BACTERIAL FLORA OF THE ENDOMETRIAL CAVITY WITH INTRAUTERINE CONTRACEPTIVE DEICVES

By

GAMAL EL DIN Y. ELKHOLI (M.Ch. CAIRO)

Assistant Profetssor of Gynaecology and Obstetrics, Tanta Faculty of Medicine

and

ADEL M.A. ABBAS (Ph. D. ENGLAND)

Assistant Professor of Medical Microbiology, Tanta Faculty of Medicine

In Egypt, where rocketting population growth threatens the national economy, it seemed warrented to study the available methods of contraception and their possible side-effects on Egyptian females. Polyethelene intrauterine contraceptive devices (Lippes loop) are probably the most suitable to be used in developing communities as it is cheap, reliable, permanent and does not depend entirely on the co-operation of the user (Gusberg, 1964). However, this method is not without complications as it may cause pain, bleeding and infection (Wilson, 1969). Upper genital tract infection in women using ing intrauterine contraceptive devices (IUCD) ranges from 1.6% in private practice (Wilson and Ledger, 1968) to 7.7% in indigent patients (Wilson *et al.* 1964). The relationship of IUCD to bacterial infection of the upper genital tract deserves further investigation since the devices in common use to-day have appendages protruding from the endometrial cavity into the non-sterile vagina Mishell *et al.* 1956). This study was undertaken in an attempt to determine the effect of IUCD (Lippes loop) upon the bacterial flora of the endometrial cavity in Egyptian females.

MATERIAL and METHODS

The females included in this study were nearly identical as regards age (35—42 years), pzrity (5—14 labours) and socio-economics status. They came to Tanta Teaching Hospital for permanent sterilisation as some of them failed to avoid pregnancy by "pills" or conventialonal methods, while others did not

wish to use IUCD or had used it but its side effects warrented it's removal. All patients were examined clinically and gynaecologically and laboratory investigation of their blood, urine and stools was carried out. No clinical evidence of cervicitis was present in any of the cases.

The subjects were divided into four groups. The first group (22 patients; was admitted to hospital with a loop inside the uterus inserted 6—18 months previously in a Family Planning Centre. The second group (7 patients) did not have IUCD upon admission. To these patients chlora mphenical ointment was instillated into the cervical canal twice weekly and chloramphenicol ovules (0.5 gm) were inserted into the upper part of the vagina three times per week. This treatment continued for 4 weeks and then a Lippes loop was inserted into the uterus. It was left in utero for 6 months. Patients of the third group (5 cases) were treated in a similar way to the second group but no loop was inserted. The fourth group (5 patients), considered as a control, was not given any treatment and no loop was inserted.

All patients, during the middle of their menstrual cycle, were submitted to surgical sterilisation by a vaginal approach immediately after admission (Ist and 4th group), six months after IUCD insertion (2nd group) or after four weeks cervical treatment (3rd group). The vesicouterine peritoneum was opened and the uterus was delivered into the vagina. The anterior wall of the uterine body was sterilised by a heated spatula. The heated blade of the scalpel was used to make a stab incision in the anterior wall to open the endometrial cavity. A small piece of endometrium was taken by a curette and placed immediately in a sterile test tube. A swab was taken from the endocervix. Both specmens were sent separately for bacteriological examination. Subsequently a loop, if prev ously inserted, was removed through the cervix. The uterine incision was colsed by one or two stitches. The tubes were ligated and cut by Pomeroy's manoeuvre. The uterus was returned to the pertioneal cavity and the ves couter ne per toneum was sutured. anterior coloprrhaphy was completed if necessary and the vagina was closed.

The piece of endometrium was homogenlsed gently in a tissue grinder wlthout abrasive in 3ml. physiological saline and used for culture. The cervical wsab and homogenised tissue were streaked on blood agar, Mac Conkey's agar and Sabouraud's glucose agar. After incubation, the paltes were exam ned perodically for growth of microrganims. Cultures from platse

showing moderate to luxurious growth were identified according to the routine bacteroilogical methods (Cowan and Steel, 1970). The isolated organisms were tested for their sensitivity to several antimicrobial agents using discs prepared according to the method described by Cruickshank et al. (1972).

RESULTS

The table shows the positive isolates from the cervix and uterine cavity in the first group of patients. In the second group cervical culture were positive and endometrial culures were negative in all cases. The cervical isolates from patients of this group included *Staphylococcus albus* and *Streptococcus pyogenes* (3 cases), *Streptococcus pyogenes* and Coliform (2 cases), *Streptoccus pyogenes* (1 case) and *Staphyloccoccus albus* (1 cases). No growth was obtained from cervical or endometrial specimens from patients of the third group. All cervical cultures from the fourth group were positive while their endcmetrial cultures were only positive in two cases... The organisms detected were *Streptococcus pyogenes* and *Staphylococcus* albus. In all patients, microorganism isolated from cervical and endometrial cultures, if positive in the same patient were identical.

