

## SERUM ALPHA FOETO PROTEINS IN Rh NEGATIVE IMMUNISED AND NON-IMMUNISED PREGNANT WOMEN

By

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### SUMMARY

Serum alpha foeto proteins (AFP) were estimated in 20 immunised and 20 non-immunised Rh negative women during pregnancy and post delivery. Ten non-pregnant healthy females were also taken as controls. It was observed that AFP levels were similar in the two groups both during pregnancy and post delivery as well. Also there was no correlation between the AFP levels and outcome of pregnancy.

### Introduction

It has been shown by many workers that Alpha foeto proteins (AFP) are produced by foetal liver and yolk sac and the maximum level in foetal serum is obtained at 12-14 weeks of gestation (Gitlin and Boemans, 1966 and Gitlin, 1975). These levels decrease after birth and adult serum contains less than 20 ng/ml (Brown *et al*, 1977). Horacek *et al* (1979) suggested that occurrence of foetoplacental haemorrhage could be detected by measurement of maternal AFP levels. It has also been suggested that maternal AFP levels may be raised when foetus is compromised (Seppala, 1975). Hence, maternal blood levels of AFP were studied in Rh negative immunised and non-immunised females to find out if there was any difference in the levels of alpha foeto proteins and whether this could be correlated with the outcome of pregnancy in immunised mothers.

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### Material and Methods

The women referred to the special Rh clinic of Postgraduate Institute of Medical Education and Research, Chandigarh, were screened for Rh antibodies by Indirect Coombs test (Coombs *et al*, 1945) and Papain Enzyme test (Goldsmith, 1955). Twenty immunised and 20 non-immunised women matched for age and number of pregnancies were included in the study. At the same time 10 non-pregnant healthy females matched for age and number of pregnancies were also included.

Blood samples were collected around 30 weeks of gestation or later depending on the time of registration and also 48 hours post delivery. From 10 control women, a single sample was collected. These sera were stored at  $-20^{\circ}\text{C}$ . AFP estimation was carried out by a solid phase radioimmunoassay using a sandwich technique with Phadebas AFP Prist Kits according to the manufacturer's specifications (Wide, 1971).

**Results and Discussion**

Mean ages of immunised and non-immunised females were similar and the number of pregnancies was 4.3 and 3.5 respectively. Table I shows the comparative AFP levels in the study groups and controls. Figs. 1 and 2 show the AFP

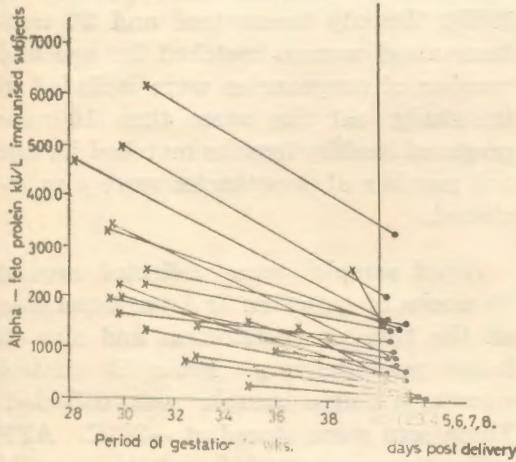
levels in the immunised and non-immunised women during pregnancy and post delivery period respectively. It was observed that there was no difference in the levels of AFP values in the two groups. Also there was no correlation between the levels of AFP and outcome of pregnancy in the immunised subjects.

**TABLE I**

*Comparison of Alpha Foeto Proteins (kU/2) in Immunised, Non-immunised and Control Subjects*

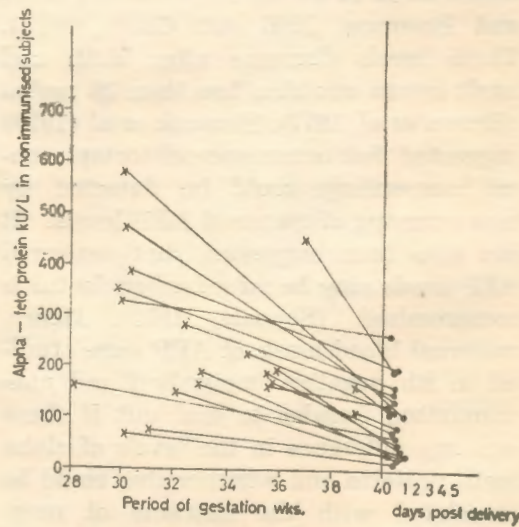
|      | Immunised<br>(20) |           | Non-immunised<br>(20) |           | Controls<br>(10) |
|------|-------------------|-----------|-----------------------|-----------|------------------|
|      | Pre-dly.          | Post-dly. | Pre-dly.              | Post-dly. |                  |
| Mean | 219.2             | 76.3      | 220.5                 | 81.4      | 9.1              |
| ±    | ±                 | ±         | ±                     | ±         | ±                |
| S.D. | 31.5              | 18.4      | 35.6                  | 21.6      | 0.7              |

Figures in parenthesis denote number of ases.  
Pre-dly.—Pre-delivery, Post dly.—Post delivery.



**Fig. 1**

Alpha-foeto protein levels in immunised subjects during pregnancy and post-delivery period.



**Fig. 2**

Alpha-foeto protein levels in non-immunised subjects during pregnancy and post-delivery period.

It was shown by Coheen *et al* (1973) and Bock *et al* (1976) that the maternal serum AFP levels may be increased before intrauterine death. Talib *et al* (1986) also showed that a pronounced increase in AFP levels may be observed in severe Rh immunisation associated with intrauterine death. However, in the present study no such observation was made. The mean levels in the immunised and non-immunised mothers were comparable. This is supported by a study by Vivian and Ward (1974). They showed that in 5 Rh negative subjects who required intrauterine transfusion for severely affected babies and those mothers whose babies were stillborn did not show any abnormally high value of AFP as compared to 3 unaffected mothers and stated that maternal levels of AFP do not seem to predict intrauterine death in Rhesus immunisation.

Since the present study showed the mean AFP levels to be similar in the immunised and non-immunised groups, it can be inferred that there is no difference in the amount of foetoplacental haemorrhage and therefore, the amount of anti-

gen available in the two groups is also similar.

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