JIACM 2012; 13(3): 223-4

Foetus as a patient

U Brahmaiah, Chinmayee Ratha**

Foetal medicine is a sub-speciality of obstetrics which focuses on foetal health, maintenance of foetal growth and well-being. The concept of recognising the foetus as a patient – separate from the mother – is the basis of this science. It involves experts from various specialities – obstetricians, paediatric cardiologists, paediatric neurologists, and geneticists[1]. This article is an attempt to look into recent advances in the field of foetal medicine.

In the past two decades, this branch underwent significant changes. Advancement in foetal medicine involves diagnosing and treating the foetus *in utero*. Previously, treatment was possible only during the neonatal period[2]. Advancements in foetal medicine help in diagnosing foetal problems pre-natally and offer the possibility of management before birth as also optimising post-natal treatment.

Current tests

Foetal viability scan: This is an ultrasound examination done at 6 to 10 weeks of gestation with an aim to determine the number of foetuses present, and whether the pregnancy is progressing normally inside the uterus.

First trimester screening for foetal aneuploidies: This includes maternal blood tests and a specialised ultrasound assessment of the foetus. This aids in prenatal diagnosis of chromosomal abnormalities particularly screening for Down's syndrome apart from trisomy 13 and trisomy 18 with the help of nuchal translucency (NT) and serum biochemistry for free β-HCG and pregnancy-associated placenta protein-A (PAPP-A) done between 11 to 13 weeks of gestation[3]. Uterine artery doppler tests the blood flow to the uterus and it would be helpful in predicting the risk for pre-eclampsia[4].

Foetal anomaly scans: Done at 18 to 23 weeks of gestation. Detailed foetal anatomy and structural abnormalities can be studied.

Risk reassessment scan: This is a detailed scan focussed on looking for soft markers and cardiac abnormalities of Down's syndrome (trisomy 21). This scan is undertaken when a serum biochemistry test risk is very high.

Cervical screening: This transvaginal scan is carried-out to predict the mother's developing pre-eclampsia and preterm labour during pregnancy.

Foetal echocardiography: Indicated for the mothers with a family history of cardiac defects or increased nuchal translucency (NT)[5]. Detailed evaluation of foetal heart is carried-out by a foetal cardiologist.

Foetal well-being scan: Done at 24 to 40 weeks of gestation. The scan aims to:

1. Evaluate foetal head size, abdomen, and foetal thigh bone for overall estimation of foetal weight.
2. Evaluation of placenta position and appearance.
3. Examination of foetal movements.
4. Measurement of the amount of amniotic fluid.
5. Assessment of blood flow to the foetus and placenta through colour Doppler.

Invasive procedures

Chorionic villus sampling (CVS): Helpful for diagnosing foetal chromosomal problems by karyotying or genetic defects like thalassaemia, sickle cell anaemia. Usually done at 11 - 14 weeks of gestation using placental tissue[6].

Amniocentesis: Similar to CVS, but done using amniotic fluid which contains foetal cells. Both invasive procedures carry risk of 1% miscarriage.

Foetal MRI: It is a non-invasive, safe modality performed as supplementary to ultrasound, and is useful in foetal visceral and soft-tissue delineation like central nervous system abnormalities. It helps in not only characterising the full extent of CNS anomalies but also determining associated anomalies. Mostly indicated in cases of non-conclusive complex CNS malformations detected by ultrasonography[7].

Foetal intrauterine transfusion

Intrauterine foetal blood transfusion (IUT) is considered to be the only foetal therapy for anaemic Rh-isoimmunised foetuses less than 32 - 34 weeks of

**** Final Year Student, Department of Medicine, M. N. R. Medical College, Sangareddy-502 294, Distt. Medak, Andhra Pradesh, ** Consultant, Department of Foetal Medicine, Indraprastha Apollo Hospitals, Sarita Vihar, Mathura Road, New Delhi-110 076.***

gestation[8]. It is considered to be the first successful foetal intervention where intravenous blood transfusion was done on a hydroptic foetus.

The gamut of foetal medicine extends from preconceptional counselling to prenatal diagnosis and management of foetal problems with the ultimate aim of reducing post-natal morbidity and mortality.

Acknowledgement

Dr. Anita Kaul, HOD of Foetal Medicine Unit, Apollo Indraprastha Hospitals, New Delhi for her encouragement and support.

References

1. Mohammed NB, Bui TH. Foetus as a patient: art and science of foetal medicine. *Pak Med Assoc* 2010; 60 (6): 417-8.
2. Anna Lawin O'Brien, Sailesh Kumar. Advances in foetal therapy. *The Obstetrician and Gynaecologist* 2005; 7: 183-9.
3. Zanardini Cristina, Bhide Amar. Foetal Medicine the way forward. *J Obstet Gynecol India* 2009; 59 (4): 301-7.
4. Yu CK, Khouri O, Onwudie N. Prediction of pre-eclampsia by uterine artery Doppler imaging: relationship to gestational age at delivery and small-for-gestational age. *Ultrasound Obstet Gynecol* 2008; 31 (3): 310-3.
5. Bahado-Singh RO, Wapner R, Thom E *et al*. Elevated first-trimester nuchal translucency increases the risk of congenital heart defects. *Am J Obstet Gynecol* 2005; 192: 1357-61.
6. Maria Cristina Rosatelli, Luisella Saba. Prenatal Diagnosis of β-Thalassaemias and Haemoglobinopathies. *Mediterranean Journal of Hematology and Infectious Diseases* 2009; 1 (1).
7. Agrawal SK, Singh P, Kumar P. MRI in antenatal and perinatal congenital anomalies. 2008; 22 (4): 223-8.
8. Deka D, Sharma N, Dadhwal V, Mittal S. Successful application of middle cerebral artery peak systolic velocity to time intrauterine transfusions in Rh isoimmunised fetus. *J Obstet Gynecol India* 2006; 56: 534-6.