ORIGINAL ARTICLE

Cytopathologic Changes Associated with Intrauterine Contraceptive Devices. A Review Of Cervico-Viginal Smears in 350 Women

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Summary

Cervico-vaginal smears from 350 IUCD users were analysed to ascertain the range of abnormalities induced in the genital tract of these women. Alteration of the microbial environment, inflammatory, degenerative, reparative and proplastic epithelial changes were the salient cytological findings. The clinical implications of these are briefly discussed.

Key Words: Cervico-vaginal cytology, IUCD.

Introduction

Of the women practising artificial methods of contraception in this country, about 5 per cent use intrauterine contraceptive devices (IUCD), the most common being Multiload and Nova T. Both are copper containing devices. The pathological changes caused by an IUCD in situ and their clinical manifestations have been the subject of several studies and reports.

This is a retrospective study from routine material to ascertain the type of abnormalities that are seen in cervico-viginal smears in IUCD users in Malaysia and to identify cellular changes that may cause problems in interpretation.

Materials and Method

Three hundred and fifty women fitted with IUCDs and attending Family Planning Clinics in Kuala Lumpur comprised the study group. All of them had essentially normal pre-insertional smears with duration of IUCD usage ranging from 1–8 years. Their ages varied from 23–45 years.

Cervico-vaginal smears were taken at the first visit, usually a year after insertion of the IUCD. The frequency of subsequent smears was decided on the first post-insertional cytology report. Those with

specific infections, borderline epithelial atypia or dysplasia were advised to have follow-up smears in 4–6 months, depending on the severity of the abnormality diagnosed. Colposcopy and cervical biopsy were advised for high grade lesions, suspicious or conclusive for malignancy. The smears were stained by the standard Papanicolaou method and screened for inflammatory changes, both specific and non-specific, as well as for epithelial atypicalities which were graded according to severity.

Results

About two thirds of the women had symptoms following insertion of the IUCD. Forty per cent complained of vaginal discharge, mostly mucoid in nature while 10 per cent had muco-purulent or blood-stained discharge. About 3 per cent had pelvic pain and low grade fever on and off. The cytological findings consisted of leukocytosis (80%), increase in the number of histiocytes with multinucleate giant forms (42%) and the presence of *G. vaginalis* (42%), *Monilia* (28%), *Trichomonas vaginalis* (32%), *Actinomyces*-like organisms (2%) and *Amoeba* (0.6%).

Morphological atypias were observed both in squamous and endocervical columnar cells. Seventy per cent of these atypias were benign, varying in severity from mild to severe, representing inflammatory, degenerative or reparative changes. Hyperplasia and papillary proliferation of endocervical epithelium, multinucleation and squamous metaplasia were also observed.

Squamous dysplasia (cervical intra-epithelial neoplasia) was noted in 14 women (4%) – seven mild, five moderate and two severe. Atypical or bizarre single cells were seen in 3 per cent of the women. Follow-up data are available in only eight of these cases (three mild, three moderate and two sevcere), all of whom had removal of their IUCDs. The mild dysplasias were no longer apparent in the repeat smears taken six months later. Colposcopy was done in the five women with moderate and severe dysplasia. Colposcopic findings corroborated the cytologic findings in all except one woman with moderate dysplasia in whom colposcopy was inconclusive. Cervical biopsy was done in the two women with severe dysplasia and the histopathologic report was that of a CIN III lesion in both. Abnormal or irritated glandular epithelial cells, both endocervical and endometrial, showing hyperchromatic nuclei, increased nucleo-cytoplasmic ratio and "bubble-gum" vacuolation of the cytoplasm were present in 28 per cent of the smears. The presence of normal or inflamed out of phase (beyond day 11 of the menstrual cycle) endometrial cells was recorded in 4 per cent of the study group. The cytologic findings are summarised in (Table I).

