

# CRITICAL EVALUATION OF VARIOUS TESTS OF FOETAL MATURITY IN TOXAEMIAS OF PREGNANCY

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## SUMMARY

Forty-one cases of toxæmia were studied. In 24 liquor amnii was analysed for amylase and uric acid levels, Nile blue sulphate and shake test. In 17 cases creatinine level and vaginal cytology was done. Investigations showed that orange cell test, shake test and creatinine level were reliable tests for foetal maturity in toxæmia cases.

### Introduction

Estimation of maturity in a case of toxæmia of pregnancy with dysmaturity in patients who report first time late in pregnancy is a ticklish problem faced by every obstetrician. Cope and Murdoch (1957) said that epiphyseal centres may not develop at a specified time in cases of foetal malnutrition and placental insufficiency. Therefore, the aid of radiography for estimation of maturity in such cases has a doubtful value. We have taken cases of toxæmias of pregnancy with dysmaturity for study and have analysed the liquor for estimating maturity by various tests. We have tried to compare the figures of the various tests with those in the control group so as to find which of the tests can be relied upon in such cases.

### Material and Methods

Forty-one cases of toxæmias of pregnancy were taken for study. In 24 cases

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of toxæmia of pregnancy the liquor amnii was analysed for amylase level, uric acid level, Nile blue sulphate test and shake test. In 17 cases creatinine estimation in liquor and vaginal cytology were done. One hundred cases were taken as control for first group of tests and 36 cases as control for second group of tests. We have tried to analyse the values according to the range of blood pressure as well as in relation to the gestational age.

Table I shows that the values of various parameters used for assessing foetal maturity have no relationship to the range of blood pressure.

In Table II comparing toxæmia group with control group we have concluded that amylase level and uric acid level in liquor shows markedly higher values in former group and are unreliable in such cases. Nile blue sulphate test and the shake test seem to be equally reliable in both the groups. Creatinine level and vaginal cytology values are comparable in both the groups.

TABLE I  
Amniotic Fluid Analysis and Vaginal Cytology According to Range of Blood Pressure

Blood pressure	Amylase	Uric acid	Nile blue test	Creatinine	Vg. cytology	Shake test
	Cases—9	Cases—9	Cases—9	Cases—6	Cases — 6	Cases — 9
135/90	Range: 33-315.5	6.2-12.64	20-53	1.78-2.27	Correct — 5	Positive — 6
mm of Hg	Mean: 198.71	9.92	23.86	1.97	Incorrect — 1	Intermediate — 1
	S.E.: $\pm 30.3$	$\pm 0.94$	$\pm 5.90$	$\pm 0.07$		Negative — 2
	Cases—9	Cases—9	Cases—9	Cases—7	Cases — 7	Cases — 9
140/100	Range: 33-422	7.5-14.5	6.56-58.62	1.54-2.5	Correct — 5	Positive — 7
mm of Hg	Mean: 287.34	12.14	35.91	2.12	Incorrect — 2	Intermediate — 2
	S.E.: $\pm 77.0$	$\pm 0.73$	$\pm 7.37$	$\pm 0.12$		Negative — 0
	Cases—6	Cases—6	Cases—6	Cases—4	Cases — 4	Cases — 6
160/100	Range: 169.39-264	8.44-14.25	18.75-43.5	1.75-2.5	Correct — 4	Positive — 5
	Mean: 197.04	12.43	30.83	2.1	Incorrect — 0	Intermediate — 1
	S.E.: $\pm 31.75$	$\pm 0.64$	$\pm 9.2$	$\pm 0.20$		Negative — 0



TABLE II  
Amniotic Fluid Analysis and Vaginal Cytology Values at Different Gestational Age Groups

Test	Gestational age in weeks	Control group			Toxaemias of pregnancy with dysmaturity		
Amylase in Somagyii units	34-36	102 ± S.E. 26.0 (6)*			114 ± S.E. 19.5 (6)*		
	37	114.28 ± S.E. 8.9 (7)*			171.28 ± S.E. 13.3 (6)*		
	38 or more	221.54 ± S.E. 14.9 (15)*			301.83 ± S.E. 20.69 (12)*		
Uric acid in mg%	34-36	6.6 ± S.E. 0.58 (6)*			12.0 ± S.E. 1.1 (6)*		
	37	7.29 ± S.E. 0.36 (7)*			11.44 ± S.E. 0.7 (7)*		
	38 or more	7.39 ± S.E. 0.4 (15)*			11.3 ± S.E. 0.53 (15)*		
Nile blue sulfate Fat cell percentage	34-36	7.9 ± S.E. 4.2 (6)*			7.05 ± S.E. 2.53 (6)*		
	37	13.52 ± S.E. 1.54 (7)*			14.25 ± S.E. 1.24 (7)*		
	38 or more	35.35 ± S.E. 4.86 (15)*			35.54 ± S.E. 3.35 (15)*		
Creatinine in mg%	34-36	1.48 ± S.E. 0.04 (6)*			1.54 ± S.E. 0 (1)*		
	37	2.05 ± S.E. 0.00 (15)*			2.02 ± S.E. 0.118 (2)*		
	38 or more	2.19 ± S.E. 0.03 (15)*			2.08 ± S.E. 0.06 (14)*		
Vg. cytology		Correct	Incor-rect	No. of cases	Correct	Incor-rect	No. of cases
	34-36	4	2	6	1	0	1
	37	14	1	15	2	0	2
38 or more	12	3	15	11	3	14	
Shake test		Positive	Inter-mediate	Negative	Positive	Inter-mediate	Negative
	34-36	3	1	2	2	2	2
	37	7	—	—	5	1	—
38 or more	14	1	—	11	1	—	

\* Number of cases

**Discussion**

Sharp (1968) showed that placental insufficiency does not appear to affect estimation of maturity by Nile blue test.

Ramzy et al (1978) are of the opinion that dysmature foetuses show an early rise in percentage of orange cells. However, pre-eclamptics and diabetics fell within normal range.

Statland et al (1978) state that if the shake test was positive, there was no neonate with hyaline membrane disease. In cases in which test was negative, 58% developed respiratory problems.

Our investigations have shown that orange cell count, shake test, creatinine level in liquor and vaginal cytology are

reliable tests for foetal maturity in cases of toxaeimias of pregnancy. Amylase level and uric acid levels show much higher figures in toxaeimias and thus cannot be relied upon. Therefore, it is advised that the former tests should be undertaken for estimation of foetal maturity in toxemias of pregnancy.

**References**

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