Short Communication

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Maternal Plasma Fibronectin and Neonatal Birth Weight

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Key Words

Maternal fibronectin

Microcirculation

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Abstract

Similar plasma fibrinogen levels were found in nonpregnant volunteers and first or third trimester normal pregnant women, while in preeclampsia it was two times higher. The close relationship observed between maternal plasma fibronectin content and corrected fetal birth weight suggests that the state of microcirculation has a profound influence on neonatal birth weight.

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Introduction

Results

Fibronectin is considered a sensitive marker for endothelial damage in preeclampsia [1, 2]; however, its level has been claimed to be elevated during normal pregnancy as well [3]. This fact and also the enhanced platelet consumption [4] or decreased red cell deformability [5] suggest a disturbed microcirculation even in normal pregnancy which should be associated with the parallel change of fetal weight.

Patients and Method

Plasma fibronectin levels were measured by rocket immunoelectrophoresis in 12 nonpregnant volunteers, 6 first and 20 third trimester (at 32-37 week) apparently healthy pregnant women and 6 pre-eclamptic patients (at 30-37 week). Fibronectin and antifibronectin were purchased from Bethesda Research Laboratories. After giving birth (at 35-40 week), the fetal weight (g)/gestational length (weeks) ratio was determined in the 20 normal and the 6 preeclamptic pregnancies.

The fibronectin level (mean $\pm$ SD) in nonpregnant volunteers was 336 ± 79 mg/l, similar to normal early or late pregnancies (301 ± 70 and 349 ± 108 mg/l). In preeclampsia, the plasma fibronectin concentration (623 ± 124 mg/l) was significantly ($p < 0.001$) higher than in any other group. When fibronectin values obtained in healthy and preeclamptic third trimester pregnancies were compared to age-corrected neonatal birth weight, a negative relationship ($r = 0.84$; $p < 0.001$) was found (fig. 1).

Discussion

In preeclampsia, the high plasma fibronectin content which refers to endothelial injury is in accordance with previous data [1]. Though we failed to find a significant difference between fibronectin levels of nonpregnant and normal pregnant subjects (probably due to the low num-

ber of cases), the close relationship between maternal plasma fibronectin level and corrected neonatal birth weight suggests that microcirculation in pregnancy has a profound influence on fetal growth in apparently normal cases as well.

These data should accordingly focus the attention to the use of drugs which can improve capillary flow (e.g. calcium dobesilate) particularly in such pregnancies where decreased placental blood supply is proved or suspected.

115-

95-

5

a 75-

55-

35-

Fig. 1. Relationship between the maternal plasma fibronectin content and the fetal birth weight (BW) gestational length (GL) ratio. ■ = Normal late pregnancies; □ = preeclamptic pregnancies, $r = 0.84$; $p < 0.001$.

200 400 600

Fibronectin, mg/l

800

References

Ballegeer, V.; Spitz, B.; Kieckens, L.; Moreau, H.; Van Assche, A.; Collen, D.: Predictive value of increased plasma levels of fibronectin in gestational hypertension. *Am. J. Obstet. Gynec.* 767:432-436(1989). Lockwood C.J.; Peters, J.H.: Increased plasma levels of EDI+ cellular fibronectin precede the clinical signs of preeclampsia. *Am. J. Obstet. Gynec.* 762:358-362(1990).

Brady, K.; Duff, P.; Yancey, M.K.: Plasma fibronectin concentrations during normal term labor. *Obstet. Gynec.* 75: 619-621 (1990). Fay, R.A.; Hughes, A.O.; Farron, N.T.: Platelets in pregnancy: hyperdestruction in pregnancy. *Obstet. Gynec.* 61:238-240 (1983). Tamás, P.; Gresele, P.; Kett, A.; Nenci G.G.; Csaba, I.F.: Red cell deformability in normal late pregnancy: possible role of plasma proteins. *Gynecol. obstet. Invest.* (in press).