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Biochemical, microbiological and clinical effects of Levonorgestrel-Releasing Intrauterine System (LNG-IUS) on the uterine cervix environment.

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Abstract

This study was conducted to evaluate endocervical environment in women using Levonorgestrel-Releasing Intrauterine System (LNG-SIU). The study enrolled 60 women (aged 21 to 52), who had an LNG-IUS inserted in the Family Planning Clinic of UNICAMP, from May 2016 to December 2016. All the subjects were submitted to a specular examination to collect sample for evaluation of the endocervical: pH, microbiota, inflammation and cell dysplasia, using Gram-stained bacteriscopy and Pap-smears before and after two months of the LNG-IUS insertion. Clinical findings (inflammation, discharge and ectopy of the cervix) were observed by colposcopy. The study showed a significative increase of the endocervical pH and the number of neutrophils, but not of the ectopy size and the endocervical mucus amount. It can be concluded that LNG-IUS promotes biochemicals and cellular changes but not clinical or microbiological alterations in the endocervical environment.

Key words: *LNG-IUS, cervical environment, uterine cervix.*

Introduction

The levonorgestrel-releasing intrauterine system (LNG-IUS) has been used since the early 1990s and is considered one of the most effective methods of contraception[1]. Data on the impact of LNG-IUS on cervicovaginal epithelium and women's susceptibility to genital infections are controversial[2,3,4]. Cellular dysplasia, inflammation, pH, microbiology and ectopy are effects that need to be better investigated regarding LNG-IUS. Due to the scarce studies on cervical microenvironment alterations after LNG-IUS insertion, this study aims to evaluate possible biochemical, microbiological and clinical alterations after two months of LNG-IUS use.

Results and Discussion

The mean age of the subjects was 32 ± 7 years, and the majority of them were white women (73%). The percentage of endovervical pH ≥ 4.5 increased from 88% to 97% (p<.02) and there was also an increase in the pH mean from 6.41(±1.02) to 6.64(0.67), (p=.08). Moderate/accentuated amount of neutrophils increased from 37% to 73% (p<.0001) although no other relevant morphological and clinical inflammatory changes were observed. The appearance of cervical mucus did not change significantly. It was observed a decrease, but not significant, of the cervical ectopy (p=ns), which may be due to the progestagenic effect.

The LNG-IUS insertion seems to cause a local reaction process in the endocervical canal. The rational for that could be presence of the IUS removal thread and, again, the progestagenic effects on the mucus.

Table 1. Comparison of mean value and standard deviation (SD) of pH before and after LNG-IUS insertion.

	Before LNG-IUS	After LNG-IUS	P value*
	Mean value + SD	Mean value + SD	
Endocervical pH	6,41 ± 1,02	6,64 ± 0,67	0,08

(*) Paired T-test.

Table 2. Analysis of cervical aspects before and after two months of LNG-IUS insertion.

Endocervical Variables	Before LNG- IUS	After LNG-IUS	P value*	Kappa (IC 95%)
	N (%)	N (%)		
pH values			0,0253	0,41(0,01;0,081)
≥4,5	53 (88)	58 (97)		
< 4,5	07 (12)	02 (2)		
Amount of Neutrophils			<0,0001	0,11 (-0,7; 0,29)
Moderate / accentuated	22 (37)	44 (73)		
Absent/discrete	38 (63)	16 (27)		
Mucus Appearance			0,1573	0,48(-0,11; 1,00)
Turbid	1 (2)	3 (5)		
Clear	59 (98)	57 (95)		
Ectopy			0,2568	0,17(-0,20; 0,53)
Moderate / accentuated	6 (10)	3 (5)		
Absent/discrete	54 (90)	55 (95)		

(*) McNemar test.

Conclusions

It can be concluded that LNG-IUS promotes reactional changes in the endocervical environment such as an increase of the local pH and an inflammatory response, but it does not seem to increase the risk for cervical infection or cause clinical disturbance after two months of insertion. No conclusions can be made from this study regarding women's susceptibility to upper genital infections.

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