

# ESTIMATION OF SERUM AND AMNIOTIC FLUID MUCOPROTEINS IN NORMAL AND TOXAEMIC PREGNANCY AND ITS RELATION TO FOETAL OUTCOME

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## SUMMARY

This study comprises of 120 cases out of which 20 are normal non-pregnant and 50 cases are of normal pregnancy and 50 of toxæmia of pregnancy, Muco-proteins are glycoproteins widely distributed in body tissues. Their levels are elevated during the conditions of stress and pregnancy. Present study shows that the mucorprotein level is increased with the severity of toxæmia of pregnancy and it has got an inverse relationship with foetal outcome.

## Introduction

Mucoproteins are widely distributed in the body tissues. In recent years, mucoproteins have been used to explain the immunological basis of pregnancy as they have been alleged to have an immunosuppressive role. They have played a major role in explaining the immunological basis of toxæmia of pregnancy. its levels are increased in serum and amniotic fluid in cases of toxæmia.

## Material and Method

Total of 120 cases were studied. Five ml of blood was collected and serum was separated. Amniotic fluid was collected by aspirating with a syringe during opera-

tion in group II and by low amniotomy in rest of the cases.

Mucoproteins were studied in serum and amniotic fluid by Varely's method (1969).

All the cases were divided into 4 groups :-

*Group I* — Consisted of 20 normal, non pregnant healthy females.

*Group II* — Cases of normal pregnancy in second trimester with diastolic B.P. between 70-80 mm of Hg. These were the cases admitted for Hysterotomy and tubectomy.

*Group III* — Consisted of the cases of normal pregnancy in third trimester with diastolic B.P. between 70-80 mm of Hg.

*Group IV* — Included all cases of

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toxaemia of pregnancy and were further subdivided into —

*Group IVA* — Cases of mild toxaemia with B.P. 140/90 mm of Hg. without albuminuria or oedema.

*Group IV B* — Moderate to severe toxaemia, with B.P. ranging from 140/90-200/130 mm of HG with oedema or albuminuria.

*Group IV C* — All cases of eclampsia.

### Observation

Mean serum mucoprotein level in non-pregnant control group was  $89.84 \pm 09$  mg%. Its level increased with increase of gestational age i.e. from  $112.02 \pm 21.07$  mg% in second trimester to  $138.76$  mg% in third trimester (Table I). Level of serum

mucoproteins were significantly raised in cases of toxaemia as compared to the levels in normal pregnancy. Levels of  $157.94 \pm 8.42$  mgm% and  $170.12 \pm 8.90$  mgm% were noted in cases of mild and severe toxaemia and eclampsia, respectively. It shows a direct relationship between the serum mucoprotein levels and severity of toxaemia.

Table II shows that mucoprotein levels in amniotic fluid were  $163.38 \pm 7.52$  mgm% in second trimester and  $182.35 \pm 8.70$  mgm% in third trimester i.e. it also increases with the advancement of pregnancy. Mucoprotein levels in amniotic fluids increased from  $218.11 \pm 12.80$  mg% in mild cases to  $246.48 \pm 11.08$  mgm% in severe toxaemia and  $267.10 \pm 10.86$  mg% in cases of eclampsia. Thus amniotic fluid

TABLE - I  
TABLE SHOWING THE DISTRIBUTION OF MEAN SERUM  
MUCOPROTEIN LEVELS IN THE VARIOUS GROUPS

Sl. No.	Group	No. of cases	Serum mucoprotein level (mg/100 ml)			Significance
			Mean	S.D.	Range	
1.	Group I (Control group)	20	89.24	± 12.09	70.8 to 110.2	—
2.	Group II (Normal pregnancy second trimester)	20	112.02	± 21.07	74.8 to 114.8	P .001 Highly significant
3.	Group III (Normal pregnancy third trimester)	30	138.76	± 15.75	107.8 to 162.6	- do -
4.	Group IV A (Mild toxaemia)	20	157.94	± 11.21	134.1 to 166.4	- do -
5.	Group IV B (Severe toxaemia)	15	166.28	± 8.42	148.6 to 175.2	- do -
6.	Group IV C	15	170.12	± 8.90	150.0 to 184.2	- do -

TABLE - II  
SHOWING LEVELS OF AMNIOTIC FLUID MUCOPROTEINS IN CASES  
OF NORMAL PREGNANCY AND TOXAEMIA OF PREGNANCY.

