

ASSESSMENT OF IMMUNOCOMPETENCE IN ABORTION

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SUMMARY

In spontaneous early recurrent abortion there was significant rise in cellular immunity as compared to first trimester normal pregnancy. While humoral immunity was decreased, maximum lowering was seen in levels of IgG levels.

In cases of threatened abortion there was no significant difference in cellular and humoral immunity as compared to normal first trimester pregnancy.

Introduction

Studies on spontaneous recurrent abortion are inspiring as it is the commonest mishap in Obstetric carrier of a female.

Despite multidirectional investigative efforts the problem of aetiology still remains unsolved in large number of cases. In the process variety of genetic, endocrinal, anatomic, metabolic and haematologic mechanisms have been ascribed as being casually connected with habitual abortion.

Almost every clinical discipline including the practice of Obstetrics & Gynaecology has been influenced by information explosion that has taken place in the science of immunology over past 15 years. Immunology in fact has always been a branch of medical science in which fundamental advances have lead quickly to practical applications of outstanding importance.

Immunocompetence in man is not new.

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It is the immuno mechanism in man which has helped him to survive. The implanted zygote containing foreign paternal antigen is seen to be successfully implanted into the uterus without rejection, due to altered cellular immuno response and production of number of substances with immunosuppressive properties. So it is tempting to postulate that there may be some abnormality of immunological responsiveness and responsible for many cases of recurrent abortions and threatened abortions.

Material and Methods

The present study comprises of 50 cases of abortions, 25 each of early spontaneous recurrent abortions and early threatened abortion and 25 cases of normal first trimester pregnancy as control. All women having two or more consecutive abortions without previous full term or premature delivery are included in this series. Cases of threatened abortion who continued their pregnancy are included. Cases of habitual abortions had routine investigations within normal

limits and maximum period lapse between last abortion and study was three months. Detailed history, clinical examination and routine investigations were done. Following were the account of special tests employed to assess immunocompetence in these cases.

Observations

The study showed that there was increase in cellular immunity and decrease in humoral immunity in cases of recurrent abortions. Increase in cellular immunity is shown by less LMI levels and increase in total leucocyte counts. In humoral immunity significant change was seen in IgG levels. There was no significant difference in LMI and immunoglobulin levels in cases of threatened abortions as compared to control cases (Table I, II & III).

- (i) T.L.C.
- (ii) T Lymphocyte studies (By LMI—Rocklin, 1976)
- (iii) Immunoglobulin assay by using tripartigen immunodiffusion plates.

TABLE I
Total Leucocyte Counts

| Leucocyte Count | Control cases | | Threatened abortion cases | | Recurrent abortion cases | |
|-----------------|---------------|-----|---------------------------|-----|--------------------------|-----|
| 6000 - 7000 | 10 | 40% | 11 | 44% | Nil | — |
| 7001 - 8000 | 14 | 56% | 14 | 56% | 1 | 4% |
| 8001 - 9000 | 1 | 4% | — | — | — | — |
| 9001 - 10000 | — | — | — | — | 11 | 44% |
| 10001 - 11000 | — | — | — | — | 10 | 40% |
| 11001 - 12000 | — | — | — | — | 3 | 12% |

TABLE II
Lymphocyte Migration Index

| Migration Index | Control cases | | Threatened abortion cases | | Recurrent abortion cases | |
|-----------------|---------------|-----|---------------------------|-----|--------------------------|-----|
| 0.10-0.19 | — | — | — | — | 3 | 12% |
| 0.20-0.29 | — | — | — | — | 20 | 80% |
| 0.30-0.39 | — | — | — | — | 1 | 4% |
| 0.40-0.39 | — | — | — | — | — | — |
| 0.50-0.59 | — | — | — | — | 1 | 4% |
| 0.60-0.69 | 2 | 8% | 6 | 24% | — | — |
| 0.70-0.79 | 23 | 92% | 19 | 76% | — | — |

TABLE III
Immuno Globins Levels

| | Immunoglobulin range in (mgm/dl) | Control Cases | Threatened abortion cases | Recurrent abortion cases |
|-----|----------------------------------|---------------|---------------------------|--------------------------|
| IgA | 110 - 210.0 | — | — | 12 (48%) |
| | 210.1- 410.0 | 25 (100%) | 25 (100%) | 13 (52%) |
| IgG | 900 -1100.0 | — | — | 14 (56%) |
| | 1100.1-1700.0 | — | — | 10 (40%) |
| | 1700.1-2100.0 | 25 (100%) | 25 (100%) | 1 (4%) |
| IgM | 110.1- 210.0 | — | — | 22 (88%) |
| | 210.1- 310.0 | 17 (68%) | 18 (72%) | 2 (8%) |
| | 310.1- 410.0 | 8 (32%) | 7 (28%) | 1 (4%) |

From Table III it is clear that immunoglobulins levels in cases of threatened abortions do not differ much from that of first trimester normal pregnancy. However, levels in cases of spontaneous abortions are in lower range. Maximum difference is seen in levels of IgG.

measurement by Rosette information method.

Solanki *et al* (1984) had also found same results but they studied humoral immunity by counting B lymphocytes rather than direct estimation of immunoglobulins.

Discussion

Findings in the above studies coincides with study of Rocklin (1976) who studied index using paternal specific antigen.

Agnihotri *et al* (1983) had also found same results but they studied lymphocyte

References

1. Agnihotri, M. et al: Jour. Obstet. & Gyn. of India, 33: 454, 1983.
2. Rooklin, R. E.: New Engl. Jour. Med. 295: 1209, 1976.
3. Solanki, A. N. et al.: Jour. Obstet. & Gyn. of India, 34: 456, 1984.

TABLE I

| Group | No. of cases | IgG (mg/dl) | IgA (mg/dl) | IgM (mg/dl) |
|----------------------|--------------|-------------|-------------|-------------|
| Normal pregnancy | 10 | 1200-1800 | 100-200 | 100-200 |
| Threatened abortion | 10 | 1000-1500 | 80-150 | 80-150 |
| Spontaneous abortion | 10 | 800-1200 | 60-120 | 60-120 |

TABLE II

| Group | No. of cases | IgG (mg/dl) | IgA (mg/dl) | IgM (mg/dl) |
|----------------------|--------------|-------------|-------------|-------------|
| Normal pregnancy | 10 | 1000-1500 | 80-150 | 80-150 |
| Threatened abortion | 10 | 800-1200 | 60-120 | 60-120 |
| Spontaneous abortion | 10 | 600-1000 | 40-80 | 40-80 |

TABLE III

| Group | No. of cases | IgG (mg/dl) | IgA (mg/dl) | IgM (mg/dl) |
|----------------------|--------------|-------------|-------------|-------------|
| Normal pregnancy | 10 | 1000-1500 | 80-150 | 80-150 |
| Threatened abortion | 10 | 800-1200 | 60-120 | 60-120 |
| Spontaneous abortion | 10 | 600-1000 | 40-80 | 40-80 |