All strains of *Sterptococcus pyogenes* and 42% of the *Steaphylococcus albus* strains were sensitive to penicillin. The remaining isolated organisms were sensitive to kanamycin, chloramphenicol, tatracycline and streptcmycin and to a lesser degree to nitrofurantin, pencillin and sulpha.

DISCUSSION

According to Walthard (quoted by Mc Leod and Read, 1955), there are three divisions of the genital tract : the vagina containing leucocytes and bacteria; the cervix containing only leucocytes and the uterine body containing neither leucocytes or bacteria. Stroganoff (quoted by Mc Leod and Read, 1955) claimed that no part of cervical canal contains organisms in the majority of cases. Nevertheless, it has been proved beyond doubt that the normal cervical canal harbours amultitude of microorganisms (Key *et al.* 1954; Vuxton *et al.* 1955 and Marcus, 1965). Even during normal pregnancy in primi gravidae, the cervical cultures were usually found positive (El Kholi and Zaki 1970).

Although there have been numerous studies involving bacteriological investigations of the upper genital tract, the results reported are quite variable and difficult to correlate (Hite *et al.* 1947; Calman *et al.* 1954; Butler 1958 and Bollinger, 1964). This is probably due to differences in methods of obtaining endometrial cultures (Michell *et al.* 1966). It is generally assumed by most

gynaecologists that the endometrial cavity is usually sterile, however, studies by various transcervical culture methods reveal the incidence of positive endometrial culture to be in the range of 60% or higher (Hite *et al.* 1947; Calman*τ* *et al.* 1954; Bollinger, 1963 and Wilson *et al.* 1964). Methods of obtaining endometrial cultures transcervically have involved the use of modified form of Little's tube (Calman *et al.* 1954), the use of sterile finger cat punched by a stylet (Cuilbeau *et al.* 1949). and the use of Telfon sheath with a removal plug attached to the aspirator (Bollinger *et al.* 1964). With the intrauterine device in utero, the incidence of positive endometrial culture taken transcervically is 58% (Wilson et al. 1964). The proportion of positive endometrial cultures seemed to be unaffected by the introduction of IUCD.

Mishell et al. (1966) studied bacteriological cultures of the endometrial cavity obtained either transfundally after hysterectomy or transcervically from women using IUCD. The incidence of positive cultures was significantly greater (56.4%) in the latter method than the former (8%). Mishell et al. (1966) concluded that the endometrial cultures obtained by the transcervical route were contaminated by cervical organisms. However, uteri removed by hysterectomy are usually pathological and cannot represent the normal flora of the endometrium (Wilson *et al.* 1964). As far as we are aware, the technique used in this work to obtain endometrial specimens for cultures has not been adapted by other workers. This method surpasses cervical contaminants by a simple by a simple operation.

In this study the following findings were emphasised : microorganisms of of the cervical canal may extend to the endometrial cavity as the organisms cultured from both organs were identical in the patients of the first and fourth groups. The introduction of the loop through the cervical canal to the uterine cavity favours the spread of organisms from the former to the latter. Antibiotic treatment of the cervix prior to insertion of the IUCD prevented infection. The results obtained in this work confirm the findings of Mishell *et al.* (1966) who reported that insertion of the IUCD through the constantly contaminated endocervix resulted in mechanical transfer of bacteria to usually sterile endometrial cavity.

SUMMARY and CONCLUSION

The bacterial flora of the endometrial cavity and cervical canal were studied in 39 patients, 29 of whom had IUCD in utero before being submitted to tubal sterilisation by a vaginal approach. It was found that treatment of the cervix

TABLE 1

Results Of Cervical and Endometrial Cultures In 22 Patients of the First Group.

Types of Microorganisms	Cervical culture		Endometrial culture	
	No. of cases	%	No. of cases	%
Stap. and *Strep. pyogenes*	2	9	2	9
Strept. pyogenes and Coliform.	5	23.1	3	13.6
Stap. albus Coliform	4	18.1	2	9
Coliform	4	18.1	3	13.6
Diphtheroid and Coliform	4	18.1	2	9
Strep. pyogenes	3	13.6	3	13.6
Sterile			7	32.2
Total	22	100	22	100

by local application of chloramphenicol for 4 weeks prior to the insertion of the IUCD kept the endometrial cavity sterile with the device in situ. The routine introduction of the loop through the cervix without antibiotic treatmetns seemed to transfer cervical flora to the endometrial cavity as the organisms isolated from both organs were identical in the same patient.

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