

## ASSESSMENT OF CELLULAR AND HUMORAL IMMUNITY IN MULTIPLE GESTATION

by

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The study of immunocompetence of pregnant females gained importance near about in 1966, when Lewis *et al* showed that cell mediated immunity which is key to the basis of acceptance or rejection of a homograft, is found to be depressed in pregnancy and thereby protects the foetus from rejection by its mother's own immune mechanism. Keeping in mind the altered immune response in normal pregnancy, the present study has been undertaken to study the variation in cellular and humoral response in cases of twin pregnancy.

### Material and Methods

The study constitutes 16 cases of multiple gestation, 25 cases of normal third trimester of pregnancy and 25 cases of non-pregnant females. The cases were drawn from Upper India Sugar Exchange Maternity Hospital, Kanpur. All the cases of Multiple gestation included in our study were in their third trimester of pregnancy.

Detailed history, clinical examination and necessary routine investigations were done (including vaginal swab culture and hanging drop smear of vaginal discharge). The following is the account of special tests employed to assess immunocompetence in these cases.

1. Peripheral lymphocyte count (PLC) was calculated with the help of total leucocyte count and differential lymphocyte count.

2. T lymphocyte studies (Jondel *et al*, 1972).

3. Active T lymphocyte studies (West *et al*, 1977).

Immunoglobulin Assay by using tripartite immunodiffusion plates Ig G, Ig A, Ig M (Mancini *et al*, 1965).

The results of various parameters for cellular and humoral immunity in cases of multiple gestation as compared to controls, were statistically analysed.

### Observations

In this study we have assessed cellular immunity in 16 cases of twin pregnancy and 25 cases of normal third trimester pregnant females as control. The results were also compared with normal non-pregnant females.

There is no significant change in PLC/Cumm, T cell % and T cell level ( $P >$

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.05) in multiple gestation when compared with control (Table I). To study the humoral response various immunoglobulin level (Ig G, Ig A and Ig M) were studied in cases of multiple gestation and their levels were compared with normal third trimester pregnant females as well as normal non-pregnant females. The mean value of Ig G and Ig M were higher in normal third trimester pregnant females as compared to control and the difference was statistically significant ( $P < .001$ ) whereas Ig A showed no significant change ( $P > .05$ ).

Whereas in the case of multiple gestation, there is a significant decrease ( $P < .001$ ) in Ig G and Ig A, while Ig M showed significant increase ( $P < .001$ ) when compared with normal third trimester pregnancy (Table II).

#### Discussion

There is no significant change in cellular immunity in multiple gestation as

compared to normal third trimester. But when compared with normal non-pregnant controls, there is a significant depression in cellular immunity (Table I). The present findings are supported by Lewis *et al* (1966), Doenhoff *et al* (1971).

As regards the immunoglobulin levels the mean Ig G and Ig M in third trimester pregnant females were significantly higher ( $P < .001$ ) as compared to control (non-pregnant). The present findings are similar to that of Raghvan *et al* (1977) and Ganguli *et al* (1980). Whereas in cases of multiple gestation Ig G and Ig A showed significant decrease ( $P < .001$ ) while the mean Ig M level showed significant increase.

In absence of pertinent literature it is difficult to explain this phenomenon moreover, number of cases are too small to draw any conclusions.

TABLE 1  
Assessment of Cellular Immunity in cases of Non-pregnant, Pregnant Third Trimester and Twin Pregnancy

Particulars		Normal Non-Pregnant (25)	Normal Third Trimester (25)	Twin Pregnancy (16)
PLC/Cumm	R =	2302-2592	2200-2832	2268-3400
	A.M. =	2363.04	26633.48	2862.75
	S.D. =	—	127.37	640.4
				t=0.69 P > .05
T Cell %	R =	62-72	44-68	50-56
	A.M. =	67.56	53.8	53.25
	S.D. =	—	5.58	2.5
				t=0.198 P > .05
T Cell level/cumm	R =	1519-1792	1176-1866	1224.72-1802
	S.D.=	1669.86	1358.70	1545.05
	A.M.=	—	69.70	72.5
				t=1.56 P > .05

TABLE II  
To Study the Humoral Immunity in cases of Non-Pregnant, Pregnant Third Trimester and Twin Pregnancy

Particulars	Normal Non-Pregnant (25)	Normal Third Trimester (25)	Twin Pregnancy (16)
Ig G mg/100 ml	R= 600-940	800-1040	492-612
A.M.=	734.46	866.4	554.4
S.D.=	—	68.73	59.07
			t = 9.73
			P < .001
Ig A mg/100 ml	R= 140-168	146.180	130-144
A.M.=	158	158.0	137.5
S.D.=	—	12.88	5.9
			t = 5.2
			P < .001
Ig M mg/100 ml	R= 80-155	218.253	370-425
A.M.=	102.32	253.25	393.75
S.D.=	—	50.50	24.28
			t = 30.5
			P < .001

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