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# Role of Fetal Serum Prolactin in Pregnancy

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## ABSTRACT

*In our study we have tried to to study the comparison of fetal cord serum prolactin level in normal and abnormal pregnancies and correlate the cord serum prolactin level with occurrence of HMD and to establish the fact that If cord serum prolactin is less, then there might be the chances of neonate developing HMD .study was conducted in Department of Obstetrics and Gynaecology, Datta Meghe Institute Of Medical Sciences, Sawangi (Meghe), Wardha (1st September 2005 to 31st August 2007: on 160 randomly selected booked and unbooked women GROUP A 80 women with normal pregnancies GROUP B 80 women with abnormal pregnancies.*

*In a prospective study umbilical cord serum prolactin level was found to be lower in women with abnormal pregnancy.*

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**Keywords**: Prolactin, HMD, umbilical cord

## Introduction

PASTEUR taught that chance favors the prepared mind. In our practice every second counts and if we don't act abruptly and precisely, we loose the life... a precious life...that can be perhaps the only child of the couple. Yes ... this is the very essence of this study.

Fetal cord prolactin helps us in saving many lives.

The hormones which have already been known to increase the production of surfactant are cortisol, thyroid hormone, glucagons, insulin, testosterone, estradiol.

Prolactin is the latest hormone which has been known to have some relationship with the production of surfactant.It has been shown by Winters et al that the concentration of prolactin in human fetal plasma increases throughout pregnancy, with a marked rise towards term. This finding suggests that plasma prolactin may be correlated with the presence or absence of HMD in the neonate. This premise was further investigated by Hauth et al, who also found a correlation between a low level of prolactin and the development of HMD. Infant respiratory distress syndrome (IRDS), also called neonatal respiratory distress syndrome, previously called hyaline membrane disease (HMD), a syndrome in premature infants caused by developmental insufficiency of surfactant production and structural immaturity in the lungs. IRDS affects about 1% of newborn infants and is the leading cause of death in preterm infants. The incidence decreases with advancing gestational age. The syndrome is more frequent in infants of diabetic mothers and in the second born of premature twins

In our study we have also tried to correlate the cord serum prolactin level with occurrence of HMD and to establish the fact that If cord serum prolactin is less, then there might be the chances of neonate developing HMD and vice versa.

Actions of prolactin are:-

1) Blocks folliculogenesis in ovary and inhibits granulosa cell aromatase activity leading to hypoestrogenism and anovulation.

2) It has luteolytic effect generating a short or inadequate luteal phase of menstrual cycle.

3) Contributes to the prevention of immunologic rejection of conceptus by suppressing the maternal immune response.

4) Influences surfactant synthesis in the fetal lung

5) Induces and maintains lactation

6) Suppresses sexual drive

**Aim:** To study the comparison of fetal cord serum prolactin level in normal and abnormal pregnancies.

**Objective**: To study the relationship between fetal cord serum prolactin level with:-

Gestational age.

Birth weight of the newborn.

Development of respiratory distress syndrome (RDS)

**Study place**: Department of Obstetrics and Gynaecology, Datta Meghe Institute Of Medical Sciences, Sawangi(Meghe), Wardha (1st September 2005 to 31st August 2007).

**Study design**: prospective study done on 160 randomly selected booked and unbooked women delivering in the labour room or in operation theatre

The detailed general and obstetrical history was taken with special reference to the gestational age, medical problems -diabetes mellitus, pregnancy induced hypertension (PIH), thyroid diseases, and pregnancy following infertility, hyperprolactinemia, smoking and drug addiction, premature rupture of membrane and glucocorticoid/surfactant therapy for lung maturation.

GROUP A 80 women with normal pregnancies (i.e. no abnormality throughout the antenatal period), irrespective of fetal presentation.-

GROUP B 80 women with abnormal pregnancies like advanced maternal age, pregnancy induced hypertension, diabetes mellitus, premature rupture of membranes, twin pregnancy, anemia in pregnancy, jaundice in pregnancy etc.

