Rates of Bacterial Isolation from Endocervix and Pouch of Douglas in Pelvic inflammatory disease.

Sarla Malhotra, Monika Arora, Meera Sharma, Archana Ayagiri
Dept. of Obst. & Gyn., Medical College & Hospital, Chandigarh.

Summary: Isolation rates for aerobes and anaerobes has been almost similar from endocervix as well as from Pouch of Douglas (Aerobes 42% vs 34%, Anaerobes 12% vs 14%). But for ureaplasma urealytium significantly higher percentage showed growth from endocervix as compared to Pouch of Douglas (40% vs 16%). While Chlamydia trochomatis was isolated in significantly higher percentage from Pouch of Douglas as compared to endocervix (44% vs 8%). Pouch of Douglas aspirate seems more sensitive for chlamydial antigen detection

Introduction

Pelvic Inflammatory Disease (PID) is a frequent problem in gynaecological practice, the management of which depends on microbial isolation and the administration of appropriate antibiotics. The organism can be isolated from the source of entry (endocervix), site of pathogenesis (fallopian tubes) or from the discharge collected in Pouch of Douglas (POD). Isolation of the organism from fallopian tubes may be ideal but is impractical because of the invasive nature of the sample collection. Endocervix and POD are the most accessible sites which are commonly used for isolation. This study was undertaken to find out the frequency and variability of isolates from these two sites in patients with PID.

Materials and Methods

Fifty consecutive patients of PID and an equal number of appropriate age matched controls were recruited from the department of Obstetrics and Gynaecology, Post Graduate Institute of Medical Education and Research, Chandigarh. PID was diagnosed on the basis of criteria laid down by Jacobson and Estran (1969). Those who had been treated with antibiotics in the previous 14 days or whose disease resulted from surgical procedures were excluded from the study. Controls were patients attending the gynae. OPD with vague complaints and in whom pelvic examination did not reveal any abnormality.

Three endorcervical swabs were taken for microbiological processing. Culdocentesis was done after cleaning the vagina with povidine iodine and in case no fluid was aspirated, washings of Pouch of Douglas were taken using saline. Gram stained smears and wet preparation were also studied.

Swabs from both sides were processed in an identical fashion. Of the three swabs one for Mycoplasma was placed in PPLO broth. The other two swabs were transported to the laboratory immediately for culture of gonococci, aerobes and anaerobes. The organisms were identified by standard methods (Cruickshank et al,1975).

For detection of C.trachomatis antigen STD EZE swabs supplied by Abbotts USA were used. The ELISA test was performed according to the instructions supplied in the kit.

Results

All the patients and controls were married and were of reproductive age group. Most of them belonged to the age group of 26-30 years (72% patients and 80% controls). Organisms were isolated from the endocervix of 86% patients and 20% controls. Similarly from the POD, isolates were obtained from 90% of patients and 9.7% of controls. From the patients 104 bacterial isolates were obtained from the POD (1.78 per patient). The type of aerobes and anaerobes and their isolation rates as obtained from the endocervix and POD for patients were nearly similar. Isolation rates of aerobes and anaerobes from endocervix were 68.9% and 31% respectively, while the corresponding figures for these organisms from POD were 68.5% and 31.4% from patients with PID. However, aerobes were isolated in only 18% of the controls from the endocervix and 2% from Pouch of Douglas. Anaerobes were not isolated from controls from either the endocervix or from the POD. Chlamydia trachomatis

Table I

Isolates from Endocervix and POD in Patients with PID.

Organism	No. (%) of Patients (50)		Controls 50	
	Endocervix= 50	POD= 50	Endocervix= 50	POD= 31
Aerobes only	21 (42%)	17 (34%)	9 (18%)	02 (9.7%)
Aerobes and Anaerobes	16 (32%)	20 (40%)	1 (2%)	0
Anaerobes only	6 (12%)	7 (14%)	0	0
Sterile	7 (14%)	5 (10%)	40 (80%)	29 (90.3%)
M.hominis	6 (12)	3 (6)	1 (2)	0
Ureaplasma	20 (40)	8 (16)	4 (8)	0
Urealiteum	-			
M.hominis+				
U.urealyticum	5 (10)	0	1 (2)	0
Chlamydial trachomatis	4 (8)	22 (44%)	1 (2)	0

