

## ASSOCIATION OF INTRA-AMNIOTIC FLUID INFECTION AND CERVICAL INFECTION WITH PRETERM LABOUR

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### SUMMARY

Cervical cultures and amniotic fluid cultures were done on 20 patients in active preterm labour. On 20 patients in labour at term, cervical cultures were done.

In patients with preterm labour, cervical infection was present in 11 (55%) and intra-amniotic infection in 3 (11%) cases. Five patients (25%) delivered within 48 hours including the 3 with I.A. infection, and all 5 had cervical infection. Remaining 15 patients responded to tocolytic, but 5 of them again had preterm labour and delivery. Thus, 10/11 cases with cervical infection delivered before 37 weeks. At term labour, only 1 case had positive cervical infection.

In conclusion, cervical infection and intra-amniotic infection are associated with preterm labour and delivery.

### INTRODUCTION

Prematurity has been the principle contributor to perinatal morbidity and mortality for a long time. The problem

of premature births continue to frustrate the Obstetrician and the Pediatrician. Intra-amniotic infection (usually subclinical or clinical) as well as cervical and vaginal infections have been thought to be major etiologic factors for preterm delivery (Foulon et al, 1995; Regan et al,

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1996). The organisms implicated need to be identified and immediate therapy may achieve the goal of reducing or preventing preterm labour, and promote tocolysis (Joesoef, 1995).

This study aims at evaluating the relationship of cervical and intra-amniotic infection as causative factors of preterm labour.

#### **MATERIAL AND METHODS**

Patients were selected randomly from women attending the intensive care labour unit at the All India Institute of Medical Sciences, New Delhi. Patients were divided into 2 groups :

Group A:- 20 patients in preterm labour.

Group B :- 20 patients in labour at term.

All patients studied had accurate knowledge of last menstrual period and prior regular menstrual cycles. Period of gestation was again confirmed by early pelvic examination during first trimester and ultrasound for dating.

Group A : In these patients with active preterm labour, speculum examination was carried out to rule out cervical and vaginal infection and to note dilatation and effacement of the cervix. Cervical swabs were taken for anaerobes, aerobes and gonococcus.

Amniocentesis under ultrasound guidance was carried out under strict asepsis using G22/23 disposable

spinal needle, after obtaining informed consent. Amniotic fluid (5 c.c.) was sent for aerobic, anaerobic and gonococcal cultures.

The response to tocolytic drugs, the period of gestation at delivery and neonatal outcome were noted.

Group B: Cervical/high vaginal swabs were taken for aerobic, anaerobic culture.

Exclusion criteria : Patients with multiple gestation, polyhydramnios, uterine anomaly, fibromyoma uterus, ante-partum haemorrhage, rupture of membranes and eclampsia were excluded from the study.

#### **RESULTS**

In Group A, 3/20 cases (15%) had positive A.F. cultures, and 11/20 cases (55%) had cervical infection. However, no patient had clinical evidence of chorioamnionitis.

Five patients (25%) delivered within 48 hours including the 3/3 (100%) with I.A. infection, and all 5 had cervical infection. Remaining 15 patients responded to tocolytics.

Of the 11 cases with cervical infection, 10 (91%) delivered before 37 weeks, 5 within 48 hrs, and 5 reported to labour room again after initially responding to tocolysis. In Group B, 1 patient had cervical infection.

Organisms isolated were staphylococcus aureus, microaerophilic gram positive nonsporing bacilli and peptostreptococcus.

**TABLE I**  
**RELATION OF AMNIOTIC FLUID INFECTION AND CERVICAL**  
**INFECTION IN PRETERM LABOUR AND DELIVERY**

Culture Cervical culture	No. of cases & Total (20)	Period of gestation at delivery		
		< 37 weeks		> 37 weeks
		< 48 hrs	> 48 hrs	
Positive	11	5	5	1
Negative	9	-	1	8
Amn. fluid				
Positive	3	3	-	-
Negative	17	2	6	9

PTD = 3/3 (100%) A.F., 10/11 (91%) C X Infection

### DISCUSSION

Prevention of premature births continue to pose a major challenge to the obstetrician. For the past decades, several studies have been carried out to assess the various factors causing preterm labour.

The amniotic cavity is normally sterile. The relationship of unrecognised amnionitis with preterm labour was first suggested by Bobitt (1977), who found a positive culture rate in 7/10 cases, in A.F. obtained by the trans-cervical route.

In a later study of 31 patients with preterm labour and intact membrane, A.F. obtained by trans-abdominal amniocentesis (Bobitt et al, 1981) showed positive cultures in 11 (47.8%) and clinical chorioamnionitis in 8 (72.7%). Several studies have found that A.F. cultures were positive in 10%

-47.8% (Gomez et al, 1995; Foulon, 1995, Hiller & Krohn 1995).

Women with positive A.F. cultures had lower gestational age and more advanced cervical dilatation on admission than women with negative culture. Successful tocolysis was more common in women with negative than positive cultures 84.5% vs 0%, (Gomez et al, 1995).

Clinical chorioamnionitis in patients with preterm labour ranged from 38% - 75% of cases with A.F. infection (Garvett, 1986; Hiller, 1995).

Study of vaginal flora of women in PTL determined bacterial vaginosis group - gardenerella vaginalis, bacterioids sp, E.Coli, Kleibsella, staphylococcus aureus as significantly associated (Regan, 1996; Adams, 1995).

To study whether presence of specific vaginal microflora was significantly

associated with preterm labour, McDonald et al (1991) found 12% women with PTL and 6% at term to have bacterial vaginal growth - *Gardnerella vaginalis*, *Bacterioides* Sp., *E. Coli*, *Klebsella* and *Staphylococcus aureus*.

These organisms are capable of releasing prostaglandin E2 from the amniotic cells, leading to the initiation of labour (Lamont et al, 1985; Claman et al, 1995). Organisms isolated in our study and of others, were similar to those obtained from cervical swab, suggesting an ascending infection.

A low culture rate obtained in our study could be explained as culture for *Cl. Trachomatis*, *Mycoplasma hominis* and *urea plasma urealyticum* were not done.

*Chlamydia trachomatis* was isolated more frequently from women who had preterm labour (Gravert et al, 1986). Serologic evidence of *Cl. Tr.* infection has positive predictive value of 31% (Claman et al, 1995).

Markers of infection - C reactive protein, amniotic fluid cytokines, increased leukocytic count and positive culture has been found to be related to preterm delivery. The study indicates PTL can be initiated by

infection. Markers obtained by amniocentesis have better sensitivity and positive predictive value than non-invasive markers (Foulon et al, 1995).

Thus, Intra-amniotic infection and cervical infection play a major role in the etiology of active preterm labour. Early detection and treatment may be a big step in prevention of preterm births.

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