

# GROUP B STREPTOCOCCI IN A MATERNITY UNIT

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## INTRODUCTION

STREPTOCOCCI of Lancefield's Group B also known as *Streptococcus agalactiae* were initially recognised in association with bovine mastitis (Ayers and Mudge, 1922). In the recent years, there have been reports from many parts of the world about their role in human infections (Anthony and Conception, 1975), (Mahlu, 1976) especially as causative organisms of neonatal meningitis. However, a retrospective study of cerebrospinal fluid culture results from neonatal wards in the General Hospital, Kuala Lumpur over a period of one and a half years showed that the majority of cases of pyogenic meningitis in the neonates were due to gram negative bacteria and *Staphylococcus aureus*, whereas, in some European countries and in the United States, Group B streptococci are often responsible for meningitis in the neonates, together with gram negative bacteria (Goldacre, 1977). The neonatal infections caused by Group B streptococci are described as "early onset" type if they occur within the first few days of life. The infection in most of these cases is thought to be acquired during passage through the birth canal (Baker and Barrett, 1973) as these organisms are commonly present in the vagina. Therefore, a study was done to establish their presence in the vaginal flora of Malaysian women and to determine if a similar source of infection exists here.

## MATERIALS AND METHODS

All vaginal swab specimens submitted to the routine diagnostic laboratory for culture and sen-

sitivity over a period of six months were screened for the presence of group B streptococci. The swabs were sent to the laboratory in Stuart's Transport Medium and processed in the usual way, by streaking onto blood agar, chocolate agar, MacConkey's medium and Sabouraud's dextrose agar. All streptococci isolated were further identified by doing the following tests:

### Sensitivity to antibiotics:

Sensitivity to 0.1 unit of bacitracin (Oxoid) was determined for all beta-haemolytic streptococci on Ox blood agar plates. The organisms sensitive to bacitracin were provisionally reported as Lancefield's group A streptococci.

All alpha haemolytic streptococci were tested with optochin discs, 5 ug (Mast) in the same manner. Those strains which were sensitive to optochin were provisionally reported as *Streptococcus pneumoniae*.

### Pigment production on colombia agar:

All strains were streaked onto columbia agar medium (Oxoid) and incubated for 18 — 24 hours, anaerobically using the Gas Pak system. Pigmentation was observed in comparison with a control pigment producing strain of group B streptococcus (Fallon, 1974).

### Hydrolysis of aesculin and hippurate:

Aesculin hydrolysis was done to exclude group D streptococci, which produce blackening of the medium as they hydrolyse aesculin. Hydrolysis of hippurate was also done for a presumptive identification of group B streptococci which are positive for this test (Hwang, 1975).

**CAMP test:** (Christie, Atkins-Munch-Petersen, 1944) Strains of streptococci were inoculated on 4% sheep blood agar plates perpendicular to a single central streak of a beta-haemolysin producing *Staphylococcus aureus*. Plates were incu-

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bated aerobically at 37 °C overnight and inspected for the presence of complete haemolysis.

#### Growth on bile containing media:

All strains were streaked onto MacConkey's agar plates (Oxoid) to test for growth on medium containing bile salts.

#### Serological and Confirmatory test:

The identify of the strains was confirmed serologically by using a commercially prepared kit, the Phadebact (Pharmacia Diagnostics, Uppsala, Sweden).

### RESULTS

18 strains of group B streptococci were isolated from a total of 83 vaginal swabs making these organisms the commonest streptococci present in the vaginal flora among streptococci which could be grouped by Lancefield's method. The specimens were from gynaecological and antenatal clinics, from cases presenting with various complaints, such as vaginal discharge, infertility, pruritis, etc. Most of the patients were under the age of forty and in the reproductive years of life. Anaerobic streptococci were excluded from this study.

Table I  
Isolation of Streptococci from Vaginal Swabs

Source of specimen:	No. of patients	No. of streptococci isolated			
		Group B	A	C	D
ANC	16	4	0	1	
Gynae	67	14	6	2	6
Total:	83	18	6	2	7

Total no. of specimens — 83

Streptococci which could be grouped by Lancefield's method isolated from 35.

These results show that the pick up rate of group B streptococci from vaginal swabs is about 21%, which is similar to that in other countries. Therefore, it can be concluded that a source of group B streptococci is present here, which may

cause "early onset" type of infections in the newborn infants.

### DISCUSSION

This is a preliminary report on the presence of group B streptococci and their rate of isolation from vaginal swabs. From this study, it appears that vaginal carriage of group B streptococci is not different here from elsewhere.

This study also shows that group B streptococci if present in clinical specimens can be recognised by the methods used in this laboratory.

Their role in producing neonatal infections, however, is not clear and group B streptococci have not been isolated from cerebrospinal fluid from cases of neonatal meningitis, examined in UKM diagnostic laboratory so far. This may be due to an actual difference in the bacteria responsible for neonatal meningitis here and elsewhere. Results of cerebrospinal fluid cultures from other hospitals in the country, as well as examination of specimens from a greater number of cases would have to be taken into consideration before accepting this view.

Further studies are being done on the vaginal carriage of group B streptococci in the third trimester of pregnancy and during parturition with a follow up of babies born to such mothers. It is hoped that by these means, the role of group B streptococci in neonatal infections will be better understood.

Group B streptococci are present in the vaginal flora with an isolation rate of about 21%, as is shown by this study. Their role in producing neonatal infections is not clear and further studies are required before any conclusions can be drawn. The isolation of group B streptococci from vaginal swabs is being reported for the first time in this country.

### SUMMARY

Eighteen strains of Lancefield's group B streptococci were isolated during a course of routine culture of eighty-three vaginal swabs in a clinical microbiology laboratory, over a period of six months. The identity of the isolates was confirmed by using a commercially prepared kit, the Phadebact.

From this study it appears that the rate of isolation of this organism from vaginal swabs in Malaysia is about 21% which is similar to that of other countries. But, from cases of neonatal meningitis, group B streptococci are rarely isolated.

A retrospective study of cerebrospinal fluid culture results from neonatal wards in the General Hospital, Kuala Lumpur over a period of one and half years, showed that the majority of cases of neonatal meningitis were due to gram negative bacteria and *Staphylococcus aureus*. Whereas in some European countries and in the United States, group B streptococci are often responsible for meningitis in the neonates, together with gram negative bacteria. Therefore, the role of group B streptococci in producing neonatal infections here is not yet clear.

The isolation of group B streptococci from vaginal swabs is being reported for the first time in this country.

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