INTRODUCTION

Prematurity is the leading cause of perinatal morbidity and mortality worldwide. Intrauterine infection has emerged as a major cause of premature labor and delivery. It has been estimated that 25% of all preterm deliveries occur to mothers who have bacteria invasion of the amniotic cavity, although these infections are mostly subclinical in...
nature. This research describes the pathways leading to intrauterine infection, microbiology, frequency and clinical consequences of infection. The pathophysiology of the fetal inflammatory response syndrome is reviewed, as is its relationship to long-term handicap, such as cerebral palsy and bronchopulmonary dysplasia. The fact that preterm delivery may occur in association with leukocytosis of the amniotic fluid or chorioamnion has long been recognized.

METHODS

Amniotic membrane was collected from patients that had preterm spontaneous delivery. Two groups of patients were identified: 1) patients with PPROM and spontaneous preterm delivery (n = 25), and 2) patients with spontaneous preterm delivery, but the membrane is still intact (n = 25). A 2x2 cm sample of the amniotic membrane was taken from the two groups and placed into glass tubes filled with Brain Heart Infusion Broth (BHI) and another amniotic membrane was taken and put into a pot that was filled with formalin and sent to the laboratory. The amniotic membrane was cultured for bacteria and pathology examination was done to identify the number of polymorphonuclear (PMN) that were 5 to 10 or more per high-power field were scored as a PMN infiltration meaning that there was an intrauterine infection.

We used Chi Square Test using SPSS computer package (Release 17.0, SPSS, Chicago, IL, USA) to compare the types of bacteria found on both groups and if they cause intrauterine infections causing preterm delivery. The normality test was analyzed using Saphiro Wilk test. Parameters were expressed as a percentage. The statistical significance of differences was considered significant if p value was less than 0.05.

RESULTS

Table 1. Types of bacteria according to the pathology examination of amniotic membrane

<table>
<thead>
<tr>
<th>Bacteria Types</th>
<th>Polimorfonuclear</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>–</td>
<td>&gt;4</td>
</tr>
<tr>
<td>Types</td>
<td></td>
<td>Focal</td>
</tr>
<tr>
<td>E. coli</td>
<td>0%</td>
<td>44.4%</td>
</tr>
<tr>
<td>Staphylococcus aureus</td>
<td>0%</td>
<td>6%</td>
</tr>
<tr>
<td>Streptococcus alfa hemolytic</td>
<td>50.0%</td>
<td>16.7%</td>
</tr>
<tr>
<td>Micrococcus SP</td>
<td>25.0%</td>
<td>5.6%</td>
</tr>
<tr>
<td>Corynebacterium Sp</td>
<td>25.0%</td>
<td>0%</td>
</tr>
<tr>
<td>Total</td>
<td>100.0%</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

There were significant differences the types of bacteria between preterm delivery with membrane intact and PPROM. Both groups of preterm delivery were caused by chorioamnionitis.

DISCUSSION

This study showed that there were significant effects of infection towards the occurrence of preterm delivery. The most frequent types of bacteria causing infections were Escherichia coli and Staphylococcus aureus.

The best-studied site of infection is the amniotic fluid. As well as containing bacteria, amniotic fluid from women with intrauterine infections has lower glucose concentrations, higher white-cell counts,
and higher concentrations of complement C3 and various cytokines than fluid from uninfected women. However, detecting bacteria or measuring cytokines and other analyses in amniotic fluid requires amniocentesis, and it is not clear that amniocentesis improves the outcome of pregnancy, even in women with symptoms of preterm labor. At present, it is not appropriate to obtain amniotic fluid routinely to test for intrauterine infection in women who are not in labor. It is believed that intrauterine infection disrupts the extracellular chorionic decidual basement membrane, causing leakage of this protein into the cervix and vagina.

Some studies have shown several types of microorganisms from the amniotic cavity from women with preterm labor and intact membranes, some of them are Ureaplasma urealyticum, Fusobacterium spp. and Mycoplasma hominis. Other microorganisms that have been found in the amniotic fluid include Streptococcus agalactiae, Staphylococcus aureus, Gardnerella vaginalis, Escherichia coli Clostridium spp. In other studies, Cassel et al reported the retrieval of genital Mycoplasma organisms from amniotic fluid samples collected by amniocentesis at 16-21 week gestation. Subsequently, Gray et al reported positive cultures for U. urealyticum in amniotic fluid samples obtained during second trimester genetic amniocentesis. These observations suggest that microbial invasion can be clinically silent in the mid trimester of pregnancy and that pregnancy loss and preterm delivery can take weeks to occur. A similar finding was reported by Horowitz et al who detected U. urealyticum in 2.8% of amniotic fluid samples obtained at 16-20 wk gestation. The rate of adverse pregnancy outcome (fetal loss, preterm delivery and low birth weight) was significantly higher in patients with a positive amniotic fluid culture than in those with a negative culture.

CONCLUSIONS

We have demonstrated that both groups with preterm delivery were caused by intrauterine infection that would lead to the increase incidence of morbidity and mortality to the neonate. This indicates that infection involves the incidence of preterm delivery. Vaginal swab should be done to women with premature contraction to identify whether there were any bacteria so then we can give medication to prevent infection to give further effect in causing preterm delivery.

REFERENCES


