

# FIBRONECTIN LEVELS IN PREGNANCY AND PUERPERIUM

M. MICHELI (\*\*) - A. DE FRANCO (\*\*) - M. NITTI (\*\*) -  
G. SIRO-BRIGIANI (\*\*) - F. LUCISANO (\*) - G. GARGANO (\*) -  
P. GRECO (\*) - F. PIETROPAOLO (\*)

University Hospital of Bari (Italy)

(\*) Chair of Gynecological Endocrinology (Head: Prof. F. Lucisano)

(\*\*) Institute of Anesthesiology (Director: Prof. A. Brienza)

*Summary:* Fibronectin levels were serially assayed during the third trimester of pregnancy and puerperium in a group women with uncomplicated pregnancies, and two groups with mild/severe hypertensive disorders of pregnancy. The values were found increased in the complicated pregnancies, with extremely elevated levels in cases of severe preeclamptic fits.

## INTRODUCTION

Fibronectin is a large plasma glycoprotein, which is connected with processes related to hemostasis and tissue repair<sup>(6)</sup>. Its action is supposed to be involved in the clearing of fibrin, fibrinogen and fibrin degradation products from the blood by the reticuloendothelial system<sup>(4, 8)</sup>. Normal circulating levels are considered to be in the range of 200 to 400 ng/ml<sup>(9)</sup>.

A decrease is found during disseminated intravascular coagulation<sup>(6)</sup>, probably correlated to decreased reticuloendothelial function. Since abnormalities of the vascular endothelium and coagulation system are linked to the pathogenesis of preeclampsia<sup>(7)</sup>, several reports have investigated the value of fibronectin levels as a marker of this condition.

An earlier study<sup>(3)</sup>, which showed unchanged levels of the protein throughout the pregnancy, was not confirmed by two recent reports<sup>(1, 2)</sup>, which demonstrated a progressive increase during normal pregnancy.

The discrepancy could be explained by some degree of individual and age-related variation. A consensus anyway exists about a significant increase of fibronectin levels, associated with mild and severe preeclampsia<sup>(9, 1)</sup>. Furthermore a high value in normotensive women is con-

sidered to be an early predictor of developing preeclampsia<sup>(5)</sup>.

In the present report fibronectin levels were prospectively evaluated in a series of uncomplicated and hypertensive pregnancies, in order to disclose any relation between plasma values and the severity of the disease.

## MATERIAL AND METHODS

A group of patients (79) receiving antenatal care at the University Hospital of Bari (2nd Department of Obstetrics and Gynecology) were recruited for the study. They were divided into three groups, according to the severity of the pregnancy associated condition (table 1).

Group A (42 patients) were the control subjects with an uncomplicated course of their pregnancy.

Group B (29 patients) with proteinuric hypertension classified as moderate preeclampsia, according to conventional parameters.

Group C (8 patients) with severe preeclampsia or eclamptic fits sometimes during pregnancy or puerperium.

Blood samples for fibronectin level assay were regularly drawn at four weeks intervals from 28 week gestation until delivery. In group A and B patients another estimate was performed at the seventh day of puerperium, whereas in group C at least three samples were collected, the last one on the fifteenth day after delivery. Plasma fibronectin concentration was determined by means of quantitative electroimmunoassay, as previously reported in literature<sup>(1)</sup>.

Table 1. - Characteristics of the patients under study.

Group A (42 patients with uncomplicated pregnancies)	
Age:	25.4±3.7
Parity:	1.02±0.54
Group B (29 patients with moderate preeclampsia)	
Age:	23.4±2.8
Parity:	1.05±0.24
Group C (8 patients with severe preeclampsia)	
Age:	21.4±1.4
Parity:	all primigravidae

## RESULTS

The average of fibronectin values for each group showed a significant difference ( $p<0.01$ ) between both mild and severe preeclamptic patients and normal controls (Table 2). The differences were even more striking for the women who subsequently developed eclamptic attacks (group C).

Table 2. - Average of fibronectin levels in the three groups.

Fibronectin values		
Group A (mean ±SD)	Group B (mean ±SD)	Group C (mean ±SD)
238±71	294±62	796±120

No difference at all was found among the post-partum levels of all the groups.

## DISCUSSION

The results would support previous experiences with fibronectin levels in normal versus abnormal pregnancies. The plasma protein is definitely increased in the latter and apparently even more substantially where the condition is severe.

The groups here considered are pretty small if any cut-off level predictive of hypertension has to be assessed. Given the prevalence of the disease in question, observation of many hundreds of women would be necessary in order to get a reliable answer. Interestingly enough, anyway, the values appear to be raised sky-high, when the condition presents itself with a severe course, possibly demonstrating a profound interference in the reticuloendothelial system turn-over.

## BIBLIOGRAPHY

- 1) Eriksen H.D., Kern Hansen P., Brocks V., Jensen B.A.: *Acta Obst. Gyn. Scand.*, 66, 25, 1987.
- 2) Hess L.W., O'Brien W.F., Holmberg J.A., Winkel C.A., Monaghan W.P., Hemming V.G.: *Obst. Gyn.*, 68, 25, 1986.
- 3) Ganrot P.O.: *Scand. J. Clin. Lab. Inv.*, 29, suppl. 124, 83, 1972.
- 4) Jaffe E.A., Mosher D.F.: *J. Exp. Med.*, 147, 1779, 1978.
- 5) Lazarchick J., Stubbs T.M., Romein L., Van Dorsten J.P., Loadholt C.B.: *Am. J. Obst. Gyn.*, 154, 1050, 1986.
- 6) Mosher D.F., Williams E.M.: *J. Lab. Clin. Med.*, 91, 729, 1978.
- 7) Pritchard J.A., Cunningham F.G., Mason R.A.: *Am. J. Obst. Gyn.*, 124, 855, 1976.
- 8) Saba T.M., Jaffe E.: *Am. J. Med.*, 68, 577, 1980.
- 9) Stubbs T.M., Lazarchick J., Horger E.O.: *Am. J. Obst. Gyn.*, 150, 885, 1984.