

ALPHA-FETOPROTEIN IN VAGINAL FLUIDS. THE EARLY DIAGNOSIS OF PREMATURE RUPTURE OF MEMBRANES

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Alpha-fetoprotein, one of the most characteristic proteins of pregnancy, is present in the amniotic fluid during the whole period of pregnancy. In the case of premature rupture of the membranes it is appearing in the vaginal fluid. The level of AFP was measured by the ELISA technique in the vaginal fluid of pregnant. In 70 cases of the rupture of membranes and in 33 cases of splitting of the membranes the AFP was measureable in the vaginal fluid and it was not detectable in 31 cases of urine and in 16 cases of vaginal fluids of pregnant without any sign of premature rupture of the membranes.

INTRODUCTION

One of the frequent problems of the obstetricians is the early diagnosis of premature rupture of the membranes (Prom), especially in preterm pregnancies.

Due to the insufficiency of the presently used tests, the idea of Rochelson et al. /5/ has been accepted with delight, namely to search for alphafetoprotein (AFP) as a sign of Prom in the vaginal fluid of pregnant.

AFP, described firstly by Bergstand and Czar /1/, is one of the most characteristic proteins of pregnancy, detectable normally in the serum and amniotic fluid of pregnant women, and pathologically in some cases of tumours. Its increase in early pregnancies (15-18 gest. week) is a valuable sign of certain developmental defects (such as neural tube defects, omphalo-kele, congenital nephrosis etc.). Therefore the detection of AFP as a screening test is applied in the 16-18 gest. week

of pregnancy in many countries. Subsequently the first elaborated radiometric methods, soon appeared the immunoenzymatic technique more suitable for the routine laboratories, first described in 1971 by different group of scientists. In our laboratory, as the center of screening of pregnant women of more districts of Budapest, the AFP level of about 80-100 samples of sera is determined daily with the ELISA technique. It was evident to search for this protein with the same method in the vaginal fluid of pregnant women with the suspected diagnosis of Prom.

METHOD AND MATERIALS

AFP was measured in microtitration plates with the reagents of "Enzaklon-feto test" of the Institute for Serobacteriological Production and Research, Budapest, Hungary, which is employing a peroxidase labeled antibody conjugate. The absorbance was read with a Multiscan spectrophotometer at 492 nm.

The value of the standards were plotted against concentration on semi-log paper.

Precision of the reaction: sensitivity 1 nanog/ml (0.8 I.U./ml), qualitative detectability 5 nanog/ml (4.0 I.U./ml), intraassay 10 %, interassay 12 %.

Positive cases: 70 samples of vaginal fluid from pregnant women with a high probability of rupture of the membranes and 33 samples from pregnant women, where a therapeutic splitting of the membranes was executed. In some cases the amniotic fluid was obtained from the bed-sheet, to see whether the AFP is not linked to the sheet.

Negative cases: 31 samples from 24 hours collected urine of pregnant women and 16 samples of vaginal fluid from pregnant women with increased vaginal secretion.

RESULTS

The results of the two positive groups were summarized in Table I.

TABLE I

Distribution of the two positive groups of samples according to gestational ages and their AFP levels

I. Rupture of the membranes			
	32 g.w.	33-37 g.w.	38 g.w.
n	16	31	23
x (AFP)	182,5	129,3	78,1 nanog/ml
lower-upper			
limit	27-230	30-360	29-210 "
I. Splitting of the membranes			
	32 g.w.	33-37 g.w.	38 g.w.
n	8	12	13
x (AFP)	166,5	147,0	65,8 nanog/ml
lower-upper			
limit	96-220	72-254	36-106 "

Negative result was not observed. In every cases of suspected Prom as well as in cases with splitting of the membranes, a significant quantity of AFP was detected in the vaginal fluid. The samples obtained from the bed-sheet were also positive for AFP. We think that the demonstration of AFP by itself is of diagnostic value, however, a connection between the gestation age and AFP value is supported by the data of Table I.

Positive result was never found in the negative group, neither in the urine, nor the vaginal fluid (sensitivity of the test was 1 nanog/ml).

DISCUSSION

The premature rupture of the fetal membranes is a relatively common event during the different periods of the gestation with various consequences, sometimes deleterious to the mother or to the newborn (infections, etc.).

Therefore, the early diagnosis is very important, and it may determine the therapeutic measures too. The most popular tests to identify the nature of the vaginal fluid/the NBS staining, the ferning, the nitrazine test /2, 3, 4/, are less sensitive, especially in the early gestation period. Our examinations, the demonstration of AFP in the vaginal fluid by the ELISA method, confirm the results of Rochelson et al. We think that the measuring of AFP in the vaginal fluid, carried out by whatever method, is a useful aid to the clinician to support the early diagnosis of Prom.

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