

A COMPARATIVE STUDY OF L/S RATIO, SHAKE TEST AND TOTAL PHOSPHOLIPID PHOSPHOROUS IN RELATION TO ASSESSMENT OF FOETAL MATURITY

by

U. SHARMA,* M.S.

D. K. SHARMA,**

A. NAGRATH,*** M.S.

and

P. TYAGI,**** M.B.,B.S.

Today the Obstetrician and Paediatrician have a common goal in reducing maternal and fetal mortality and morbidity. The goal is a difficult one and has shown problems in achievement in Obstetric care and management of pregnancy. The management of high risk pregnancy continues to be a cause for concern. Though maternal mortality has come down appreciably, the perinatal mortality still continues to be a challenge.

In high risk pregnancy it is absolutely mandatory to determine the pulmonary maturity of fetus with the view to decide the exact time of delivery. As surfactants originate from the fetal lung, their estimation in amniotic fluid would be an indicator of fetal maturity.

The present study was conducted with the view of comparing the efficacy of L/S ratio, TPP and shake test as indicator of fetal maturity.

Material and Method

246 cases have been studied in which the L/S ratio, the shake test and total

phospholipid content has been estimated, at different periods of gestation ranging from 26 to 43 weeks. Sixty-four cases were followed up from the time of initial amniocentesis to the time of delivery when the vaginal amniotomy was done for evaluation of biochemical values to see the changes with increased period of gestation.

T.P.P.

Chloroform extract of amniotic fluid was digested with perchloric acid and the phosphorous determined by method of Bartlett (1959) and the amount of phospholipid calculated.

Observations

The mean TPP value between 26-28 weeks was 0.179 mg/100 mg, between 29 to 31 weeks 0.201 mg/100 ml, between 32 to 34 weeks, 0.062 mg/100 ml, between 35 to 37 weeks 0.336 mg/100 ml, between 38 to 40 weeks, 0.385 mg/100 ml, between 41 to 43 weeks 0.401 mg/100 mg.

Mean L/S ratio between 26 to 28 weeks was 0.096, between 29 to 31 weeks 0.818, between 32 to 34 weeks 1.113, between 34 to 37 weeks. 2.207, between 38 to 40 weeks 2.567 and between 41 to 43 weeks 3.016.

*Professor & Head of Obstet. & Gynec. Dept.

**Reader in Paediatrics Dept.

***Lecturer in Obstet. & Gynec. Dept.

****Registrar in Obst. & Gynec. Dept.

L.L.R.M. Medical College, Meerut.

Accepted for publication on 24-3-1980.

Shake test was negative in 94.4% cases at 26 to 28 weeks gestation and intermediate in 5.6% between 29 to 31 weeks. It was negative in 30.7% and intermediate in 69.3% between 32 to 34 weeks. It was negative in 19.5% intermediate in 61.0% and positive in 19.5%, between 35 to 37 weeks it was negative in 22.7%, intermediate in 31.9% and positive in 45.4%, between 38 to 40 weeks it was negative in 9.8%, intermediate in 2.1% and positive in 88.1% and between 41 to 43 weeks it was intermediate in 25.0% and positive in 75.0%.

When L/S ratio was 1.5 shake test was negative in 66.6%, intermediate in 26.4% and positive in 7%. With L/S ratio between 1.6 to 1.9 shake test was intermediate in 33.3% and positive in 66.7% and with L/S ratio 2.0, shake test was negative in 2.4%, intermediate in 24.1% and positive in 73.5%.

With TPP values 0.100 mg/100 ml shake test with negative with TPP values between 0.101 to 0.200 mg/100 mg shake test was negative in 84.2%, intermediate in 10.5% and positive in 5.3%, between 0.201 to 0.300 mg/100 mg it was negative in 55.6%, intermediate in 33.3% and positive in 11.1% between 0.401 to 0.100 mg/100 ml it was negative in 2.9% intermediate in 18.8% and positive in 76.3%

and between 0.501 to 0.600 mg/100 ml it was intermediate in 17.8% and positive in 82.2%.

Discussion

The 3 parameters L/S ratio, shake test and TPP were compared with each other and they showed a good correlation.

In the present study L/S ratio and TPP values were lower in premature gestation as compared with full term gestation and shake test was negative or intermediate.

Though all the 3 parameters are good it is suggested that TPP values are more reliable prior to 32 weeks when lecithin is low. While after that L/S ratio and shake test are more informative. Moreover in late pregnancy large changes can occur in TPP values without any change in lecithin which is main surface active material of lungs indicating lung maturity because of a relatively large increase or decrease in other lipids. Thus the importance of ascertaining the L/S ratio.

Shake test can be used as a screening procedure and the more elaborate L/S ratio can be estimated when very small bubbles are obtained or bubble clumping occurs, to differentiate the possibly immature fetus from the likely mature fetus and in those cases showing a deviation from normal.