ESTIMATION OF FOETAL & MATERNAL IMMUNOGLOBULINS CONCENTRATION IN VAGINAL DELIVERY AND ELECTIVE CAESAREANS

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SUMMARY

In the present series it was found that IgG concentrations were much higher in cord, than maternal blood in vaginal deliveries. However, there was not much difference between the two levels in cases of Elective caesareans.

IgG can cross the placental barrier and its transmission is facilitated by uterine contractions as is manifest in vaginal deliveries. However in cases where elective caesareans were done before the onset of effective labour pains the difference in the two levels was not much.

IgM and IgA were detected in all cord sera in both modes of delivery. However these levels were much lower than the corresponding maternal levels.

The bulk of the immunity of the neonate at birth is a passive one and mainly in the form of IgG. The babies born by elective caesareans have lower levels of IgG and are more prone to infections. This study has helped in identifying the neonate at risk and thereby take measures to protect it.

Introduction

The bulk of the immunity of the neonate at birth is in the form of IgG. The neonatal blood has very small amounts of IgG and IgM.

IgG has a molecular weight which allows it to negotiate the placental barrier. This transmission is facilitated by uterine contractions.

IgM and IgA do not cross the placental barrier. However the neonate is quite capable of synthesizing its own antibodies provided it gets an adequate stimulus. This has been proved by high levels of IgM and IgA in new borns who had been exposed to infection in their intrauterine life.

IgE is transmitted to the neonate from the mother via breast milk.

Material and Methods

Thirty cases were selected from the Upper India Sugar Exchange maternity Hospital Kanpur. Cases were both primi para and multigravida of different age group.

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Analysis was conducted in the following two groups of cases:

Group I: Vaginal delivery—20 cases.

Group II: Elective Caesarean—10 cases.

5 ml of maternal blood was drawn from ante-cubital vein at the time of delivery. Foetal blood was collected immediately after cutting its umblical cord.

Single radial immunodiffusion method of Macini and Haniman (1965) was used for quantitative determination of immunoglobulin.

Results

IgG was found to be significantly higher in cord sera as compared to maternal sera in vaginal delivery.

There is no significant difference between the maternal and cord sera levels in cases of elective caesareans.

IgG and IgA were found in all cord sera irrespective of the mode of delivery. These levels were very much lower than the corresponding maternal levels.

Discussion

It is apparent from the above results that labour pains enhance the transmission of IgG from mother to foetus via placenta.

In cases of elective caesareans where delivery was achieved before onset of proper labour pain the levels did not

TABLE I

Comparison of IgG Levels in Maternal and Cord Sera in Vaginal Delivery and Elective Caesareans

(Levels in Mg./100 ml.)

Delivery	Maternal (Mean values)	Cord (Mean values)	p	Remarks
1. Vaginal	1093.3	1554.16	<.001	Highly significant
2. Elective caesareans	1131.76	1141.66	>.05	Not significant

TABLE II

Comparison of IgA Levels in Cord and Maternal Sera in Vaginal Delivery and Elective Caesareans

(Levels in Mg./100 ml.)

Type of delivery	Maternal	Cord	p	Remarks
1. Vaginal delivery	183.62	87.28	<.001	Highly significant
2. Elective caesareans	147.86	74.47	<.001	Highly significant

TABLE III

Comparison of Maternal and Cord IgM Levels in Vaginal Delivery and Elective Caesareans

(Level in Mg./100 ml)

Mode of delivery	Maternal (Mean values)	Cord (Mean values)	p	Remarks
1. Vaginal delivery	199.64	64.4	<.001	Highly significant
2. Elective caesareans	227.62	48.08	<.001	Highly significant

show much difference. Our findings are in agreement with the findings of Cochran (1972). Yang and Hebbs (1963) have also reported similar findings. They compared the levels of IgG in cord and maternal sera in vaginal delivery, emergency caesareans and elective caesareans.

In our study there have been detectable levels of IgA and IgM in all cord sera irrespective of the mode of delivery. Our findings are consistent with Cochran (1972) who also found detectable levels of IgA and IgM in all cord sera. Gitlin *et al* (1967) have not been able to detect IgA and IgM in any of the cord sera.

As regards the origin of IgA and IgM —it can only be said that under the existing unhygienic conditions of the hospital probably some intrauterine infection stimulated their production.

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