**Exclusion Criteria**

- Who did not have any ultrasound in first 12 weeks of gestation
- Women not sure of LMP
- Known cases of hyperprolactinaemia, or patients with intrauterine deaths
- Women with threatenend preterm who have received glucocorticoid therapy

Every selected women was monitored during labour for mode of delivery and any complication was noted Immediately after birth of the fetus, the umbilical cord was clamped and cut and without squeezing the cord, 3 ml of mixed umbilical (arterial and venous) blood was collected in a vial from maternal end

After excluding other causes of RDS like meconium aspiration, sepsis etc. Baby was said to have RDS, if:- Respiratory rate (>60/min)

- Presence of subcostal and intercostal recession (retraction) and flaring of alae nasi
- Diminished air entry in the lungs
- Grunting respiration
- Cyanosis
- X-ray chest showing low volume lungs with diffuse reticulogram and air bronchograms
- Every baby was followed up.
- Mothers were observed for the adequacy of the lactation.

## Observations & Results

## TABLE:1 Correlation of cord serum prolactin levels with maternal age

| Age in years | Group A | | Group B | | z-test | p-value |
|---|---|---|---|---|---|---|
| | n | Mean (ng/ml) | n | Mean (ng/ml) | | |
| 20-25 | 32 | 401.05 | 34 | 300.39 | 3.53 | 0.001 S p<0.05 |
| 26-30 | 44 | 366.76 | 37 | 297.27 | 2.71 | 0.008 s P<0.05 |
| 31-35 | 4 | 462.05 | 8 | 330.78 | 2.43 | 0.04 s P<0.05 |
| 36-40 | 0 | - | 1 | 201.4 | NA | NA |
| Total | 80 | | 80 | | | |

# Table 2: Correlation of cord serum prolactin levels with gestational age.

| Gestational Age | Group A | | Group B | | z- value | P- value |
|---|---|---|---|---|---|---|
| | No | Mean (ng/ml) | No | Mean (ng/ml) | | |
| 22-28 | - | - | 8* | 58.55 | NA | NA |
| >28-31 | - | - | 4* | 193.40 | NA | NA |
| >31-34 | - | - | 29* | 286.72 | NA | NA |
| >34-37 | 16 | 377.72 | 21 | 371.82 | 0.19 | 0.84 NS p>0.05 |
| >37-42 | 64 | 386.83 | 24 | 367.56 | 3.20 | 0.42 NS P>0.05 |
| Total | 80 | 385.01 | 86 | 300.49 | | |

* Twin gestation

# Table 3: Correlation of cord serum prolactin levels with birth weight.

| Birth weight(gms) | Group A | | Group B | | p-value |
|---|---|---|---|---|---|
| | No | Mean (ng/ml) | No | Mean (ng/ml) | |
| < 500 | - | - | 3 | 18.73 | - |
| 501-1000 | - | - | 6 | 224.72 | - |
| 1001-1500 | - | - | 7 | 208.37 | - |
| 1501-2000 | - | - | 29 | 295.21 | - |
| 2001-2500 | - | - | 10 | 332.51 | - |
| 2501-3000 | 28 | 302.84 | 16 | 330.56 | NS,p>0.05 |
| 3001-3500 | 44 | 413.63 | 13 | 376.34 | S,p<0.05 |
| >3500 | 8 | 470.0 | 2 | 335.70 | S,p<0.05 |
| Total | 80 | | 86 | | |

## Table 4: Correlation of cord serum prolactin levels with respiratory distress syndrome(RDS).

| | Group A | | Group B | | p-value |
|---|---|---|---|---|---|
| | No | Mean (ng/ml) | No | Mean (ng/ml) | |
| RDS | - | - | 12 | 137.24 | - |
| Without RDS | 80 | 385.64 | 74 | 329.59 | NS,p>0.05 |
| Total | 80 | - | 86 | - | - |

**Discussion**

Both the groups are comparable in gravidity and no correlation was observed between gravidity and cord serum prolactin level.

The mean cord serum prolactin level of women had no correlation with mode of delivery. Mean cord serum prolactin levels were found to be directly proportionate with gestational age.The mean birth weight of newborn in Group A were significantly higher than Group B.. Mean cord serum prolactin level was directly proportionate to

birth weight in both the groups. Mean cord serum prolactin level was directly proportionate to birth weight in both the groups Development of RDS is indirectly proportionate to the period of gestation and birth weight

## Conclusion

In a prospective study umbilical cord serum prolactin level was found to be lower in women with abnormal pregnancy. Development of RDS has indirect relation to gestational age and birth weight. Hence the risk of RDS was higher in newborn when cord serum prolactin level were low. These results are suggestive that prolactin might have some role in fetal lung maturation

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