

SERUM PROTEINS INCLUDING IMMUNOGLOBULINS IN MOTHERS DELIVERING PREMATURELY

by

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Some previous studies have indicated that in comparison to non-pregnant state, a female during pregnancy shows variations in total serum proteins, including immunoglobulins. Thus, there was a rise in Alpha₁ and Beta, a fall in Alpha₂, and the gamma fraction did not show much change except when the mother had suffered from some infection during pregnancy. The levels of immunoglobulins I, M and A recorded a rise during pregnancy which was significant (Raghvan *et al* 1977). The present study was therefore undertaken in mothers with premature delivery.

Material and Methods

The study was undertaken on 16 young

been compared with those obtained in 31 healthy mothers delivering fullterm babies weighing more than 2500 gms and did not have infection during pregnancy and 15 who did have infection. Sera for investigation were obtained from the antecubital vein at the end of the second stage of labour. Total protein and protein fraction were estimated by the method of Block *et al* (1965) and immunoglobulin were quantitated using single radial gel diffusion technique (Mancini, *et al* 1965).

Observations

The total protein and its fractions of the test group are compared with the controls in Table I. The total protein levels

TABLE I
Total Protein and its Fractions Just Before Delivery Expressed as Gms %

	Total Protein	Albumin	Globulin
Premature delivery	7.20 ± 0.44	2.58 ± 0.36	4.44 ± 0.52
Normal delivery	7.25 ± 0.43	2.70 ± 0.34	4.48 ± 0.52
Infected during pregnancy	6.94 ± 0.84	2.50 ± 0.63	4.44 ± 0.48

mothers who delivered live babies less than 2500 gms in weight and less than 37 weeks of gestation. The results have

of the test group are the same as in the non-infected fullterm pregnant female. However, the albumin and globulin levels are similar to those seen in infected full-term pregnant group, thus indicating that the premature group mothers may have

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suffered from a subclinical infection during the pregnancy. *Discussion*

Various fractions of globulin and their levels are given in Table II. The levels of pregnant females had been done previously mainly to find out the nutritional status

TABLE II
Different Fractions of the Globulins Just Before Delivery Expressed as Gms %

	Alpha ₁	Alpha ₂	Beta	Gamma
Premature delivery	0.78 ± 0.20	0.40 ± 0.22	1.50 ± 0.30	1.68 ± 0.30
Normal delivery	0.86 ± 0.2	0.30 ± 0.12	1.56 ± 0.41	1.75 ± 0.48
Infected during pregnancy	0.72 ± 0.21	0.35 ± 0.22	1.50 ± 0.30	1.84 ± 0.30

of Alpha₁ of the test group are in between the levels obtained in the healthy and infected pregnant groups but Alpha₂ and gamma levels are higher than both these groups and Beta globulin levels are same as in the infected group. These findings also support that the test group may have suffered from some subclinical infection during pregnancy which as far as the immune reaction is concerned was of more severe nature than the infected control.

The levels of three major immunoglobulins are given in Table III. The levels

of the mother and its effect on the foetus and the newborn. Study of immunoglobulin levels during pregnancy has been taken up recently with the same view. During these studies it has been observed that globulin levels rise during pregnancy and this rise is particularly noticed in Alpha₁ and Beta fractions while gamma fraction is not altered and Alpha₂ records a fall. All the major immunoglobulins record a rise in the pregnant as compared to the non-pregnant state (Raghvan and Bazaz-Malik, *et al* 1977).

TABLE III
Levels of Immunoglobulins Just Before Delivery Given in I. Units

	IgG	IgM	IgA
Premature delivery	247 ± 101	176.40 ± 650	141.50 ± 107.20
Normal delivery	237 ± 145	271 ± 223	140.5 ± 110.5
Infected during pregnancy	235 ± 168	434 ± 300	113 ± 100

of immunoglobulin G are very significantly higher and immunoglobulin M significantly lower than the control. Immunoglobulin A is same as in the healthy pregnant but higher than the infected. These findings indicate utilization of IgM and higher production of IgG supporting that the patient has been exposed to repeated infections during pregnancy.

A pregnant female who has suffered from some clinical infection before delivery against a pregnant female without such history shows a lower globulin level as well as Alpha₁ and Beta fraction but a rise in Alpha₂ and gammaglobulin fraction. IgM records a significant rise, IgA a significant fall and IgG no change at all (Raghvan and Bazaz-Malik, *et al* 1977).

As against these findings in the present study the females delivering a premature baby show total protein levels of a normal pregnant female. Albumin and globulin levels like that of the infected mother. Of the globulin fraction Alpha₁ is in between the two control groups, Alpha₂ higher than the infected group, Beta same as the infected group and gamma higher than the infected group.

The immunoglobulin levels are higher in the IgG fraction, lower in IgM fraction and same as the uninfected in IgA fraction. Lower IgM levels indicate recent utilization of the immunoglobulin and higher IgG levels indicate an older infection. These, therefore, suggest that the test mothers were either having a long standing infection or were exposed to repeated infections. Therefore, one of the factors which may be responsible for prematurity may be this infection.

The levels of all the three major immunoglobulins in Indian pregnant women are higher than those reported by workers abroad. To the knowledge of the authors, immunoglobulin levels in Indian females delivering premature babies have not been reported before.

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TABLE II

IgG	IgM	IgA
12.5 ± 2.5	1.5 ± 0.5	0.5 ± 0.2
15.0 ± 3.0	1.0 ± 0.4	0.4 ± 0.1
10.0 ± 2.0	1.2 ± 0.4	0.6 ± 0.2

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