Table II

Isolation of Aerobic and Facultative Organisms from Endocervix and POD

Isolates	Patients (n=50)	Number of	Women (%)	
	Endocervix	Controls	(n=50)	POD=31
		POD Endosevix =50		
Haemolytic Streptococci	0 (0)	0 (0)	1 (N.D)	1 (0)
Staph pyogenes	1 (2)	0 (0)	0 (0)	0 (0)
Streptococci faecalis	5 (10)	1 (2)	0 (0)	0(0)
Staph.aureus	8 (16)	7 (14)	1 (N.D)	0 (0)
Staph epidermidis	5 (10)	4 (8)	0 (0)	1 (0)
E coli	8 (16)	7 (11)	0 (0)	0 (0)
Klebsiella pneumoniae	5 (10)	4 (8)	0 (0)	0 (0)
Proteus mirablis	1 (2)	1 (2)	0 (0)	0 (0)
Aematobacter Spp	1 (2)	2 (4)	0 (0)	0 (0)
N.gonorrhoeae	0 (0)	0 (0)	0 (0)	0 (0)
Diphtheroids	2 (4)	1(2)	0 (0)	0 (0)
Gardinella Vagmalis	5 (10)	0 (0)	4 (N.D)	0 (0)

N.D Culdocentesis not done

antigen was detected from the endocervix in only one control and in none from the POD. (Table-I) Chlamydia trachomatis antigen was detected from endocervix and POD in 8% and 44% of patients respectively. For Mycoplasma hominis the corresponding figures were 12% and 6% respectively for patients. Ureaplasma urealyticum from the endocervix and POD was isolated in 40% and 6% of patients respectively (Table II).

Discussion

From the study it is obvious that from either side there are significantly more number of isolates from patients as compared to controls (104 vs 13, $p<0.001$). Aerobic isolates from the endocervix and POD were obtained from a very small number of controls (18% vs 9.7%).

More number of isolates were recovered from the endocervix as compared to POD (104 vs 89). Not all the organisms isolated from endocervix may be responsible for PID because many organisms may not be able to go beyond endocervix. From the patients, isolation of mycoplasma and ureaplasma urealyticum was twice as frequent from the endocervix than from POD, suggesting

again that in some of the situations infection is localised to endocervix only and these organisms may not be responsible for the causation of PID. On the other hand in patients with PID Chlamydial antigen was detected more frequently from the POD (44%) compared to endocervix (8%). This may be due to locking antibodies or self limiting nature of the chlamydial cervicitis (Johannison 1981). A similar pattern was also observed on chlamydial culture from these sites (Marana et al 1990). Similar findings have recently been reported by Mittal et al (1995) who obtained significantly higher detection rates of chlamydial trachomatis antigen from the POD (41.1%) as compared to those from the endocervix in patients with PID. Chlamydial upper genital infection are often indolent and persist for years (Gjonnaess et al 1982, Winkler et al 1985). However, there was not much difference in the isolation of aerobes (42% vs 34%) and anaerobes (12% vs 14%) from these two sites indicating the ability of these organism to be able to go beyond endocervix and their consistent role in the etiology of PID either alone or together with other STD pathogens. However Gjonnaess et al (1982) did not find anaerobes from the peritoneal fluid in any of their 65 patients, though the role of anaerobes in the causation of PID is now fully established.

Culdocentesis can be used to get pure growth of organisms if proper aseptic measures are undertaken as revealed in this study (93.5% of controls were found to be sterile), which collaborated the findings of Cunnighan et al (1978). It was considered more appropriate by some workers to sample the POD to have a better information about the etiological agents by obtaining the isolates in a purer form though study by Sweet et al (1980) has not supported this contention.

References

1. Cunnigham FC,Hauth JC, Gilstrap LC, Herberts WNP, Kappus SS. Obst. Gyn. 52:161,1978
2. Cruickshank R, Duguid JP Marmion BP, Swain RH: Medical Microbiology, Churchill, Livingstone, London, 12 Ed Vol-11,399:1975
3. Gjonnaess H, Dalaker K, Anestad G, Marth PA, Krile G,Bergan T:Obst Gyn 59:550,1982
4. Jacobson L, Estrom L, Am J Obst ,Gyn :105:1088,1969.
5. Johannison G, Acta, Derm. Venereol Suppl.:93:1981
6. Marana R, Lucisano A, Fert. Ster:53 :3554,1990.
7. Mittal A, Kapur S, Gupta S. Genito Urinary Med.71:267:1995.
8. Sweet RL, Drapar DL, Schachter J, James J, Hadley WK, Brooks GS: Am .J. Obst. Gyn.138:985:1980.
9. Winkler B, Reumann W. Mitaon, Gollo L, Richart RM, Crum CP:AM J Obst. Gyn. 152:275:1985