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Neutrophil Alkaline Phosphatase in AIDS

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A marked decrease of neutrophil alkaline phosphatase (NAP) has been found in a 22-year-old pregnant woman with AIDS. The newborn (2.280 kg, week 36) was affected by encephalopathy and anoxic status and died 23 days after delivery. The laboratory findings, obtained at week 33 of pregnancy, showed specific anti-HIV¹ antibodies as determined by ELISA, a reduced number of OKT4 cells with low OKT4/T8 ratio, and an anti-D antibody (Coombs 1/16, IgG₃). Using biochemical [1] and cytochemical [2] techniques, the NAP activity was determined in the patient and in control pregnant women. This study was completed by additional biological tests, performed in nonpregnant AIDS patients and controls (tables I-III).

The pregnant patient with AIDS had a marked decrease of NAP activity and a drop in thermostable AP, following 1.5 min microwave (2,050 MHz; P = 0.45 kW, 220 V 50 Hz, 4.4 Am) or 56 °C for 10 min.

In AIDS cases without pregnancy we observed an increase in NAP activity and a high residual fraction of thermostable NAP.

These results suggest: (1) the presence of a thermo-labile AP variant in PMN of pregnant women with AIDS; (2) this nonspecific NAP seems to correlate with a clinical evolution: 6 months postpartum, the

Table I. Cytochemical study of NAP and microwave NAP in a patient with AIDS and in control women

NAP activity scores

Microwave NAP scores

patient presented a critical status and (3) the nonpregnant women with AIDS and with high NAP activity were clinically stable between 11 and 25 months.

Table II. NAP biochemical assay and thermostability measured in the AIDS case and in normal controls

NAP activity nmol/h/10⁶ cell

0

25 ± 5

Residual activity % (10 min at 56°C)

Table III. Biochemical study of the effects of microwave on placental and hepatic AP isoenzymes (percent of residual activity)

Nozawa, S.; Fishman, W.H.: Heat stable alkaline phosphatase: chemistry and biology; in, Grudzinskas, Seppala, Teisner, Pregnancy proteins, pp. 121–153 (Academic Press, New York 1982). Kaplow, L.S.: An histochemical procedure for localizing and evaluation leucocyte alkaline phosphatase activity in smears of blood and marrow. Blood, 10: 1023(1955).

Pregnancy (30–34 weeks)