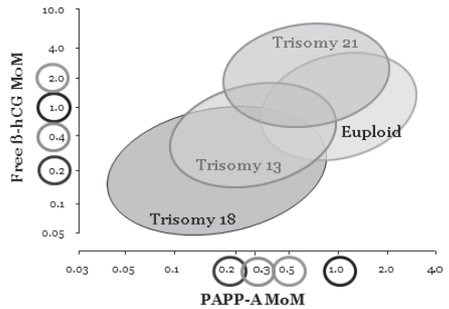
* Free ß-hCG is higher in Trisomy 21 than in euploid pregnancies and the difference between the two is higher at 13 than at 11 weeks
* Serum PAPP-A is lower in Trisomy 21 than in euploid pregnancies and the difference between the two is higher at 11 than at 13 weeks
* The difference from euploid pregnancies in PAPP-A at 11 weeks is greater than the difference in ß-hCG at 13 weeks and therefore the overall performance of biochemical screening is better at 11 than at 13 weeks in Trisomy 21.



The overall performance of combined screening is better at 11 than at 13 weeks and may be best at 10 weeks. Ultrasound scanning for fetal abnormalities is better at 12 than at 11 weeks and much better than at 10 weeks. A good way of achieving a high performance of screening for Trisomy 21 and diagnosing major fetal defects by ultrasound is to carry out the blood test at 10 or 11 weeks and the ultrasound scan at 12 weeks

Recent data suggests that pregnancies with low PAPP-A (<0.3MoMs) should be followed up carefully because of poor fetal outcome (fetal growth restriction / preterm delivery / fetal death).

PLGF (MATERNAL SERUM PLACENTAL GROWTH FACTOR)

PlGF (maternal serum placental growth factor) and PAPP-A are the important 1st trimester chemical markers in screening for preeclampsia

Preeclampsia (PE), which affects about 2% of pregnancies, is a major cause of perinatal and maternal morbidity and mortality. It is early-PE requiring delivery before 34 weeks rather than late PE which is associated with an increased risk of perinatal mortality and morbidity and both short-term and long-term maternal complications. Identification of women at high-risk for PE could potentially improve pregnancy outcome because intensive maternal and fetal monitoring in such patients would lead to an earlier diagnosis of the clinical signs of the disease and the associated fetal growth restriction and avoid the development of serious complications through such interventions as the administration of antihypertensive medication and early delivery.

The a priori risk for preeclampsia is based on factors from the maternal history. The prevalence of this condition is 2% for all preeclampsia and 0.5% for early preeclampsia.

The patient-specific risk of developing PE can be predicted by a combination of factors in the maternal history, including Black racial origin, high body mass index and prior or family history of PE, and the following measurements taken at 11-13+6 weeks:

* maternal blood pressure
* uterine artery pulsatility index (PI)
* maternal serum level of PAPP-A
* maternal serum level of PLGF

Screening by the combination of maternal history, biophysical markers and biochemical markers could identify about 90% and 45% of patients developing early-PE and late-PE, respectively, at a false positive rate of 5%.

For the purposes of risk calculation for hypertensive disorders, the PlGF value is converted to a multiple of the median (MoM). Following factors also influences the risk calculation for hypertensive disorders with PlGF. These are:

* Ethnicity
* Maternal weight
* CRL
* Smoking status

Screening for preeclampsia can also be achieved by a combination of maternal history with any one of these markers above.

Screening test	Detection rate (%) for fixed false positive rate					
	Early preeclampsia		Late preeclampsia		Gestational hypertension	
	5%	10%	5%	10%	5%	10%
Maternal factor	37.0	47.0	28.9	41.4	20.7	30.7
Maternal factor plus						
Uterine artery L-PI	64.9	81.1	32.0	45.3	17.9	35.0
MAP	48.6	75.7	39.8	52.3	36.4	47.9
PAPP-A	45.9	59.5	31.7	45.2	-	-
PlGF	53.8	65.4	38.9	46.7	-	-
Uterine artery L-PI, MAP	78.4	89.2	42.2	57.0	35.7	50.0
Uterine artery L-PI, PAPP-A	67.6	81.1	-	-	-	-
Uterine artery L-PI, PlGF	76.9	76.9	36.7	51.1	-	-
MAP, PAPP-A	64.9	73.0	38.9	52.4	-	-
MAP, PlGF	76.9	88.5	41.1	57.8	-	-
Uterine artery L-PI, MAP, PAPP-A	83.8	94.6	-	-	-	-
Uterine artery L-PI, MAP, PlGF	88.5	92.3	38.9	64.4	-	-

CONCLUSION:

Chemical markers can play important role in identification of pregnancies complicated by fetal aneuploidies, fetal growth restriction, intra uterine death and hypertensive disorders of pregnancy. It is important modality of maternal investigation along with 11-14 week fetal scan.

Identification of women at high-risk for chromosomal anomaly could potentially identify earlier in pregnancy and could be benefited with early and safe termination of pregnancy.

Identification of women at high-risk for PE could potentially improve pregnancy outcome because intensive maternal and fetal monitoring in such patients would lead to an earlier diagnosis of the clinical signs of the disease and the associated fetal growth restriction and avoid the development of serious complications through such interventions as the administration of antihypertensive medication and early delivery.

Ref.: www.fetalmedicine.com

6

Fetal Medicine Foundation of India

PARAS

ADVANCED CENTER FOR FETAL MEDICINE

4D Sonography, Color Doppler & Endoscopy Centre

WE HONOUR REFERENCES FOR

Chorian Biopsy
Amniocentesis
Fetal Cordocentesis
Fetal Reduction
Amnio infusion / drainage / amniopatch
Fetal Blood Transfusion
Fetal Shunt Procedure
Fetal Liver/Skin/Muscle Biopsy
Detection of Chromosomal Anomalies
"Recurrent Pregnancy Loss" - complete evaluation
Genetic Counseling
Comprehensive evaluation of Fetus at risk
Once "USG abnormality detected" - What next?
(counselling and further management of mother or fetus)

Fetal Medicine Foundation (FMF, UK) certified Sonographer

CHEMICAL MARKERS IN PREGNANCY

Dr. PRASHANT ACHARYA M.D., FICOG
Diploma in Ultra Sonography
Diploma in Pelvi Endoscopy (Germany)
Trained at Kings College Hospital, LONDON, England
Hon. Sonologist and Fetal Medicine Consultant, NHL Municipal Medical College,
Sheth K. M. School of Post Graduate Medicine and Research,
Sheth V. S. Hospital, Ahmedabad, Gujarat
Chairperson Genetic and Fetal Medicine Committee, FOGSI

Dr. ASHINI ACHARYA M.D.
Diploma in Ultra Sonography
Trained at Royal Infermery,
Edinburgh, England

2/B, Virvijay Society, Opp. Sanghvi High School,
Naranpura, Ahmedabad - 380013. Gujarat
Phone : 079-27417653 Mobile.: 98240 69250
E-mail: ashiniprashant@hotmail.com