

BACTERIOLOGICAL STUDY IN TERMINATION OF PREGNANCY AND ITS RELATIONSHIP TO SEPSIS

by

SAVITRI AGARWAL, M.S. (Obst. & Gynec), M.R.C.O.G. (Lond.)

and

VANMALA CHAWLA, M.B.B.S.

Introduction

With the liberalization of abortions and increasing interference with pregnancy, the problem of sepsis has assumed great importance. With all the advanced methods of induction of abortion and precautions observed, the cases still are seen with gross sepsis resulting in serious morbidity and often mortality. This is particularly observed in those cases who are handled outside hospitals and are handled by untrained personnel or in places which have limited facilities. The purpose of this study is to evaluate the bacterial flora of the patients undergoing termination of pregnancy and their relationship if any to sepsis following termination of pregnancy. The value of prophylactic use of antibiotics has also been evaluated.

Review of Literature

Very little study has been done regarding pre and post abortal bacteriological growth pattern in the vagina in cases undergoing medical termination of pregnancy and more so its relationship to post abortal sepsis has not been studied by many workers.

Schottmuller (1928), Douglas, Davis and Davis (1946) and Hill (1950) observed that the most severe forms of post-partum infections are generally due to either *Streptococcus pyogenes* or anaero-

bic *Streptococci*. White (1933) and Thomas and Hare (1954) reported that anaerobic streptococci were common inhabitants of birth canal and between 20-40% women were harbouring them in vagina during pregnancy.

Several authors have found anaerobic streptococci in the pregnant genital tract and the incidence has been reported to vary from 39.5% by Soule and Brown (1932) to 23.7% and 33.0% by Thomas and Hare (1954) respectively. Popli and Sen (1965) found anaerobic streptococci in 5.7% cases in whom pre-natal and pre-abortal swabs were studied. But patients who came with sepsis, the pathogenic organisms observed were *Staphylococcus pyogenes* in 47.0%, *Streptococcus pyogenes* in 23.5% and anaerobic streptococci in 17.6% respectively.

Michael *et al* (1973) detected coliforms as the most commonly isolated organisms in pre-abortal cultures of which *Escherichia coli* and other members of enterobacteriaceae were the commonest. He isolated anaerobic streptococci and other organisms like *Clostridium Welchii*, *staphylococcus albus* and *pseudomonas* in association with coliforms. Agarwal (1970) detected *Escherichia coli* as one of the causal factors for vaginitis in women.

Sen *et al* (1976) studied bacterial growth pre and post operatively in cases

of medical termination of pregnancy by dilatation and evacuation combined with vaginal ligation. Out of 108 cases studied preoperatively, they found *Escherichia coli*, *staphylococcus aureus*, *staphylococcus albus* and *Candida* in 27, 36, 21 and 12 cases respectively. No growth was observed in 12 cases. Postoperatively, the type of organisms grown were *Escherichia coli* in 61, *staphylococcus aureus* in 33, *Klebsiella* in 6 and *Escherichia coli* with *staphylococcus aureus* in 6 and no growth in 2 cases. Relationship with fever was studied only in 3 cases and *Escherichia coli* was cultured.

Gupta and associates (1976) isolated organisms from the vagina following termination of pregnancy by extraamniotic prostaglandins in 34.88 per cent of cases. Post abortal cultures yielded *staphylococcus aureus*, *Klebsiella aerogenes*, *Escherichia coli* and *pseudomonas aeruginosa* of which *Escherichia coli* and *staphylococcus aureus* were the commonest organisms. No correlation of bacteriological growth with post abortal sepsis was studied by them.

Material and Methods

Bacterial flora of 100 pre-abortal patients were studied. These patients underwent termination of pregnancy either by suction evacuation or by intraamniotic hypertonic saline in the first and second trimesters respectively. Direct smears

were made from all the patients and stained by Gram's stain. High vaginal swabs were collected from all the patients for bacterial cultures. For aerobic cultures, the swabs were directly inoculated in blood agar and McConkey agar plates. These plates were incubated at 37°C for 48 hours before studying the colonial morphology. Further identification of the organisms was done by studying the other relevant characteristics and biochemical tests. Their sensitivity to various antibiotics was also tested. For anaerobic cultures, the swabs were inoculated into cooked meat medium and blood agar plates. The latter were incubated in McIntosh and Fildes jar for 48 hours at 37°C when colony characteristics and other identification marks of the anaerobic bacteria were studied. The growth from cooked meat medium after 48 hours incubation was subcultured on blood agar plates and processed in a similar way as above.

