

Dehydration, urinary tract infection, systemic infection, vaginitis, or cervicitis may contribute to or predispose a woman to preterm labor. Prematurity is the major contributor to neonatal morbidity, mortality, pulmonary immaturity, increased intraventricular hemorrhage, neonatal respiratory distress syndrome, persistent pulmonary hypertension, and bronchopulmonary dysplasia. Premature neonates are also at higher risk for sepsis, necrotizing enterocolitis, and apneic and bradycardiac episodes.¹

To prevent the consequences of preterm labor, it is very important to detect or predict preterm labor as early as possible. Recently, attention has been focused on the use of biochemical markers to predict preterm labor. One such marker is fetal fibronectin (fFN). The presence of fFN in cervicovaginal secretions may be a sign of impending labor in gravidas without rupture of the membranes.²

Fibronectin is composed of 2 disulfide-bonded polypeptides (α - and β -chains), each with a molecular size of 220-230 kDa. The 2 interchain disulfide-bonds are located close to the COOH-terminus of the molecule.³ The structure of the fibronectin polypeptides varies somewhat depending on the cellular source of the protein. Fibronectin is important for cell adhesion and migration as it is involved in cell anchorage, polarity, ability to migrate, and state of differentiation.^{4,6} Three subtypes of fibronectin, i.e., plasma fibronectin, cellular fibronectin, and fFN, have been identified.^{2,7}

fFN is an extracellular glycoprotein localized in the extravillous cytotrophoblasts of the placenta and membranes, as well as in the amniotic epithelium.^{2,8,9} Placental examination with immunohistochemical techniques has suggested that fFN is concentrated at the chorio-decidual interface.¹⁰ fFN is expressed in cervicovaginal secretions during the first 20 weeks of gestation, but it disappears from the secretions after this period and does not normally reappear until spontaneous rupture of the membranes at term.⁸ fFN in cervicovaginal secretions of asymptomatic patients has potential value as a screening test to identify patients at risk of preterm birth.¹¹

fFN production by human chorion cells *in vitro* is

stimulated by inflammatory products and mediators (lipopolysaccharide, interleukin-1 β , and tumor necrosis factor- α), which are considered important in the initiation of some cases of preterm labor.¹⁰ Any mechanical or inflammatory-mediated damage or infection of the adhesive fFN interphase between the chorion and the decidua may result in the reappearance of fFN in genital secretions.^{8,9} Bacterial products and the maternal host defense against these products result in phospholipid mobilization (prostaglandin), increased endotoxin concentrations, and activation of leukocytes (plasmin, elastases, and collagenase) and macrophages (cytokines).^{8,11,12} These events may initiate uterine contractions, proteolysis of membranes, cervical ripening, chorio-decidual separation, and leakage of fFN, and may eventually result in preterm labor.

To prevent the consequences resulting from preterm labor, we designed this study to predict preterm labor by fetal fibronectin.

MATERIALS AND METHODS

We selected high-risk pregnant women with gestational ages ranging from 20 to 34 weeks for enrollment in our study. Gestational age was calculated on the basis of the last menstrual period. These women were under regular prenatal care at the Outpatient Department (OPD) of the Department of Obstetrics and Gynecology, Taipei Medical College Hospital from May 1994 to February 1995. The study was approved by the Taipei Medical College Hospital Institutional Review Board.

Prior to this study, we designed a table of risk factors for preterm labor. Patients who fit the criteria were recruited in our study. The major risk factors for preterm labor included multiple pregnancies, history of preterm labor, abdominal operation performed during pregnancy, history of exposure to diethylstilbestrol (DES) *in utero*, polyhydramnion, anomaly of the uterus, history of cone biopsy, cervical dilation of more than 1 cm at the 32nd week of gestational age,