INTRODUCTION

Pulmonary function is the principal determinant of survival in prematurely delivered infants. These babies often develop respiratory distress syndrome (RDS) which is related to relative pulmonary immaturity with respect to surfactant production , namely phosphatidyl choline (Lecithine), phosphatidyl glycerol and phosphatidyl inositol *(Gold et al ., 1982)* .

The most accepted prenatal indicators of pulmonary maturity are amniotic fluid measurement of L/S ratio and phosphatidyl glycerol, each requiring amniocentesis *(Weiner and Weinstein.,1987; Saad et al., 1987)*.

Amniocentesis carries a risk of complication to both mother and fetus varying from failed tap, multiple punctures or bloody tap to abruptio placentae, premature labor, premature rupture of membrane or fetal injury *(Langer et al.,1984)* .

Ultrasound , being a non invasive method of investigation , has been tried in antenatal detection of fetal lung maturity. Early reports by *Goldstein and associates (1976)*, suggested that the use of BPD > 9.0 cm resulted in high false positive rate (27-30 %) in predicting fetal lung maturity.

Chinn and colleagues (1983) demonstrated that sonographically visible epiphyseal ossification centers in the distal femur and proximal tibia can be useful in the evaluation of fetal lung. But these epiphyses can be seen as early as 35 weeks. A time of pregnancy when most but not all fetuses can be expected to have mature lungs.

Tabsh (1984) demonstrate a + ve relation between size of distal femoral epiphysis and L/S ratio

Mahony and colleagues (1986) correlated epiphyseal ossification centers in assessment of fetal lung maturity by use of ultrasound with the amniocentsis lung profile and found that a visible proximal humoral epiphysis had a mature amninocentesis lung profile (accuracy of positive prediction = 100%). Fetuses with an immature amniocentesis lung profile had no visible proximal humoral epiphysis .

Cayea and associates (1985) evaluated the fetal lung/liver ratio in terms of both echogenicity and texture. These authors demonstrated no correlation between these sonographic indices of fetal lung maturity in comparison with objective standards, such as the L/S ratio .

Zilianti and Fernandez (1983) correlated fetal bowel pattern to fetal maturity and classified bowel pattern into four stages.

Grannum and colleagues (1979) stated that Grade III placenta was associated with fetal lung maturity (as assessed by L/S ratio) in 100% of cases. The limitation of this study is that Grade III placenta is found in only 15% of pregnancies at term. The placenta was classified into :

Grade 0 :   Chorionic plate is straight and well defined with homogenous placental substance. Mean gestaticnal age is 12 weeks.

Grade I: Chorionic plate shows subtle indulations, the placental substance shows few scattered ecogenic areas. Mean gestational age is 31 weeks.

Grade II :   Chorionic plate shows indentation extending into placenta but not basal layer. Placental substance shows linear echogenic densities and there is linear arrangement of small echogenic densities at basal layer . Mean gestational age is 33 w.

Grade III :   Chorionic plate shows indetation communicating with basal layer. Placental substance show circular densities with echo spared areas in its center and large irregular densities which cause acoustic shadows. Basal layer shows large and confluent basal echogenic densities which can creat acoustic shadows. Mean gestational age is 35 w.

Gross et al., (1985) stated that patients with sonographically clear amniotic fluid had immature phospholipid profile, while 53 % of patients with turbid or markedly turbid amniotic fluid had a mature phospholipid profile.

So, no single sonographic finding in the 3 rd trimester of pregnancy can be considered unequivocal evidence of fetal lung maturity.

Salman and Quetal (1985) introduced a scoring system using multiple parameters including gestational age [BPD , head circumference (HC), abdominals circumference (AC), femur length (FL)], placental grading according to Grannum classification, fetal bowel pattern, lung/liver ratio and distal femoral epiphysis, to assess fetal lung maturity . A score of five or greater out of a possible total of ten indicated fetal lung maturity . But due to the small number of fetuses studied and the possible effect of their ages on the result, this system needs further evaluation before it can be used routinely in clinical practice.

Our work will introduce a new modification on this scoring system by adding presence of fleckers in amniotic fluid and proximal humoral epiphysis .