Sl. No.	Group	No. of cases	Amniotic fluid mucoproteins (mg/100 ml)			Significance
			Mean	S.D.	Range	
1.	Group II	20	163.38	± 7.52	148.5 to 174.8	—
2.	Group III	30	182.35	± 8.70	165.2 to 195.5 P	.001 Highly significant
3.	Group IV A	20	218.11	± 12.80	194.0 to 234.5	- do -
4.	Group IV B	15	246.48	± 11.08	227.08 to 260.2	- do -
5.	Group IV C	15	267.10	± 10.86	252.9 to 286.2	- do -

mucoprotein level increases with advancement of pregnancy and it is directly proportional to severity of toxemia.

Table III shows that the birth weight and apgar score decreases with increased severity of toxemia. This shows a negative correlation between the severity of toxemia, as reflected by raised mucoprotein levels and poor foetal status.

pregnancy is more significant in pregnancy.

In the present series it was seen that the mean level of serum mucoprotein in the control group was  $89.84 \pm 12.09$  mgm%. With increasing maturity the level increased significantly from  $112.02 \pm 21.07$  mgm% in second trimester to  $138.76 \pm 15.75$  mgm% in third trimester. The val-

TABLE - III  
SHOWING THE RELATION BETWEEN THE MEAN LEVEL OF SERUM  
AND AMNIOTIC FLUID MUCOPROTEINS WITH THE CONDITIONS OF  
THE FOETUS IN THE VARIOUS GROUPS.

Sl. No.	Group	No. of cases	Serum Mucoproteins (mg/100 ml) Mean ± S.D.	Amniotic fluid mucoprotein (mg/100 ml) Mean ± S.D.	Status of newborn	
					Apgar score at 3 minutes	Mean birth weight (kg.)
1.	Group III	30	$138.76 \pm 15.75$	$182.35 \pm 8.70$	10/10	2.56 kg.
2.	Group IV A	20	$157.94 \pm 11.21$	$218.11 \pm 12.80$	9.2/10	2.44 kg.
3.	Group IV B	15	$166.28 \pm 8.42$	$246.48 \pm 11.08$	8.1/10	2.18 kg.
4.	Group IV C	15	$170.12 \pm 8.90$	$267.10 \pm 10.86$	3.1/10	2.20 kg.

In Group IV C (eclampsia), 9 patients had intranatal fetal death.

### Discussion

Plasma mucoproteins may be raised in response to non-specific stress, resolution of inflamed tissue (Catchpole, 1950) and tissue proliferation (Shetlar, 1961). The possible immunosuppressive role of

ues are comparable to those reported by Sarin et al (1983) and Singh et al (1983). In our study, the values of serum mucoproteins are significantly higher in cases of toxemia than in normal pregnancy (Table I) and then increase with the increase in

severity of toxæmia. Similar findings were reported by Dasgupta (1975) and Sarin et al 1983.

Present study shows that mucoprotein levels of amniotic fluid increase from second trimester to third trimester and there is a significant rise in cases of toxæmia (Table II). The rise had a direct relationship with the severity of toxæmia. Highest levels were found in cases of eclampsia (Table II). These findings are comparable with those reported by Sinha and Mukerjee (1973).

An inverse relationship was found with the severity of toxæmia as reflected by raised mucoprotein levels and the birth status of new born in present study. The mean birth weight and appgar score was significantly lower in the babies of toxæmic mothers than those of non-toxæmic cases (Table III). Similar findings were observed by Sinha and Mukerjee (1973), Dutta (1977), Mardikar et al (1980) and Sarin et al (1973).

#### Conclusion

Serum and amniotic fluid mucopro-

tein levels are increased in cases of toxæmia as compared to normal pregnancy. The foetus shows an inverse relationship with the mucoprotein levels in cases of toxæmia. Thus increased levels of mucoproteins in serum and amniotic fluid can help to assess the severity of toxæmia and can be used as a parameter of foetal welfare.

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