
Ngai et al. [4]	1027	~20%	~40%	~18%	6%	
Hamoda et al. [5]	1035		≤22%	≤8%		
Raymond et al. [6]	540	18%	27%	32%	19%	6%
WHO Task Force on Postovulatory Methods of Fertility Regulation [7]	1001		~15%	~28%	~13%	<14%
Ho and Kwan [8]	440		41%	15%		3%

[a] In each study, subsets of these women were included in the bleeding analyses.

effectiveness [12]. The women in both trials maintained daily bleeding diaries throughout the studies.

2. Materials and methods

The ECP study was conducted at a Planned Parenthood clinic in Boston between June 2004 and March 2005. The study was approved by the institutional review board of Family Health International.

To be eligible for the study, a woman had to meet the following criteria: she was aged between 18 and 35 years; she had taken ECPs (1.5 mg of levonorgestrel) on the day of enrollment or the previous day; she reported a usual menstrual cycle length of 23–32 days and a usual menstrual period duration of 3–7 days; the number of days since her last period did not exceed her usual cycle length; she had no history of intermenstrual bleeding within the past year not due to hormonal contraception; she had no bleeding on the day she took the ECPs before taking them; she had no history of medical conditions within the past year that might affect bleeding patterns (including recent pregnancy or breast-feeding); she had not recently used any drug or device (including contraceptives) that might affect bleeding; and she did not plan to use any such drug or device within the next 2 months.

After each volunteer signed a written informed consent form, we interviewed her to assess eligibility and to obtain baseline demographic, medical, menstrual and other relevant information. We gave her paper diaries on which to record each day through the Saturday of the 10th week after she took the pills whether she had any vaginal bleeding and whether she considered such bleeding to be part of a menstrual period. We scheduled follow-up contacts at 4 and 9 weeks after admission to obtain further information about bleeding patterns, medical conditions, medication use, occurrence of pregnancy and other relevant history. When clinically appropriate, we recommended pregnancy tests to women who had abnormal bleeding patterns.

The comparison study had been described in detail elsewhere [12]. From the 1536 women enrolled in that trial, we selected a subpopulation who would have met the enrollment criteria for the ECP trial, except that we could assess medical conditions only for the 6 months prior to admission and use of noncontraceptive drugs only at the time of admission and we had no data on intermenstrual bleeding prior to admission or on usual duration of menses. We excluded women who had ever used ECPs before admission to the comparison study from our analysis population. All women in the comparison study kept daily bleeding diaries and provided detailed information about medical conditions, use of medications (including contraceptives) and pregnancies occurring after admission.

The primary analysis population from each study consisted of all women who provided any menstrual diary data after admission. We included in the analysis each participant's data from the day of ECP ingestion (for the ECP study population) or study admission (for the comparison study population) to the first of the following days: the last day she provided diary information, the day before she initiated use of any drug or device or developed any medical condition that could have affected bleeding patterns, the day before the estimated fertilization date of a pregnancy and Day 70 after ECP use (for the ECP study population) or admission (for the comparison study population). After applying these rules, if the diary showed bleeding on the last 1 or 2 days preceded by at least 2 days without bleeding, we excluded the terminal bleeding days from the analysis. We defined a *follow-up menstrual period* as any episode of at least 3 days of bleeding (either consecutive or separated only by 1 bleeding-free day) preceded by at least 2 days without bleeding. A complete menstrual period was one followed by at least 2 nonbleeding days. We defined a *cycle* as the interval from the onset of a