Discussion

An IUCD has a "body" which rests in the uterine cavity, a small "neck" which occupies the endocervical canal and a "tail" that may be seen or felt at the external os. The tails or carrier threads nowadays are monofilamentous and synthetic. Older IUCDs used biologic material such as cotton, catgut or silk to make their polyfilamentous threads. When correctly fitted, the IUCD establishes a guided to-and fro channel between the uterine carvity and the vagina, aiding in the descent of normal and abnormal uterine contents to the posterior formix and the ascent of microorganisms from the vagina into the uterine cavity, the "tail" acting as a wick[1]. Many of the clinico-pathologic sequelae of IUCD usage are the direct effects of this foreign body on the endometrial and endocervical lining epithelium. It is interesting that 60 per cent of the women in this study were asymptomatic even when their smears showed some deviations from the normal.

The study shows a significant alteration in the microbial flora of the vagina with a high frequency of *G. vaginalis, Trichomonas vaginalis* and *Candida* when compared with general population. The role

Table I
Cytologic Findings in Cervico-vaginal Smears of 350 IUCD Users

Cytologic Findings	No. of Women	%
MICROBIAL CHANGES		
a) *Gardnerella vaginalis*	147	42
b) *Trichomonas vaginalis*	112	32
c) *Candida*	98	28
d) *Actinomyces*	7	2
e) Non-pathogenic *amoeba*	2	0.6
CELLULAR CHANGES		
a) Leukocytosis	280	80
b) Increased histiocytes	147	42
c) Benign reactive/proliferative changes	245	70
d) Out of phase endometrials	109	31
e) Irritated glandular cells (IUCD cells)	98	28
f) Dysplastic squamous cells	14	4
g) Atypical/Bizarre single cells	11	3

of IUCD in pelvic inflammatory disease (PID) is now generally accepted and IUCD users are at least four times more prone to PID than non-users[2]. Eleven of our patients had pelvic pain and intermittent fever, suggestive of PID and in one the smear showed *Actinomyces*-like organisms. The incidence of *Actinomyces* in our series is low, 2 per cent, compared to reports in Western studies which record incidences as high as 8 per cent and 25 per cent[3]. Orogenital transfer of *Actinomyces,* normal inhabitants of the oral cavity, is considered an important mode of transmission of the organism to the genital tract[1]. This view is strengthened by the presence sometimes of another oral inhabitant, *Entamoeba gingivalis,* in the genital tract of IUCD users. Non-pathogenic amoeba, identified in two of our patients, is reported to occur in 1 per cent of IUCD users[4]. Our low figures may be due to oral sex being an uncommon practice in the population studied.

The changes that are worrisome in a smear are the epithelial atypias which can mimic neoplastic lesions, particularly when information regarding IUCD usage is not furnished. Irritated endocervical and endometrial cells can manifest disconcerting morphological changes. Some of these may resemble cells shed from a carcinoma-in-situ. However, Gupta etal[5] observed this cytologic atypia to revert to normal 1 - 13 months after removal of the IUCD.

In 14 women (4%) dysplastic changes were observed. Though there has been much controversy regarding the role of IUCD in causing neoplastic transformation of cervical eplithelium, current opinion is that the development of malignant or pre-malignant cervical lesions cannot be attributed to the IUCD itself. It is more probable that the IUCD wearer who develops cervical cancer, feeling protected from unwanted pregnancy, exposes herself to risk factors well established in the genesis of cervical cancer. We found out-of-phase endometrial cells — benign, inflamed and atypical — in 80 per cent of the 109 women who had menorrhagia or intermenstrual bleeding and attribute this to endometritis or chronic endometrial irritation. In one study, the nuclear DNA values of atypical glandular cell clusters from the uterine fluid of IUCD users were measured and interpreted to show a polyploid pattern

indicative of reactive proliferation of endometrial tissue[6]. Although patients with IUCDs have a greater risk for pelvic inflammatory disease, they have not been shown to have an increased risk for endometrial carcinoma.

Nevertheless it is quite possible for the patient to have co-existing serious endometrial pathology including carcinoma, particularly if she is over 40. For this reason, atypical endometrial cells should always be viewed with suspicion and a repeat smear, after removal of the IUCD and the next menstrual period, is the recommended practice. For a rapid assessment however endometrial curettage is advised.

Conclusion

Of the spectrum of changes observed in the cervico-vaginal smears of IUCD users, serious epithelial atypias need to be followed up. Removal of the IUCD followed by clinical and cytologic/histologic assessment is suggested to determine whether these atypias are reactive changes that will regress in the absence of the IUCD or are truly neolplastic in origin.

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