All the patients were administered strepto-penicillin injections containing ½ gram of streptomycin and 4 lac units of procaine penicillin, from the day of operation and for 5 days. Those who developed evidence of sepsis, were further investigated. The vaginal swab cultures were done both for aerobic and anaerobic microbes and the sensitivity to different antibiotics was studied.

Observations

Results of Bacteriological study of high vaginal swabs of 100 cases

(Pre-abortal)			
Organism	No.	%	Sensitivity to
<i>Staphylococcus aureus</i>	20	20	Chloromycetin, Streptomycin & Tetracycline
Anaerobic streptococci	10	10	Streptomycin, Penicillin & Ampicillin
<i>Pseudomonas aeruginosa</i>	9	9	Streptomycin and Gentamycin
<i>Staphylococcus albus</i>	22	22	Not done

<i>Candida species</i>	5	5	Not done
No growth	34	34	
	<hr/>	<hr/>	
	100	100	
	<hr/>	<hr/>	
(Post abortal)			
<i>Pseudomonas aeruginosa</i>		1	Streptomycin, Gentamycin & Polymyxin B
<i>Klebsiella</i>		1	Tetracycline & cloxacillin
<i>Staphylococcus aureus</i> & <i>Escherichia coli</i>		2	Chloromycetin and Tetracycline
Sterile		1	
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		5	

Discussion

In the present series, *Staphylococcus aureus* was found in 20% of cases pre-operatively and in 2 cases post-operatively. Sen *et al* (1976) isolated *Staphylococcus aureus* in 33.3% of cases pre-operatively and in 30.5% of cases in post-operative period. Gupta *et al* (1976) isolated *Staphylococcus aureus* in patients in whom termination of pregnancy was carried out with prostaglandins. Relationship with sepsis was not studied by them. In the present study, of those who developed sepsis, 2 cases showed the mixed growth of *Staphylococcus aureus* and *Escherichia coli* in culture which were sensitive to Chloromycetin and tetracycline.

In our cases, anaerobic streptococci were detected in 10% of cases pre-operatively, whereas Thomas and Hare (1954) reported that anaerobic streptococci were normal inhabitants of vaginal canal and 20-40% of women were harbouring them. Popli and Sen (1965) found anaerobic streptococci in 5% of pre-natal and pre-abortal group. The patients who came with sepsis, anaerobic streptococci were found in 17.6% of cases. In our series, anaerobic streptococci were not isolated from any of the patients post-operatively. It may be due to pro-

phylactic use of streptomycin and penicillin that the infection which could have been caused by anaerobic streptococci was averted.

In 9% of cases, *pseudomonas* were detected pre-operatively, whereas only in 1 patient having fever *pseudomonas* were cultured. This indicates, *pseudomonas* may remain in the vagina as normal inhabitant without causing sepsis in majority of cases and a small percentage of cases may get sepsis following delivery or abortion.

Klebsiella was not detected pre-operatively in any patient but was seen in one patient showing evidence of sepsis, thus indicating that source of infection was exogenous.

Staphylococcus albus was found in 22% of cases pre-operatively but was not detected in patients having evidence of sepsis thus remaining as non-pathogenic inhabitant in vagina.

Summary and Conclusions

1. Termination of pregnancy was done in first and second trimester by vacuum aspiration and hypertonic saline respectively in 100 cases.

2. Bacteriological studies were done in all cases by direct smears and culture of high vaginal swabs.

3. All patients were injected 1 gm of streptomycin and 4 lacs of procaine penicillin prophylactically after testing sensitivity.

4. In majority of cases the pathogenic inhabitants were staphylococcus aureus sensitive to streptococci, chloro and tetracycline (20%).

5. Out of 1000 cases, only 5 showed evidence of sepsis in the form of fever and mild pelvic cellulitis. Bacteriological studies showed Staphylococcus aureus and Escherichia coli in 2 cases, pseudomonas aeruginosa in one case and Klebsiella in one case.

6. Above studies indicate that if medical termination of pregnancy is done under aseptic conditions by trained personnel, the danger of morbidity is negligible and that of mortality is nil due to sepsis.

7. Some of pathogenic bacteria may remain in the vagina without producing any sepsis.

8. If coverage of antibiotics is given prophylactically, chances of sepsis can be reduced to minimal without severely affecting the health of the patient.

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