# Serum and Amniotic Fluid Mucoproteins in Normal and Toxaemic Pregnancy

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## ABSTRACT

**Serum and amniotic fluid mucoprotein concentrations were estimated in normal and toxaemic pregnant women. The levels were found to be higher in preeclampsia and eclampsia than the normal controls. Comparatively higher concentrations were observed in amniotic fluid than serum. Data suggest that the estimation of serum and amniotic fluid mucoproteins may be useful in assessing the severity of toxaemia of pregnancy and fetal well being.**

KEY WORDS : amniotic fluid, mucoprotein, pregnancy, eclampsia.

## INTRODUCTION

Mucoproteins are widely distributed in human body. Various workers have reported that serum mucoprotein concentration increases in several pathological conditions like tuberculosis, rheumatoid arthritis, rheumatic fever and malignancy, while decreases in cirrhosis of liver (1,2,3). Compared to normal pregnancy some workers have reported higher values of mucoproteins in preeclampsia and eclampsia (4,5,6), whereas others have failed to observe a significant difference[7].

Due to the conflicting reports, it was planned to study mucoprotein content of serum and amniotic fluid in normal as well as toxaemic pregnancy and to find their relationship with the severity of toxaemia and fetal outcome, if any, because, preeclampsia and eclampsia continue to be a significant contributor of maternal mortality, morbidity and fetal wastage. In India its incidence varies from 7-9% (8,9).

## MATERIAL AND METHODS

One hundred cases admitted to the Obstetrics wards of Medical College and Hospital, Rohtak, were studied. The cases included normal as well as toxaemic pregnancy and were divided into four groups, as follows :

Group I Controls - Normal pregnant women in the 3rd trimester of pregnancy having blood pressure within the normal range (about 120/80 mmHg) without any systemic disease.

Group II Pregnant women with mild preeclampsia - Their blood pressure was between 140/90 to 160/110 mmHg with edema and/or albuminuria.

Group III Pregnant women with severe preeclampsia Blood pressure more than 160/110 mmHg. with edema and/or albuminuria.

Group IV Pregnant women with eclampsia - Patients of preeclampsia with convulsions.

Maternal venous blood (about 5 ml) was drawn asceptically and serum was separated. Their amniotic fluid was also collected either directly from the bag of water or during induction of labour. In some of the cases it was collected during caesarian section. Only clear or meconium stained samples were taken while those with the blood stains were discarded.

After delivery, Apgar score, birth weight of the newborn babies and placental weights were recorded. Placenta was examined for obvious abnormality, if any, Maternal serum and amniotic fluid mucoproteins were estimated (10). Results were statistically analysed by Student's t-test.

## RESULTS AND DISCUSSION

Mean Apgar score, birth weight of the baby and the placental weight were significantly lower in cases with toxaemic pregnancy than in those with normal pregnancy. The decrease was directly proportional with the increasing severity of toxaemia. The decrease in Apgar score, birth weight of the newborn and the placental weight observed in preeclampsia and eclampsia suggests placental insufficiency which is a well known feature of the toxaemic pregnancy. Serum as well as amniotic fluid mucoprotein concentrations were significantly higher in toxaemic than the normal pregnant women. The increase in mucoproteins could be due to obstetric and/ or immunological stress[11,12]. In all the groups, amniotic fluid mucoprotein concentrations. however. were significantly higher than the levels in serum (Table I). Comparatively higher levels in amniotic fluid than serum may be from sources like amniotic epithelium., chorion, surface of the umbilical cord, stomodeum of fetus and/ or maternal blood due to disturbed blood-placental barriers[13,14]

As shown in Table 2, mucoporotein concentration in the amniotic fluid was significantly higher in the meconium stained samples (having fetal distress) than the corresponding level in the clear samples. The presence of the occult meconium liberated due to fetal asphyxia could be responsible for the increased levels of mucoproteins in the meconium stained samples than the clear samples. The estimation of mucoproteins in serum as well as in amniotic fluid may be useful in assessing the severity of toxaemia and as a parameter of fetal well-being.

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## Table I

## Apgar score, birth weight of the newborn, placental weight and maternal serum and amniotic fluid mucoprotein levels in normal and toxemic pregnancy (Values are mean± SEM for 25 subjects in each group)

| | Group | Apgar score | Birth wt. (Kg.) | Placental wt. (g) | Mucoproteins (mg/dl) | |
|---|---|---|---|---|---|---|
| | | | | | Serum | Amniotic fluid |
| I | Controls | 8.8± 0.16 | 3.19± 0.05 | 605± 12.0 | 147.8± 3.4 | 185.1± 6.4 |
| II | Mild preeclampsia | 7.0± 0.17[b] | 2.78± 0.09[a] | 474± 12.7[a] | 161.8± 3.1[a] | 248.8± 3.7[a] |
| III | Severe preeclampsia | 5.6± 0.45[a,b] | 2.3± 70.12[a,b] | 438± 17.0[a] | 167.7± 2.8[a] | 365.6± 5.7[a,b] |
| IV | Eclampsia | 3.3± 0.49[a,b,c] | 2.27± ,14[a,b] | 383± 013.6[a,b] | 188.3± 2.1[a,b,c] | 475.6± 5.7[a,b,c] |

a = p< 0.05 when compared with the control group
b = p < 0.05 vs mild preclampsia
c = p < 0.05 vs severe preeclampsia,

## Table 2

## Amniotic fluid mucoprotein levels in meconium stained as well as clear samples in different groups of patients (Values are mean± SEM; n = number of subjects)

| | Group | Clear samples | | Meconium stained samples | |
|---|---|---|---|---|---|
| | | n | Mucoprotein (mg/dL) | n | Mucoprotein (mg/dL) |
| I | Controls | 18 | 181.2± 5.2 | 7 | 209,4± 5.0[a] |
| II | Mild preeclampsia | 17 | 242,5± 4.1 | 8 | 262.3± 4.2[a] |
| III | Severe preeclampsia | 12 | 343,6± 6.0 | 13 | 383,6± 4.0[a] |
| IV | Eclampsia | 10 | 450,4± 7.2 | 15 | 492,9± 3.9[a] |

a = p< 0.05 when compared with the group with clear samples.

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