Hospital and required ventilation support as the hypertrophy and severity dramatically increased.

The patient's anomaly scan was normal and a fetal echocardiography did not show any signs of congenital, valvular, or structural abnormality. Neonatal hypertrophic cardiomyopathy usually has a poor prognosis that is not secondary to a cardiac malformation with the exception of transient hypertrophic cardiomyopathy in neonates of diabetic mothers [1].

Myocardial ischaemia can develop following acute fetal distress and the common neonatal manifestaitions of this include cardiac failure, tricuspid or mitral insufficiency [2,3].

There is an increased risk of hypertrophic cardiomyopathy among newborns of diabetic mothers [4]. Around 1 in 5000 people are affected in the UK, but the majority are in their teenage years or early adulthood [5]. As a result, there is little literature regarding this condition and we aim to establish suitable antenatal care and heighten awareness with particular attention to the surveillance of neonates after acute fetal distress. We also recommend a multidisciplinary team approach with the maternal and fetal medicine departments.

REFERENCES

1. Dawid G *et al,* A fetal dilated and hypertrophic cardiomyopathy associated with maternal gestational diabetes-a case report. Pediatr *Endocrinol Diabetes Metab*. 2010; 16(2):123–5.
2. Bucciarelli RL, *et al*, Transient tricuspid insufficiency of the newborn: a form of myocardial dysfunction in stressed newborn. 1997. *Pediatrics 96*:295– 300.
3. Donelly WH, Bucciarelli RL, Nelson RM (1980) Ischemic papillary muscle necrosis in stressed newborn infants. *J Pediatr 59*:330–337.
4. The Cardiomyopathy Association, www.cardiomyopathy.org 2012
5. M.C. Vaillant *et al,* Transient Hypertrophic Cardiomyopathy in Neonates after Acute Fetal Distress. *Pediatr Cardiol 18*:52–56, 1997.

PF.77 CAN ABNORMAL MATERNAL SERUM MARKERS ANALYTES BE USED TO PREDICT OBSTETRICAL OUTCOMES?

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Introduction A variety of other pregnancy outcomes other than neural tube defects and aneuploidy have been associated with abnormal values of different analytes used in second trimester screening tests.

Aim To review the obstetrical outcomes associated with abnormally elevated or decreased level of maternal serum marker analytes used in second trimester screening for aneuploidy.

To provide guidance to facilitate the management of these pregnancies and to assess the usefulness of these markers as a screening test.

Method and Setting: Retrospective analysis of 102 case notes with high risk screening result just over a period of two years from January 2007 – May 2009 at Manor Hospital, Walsall.

Results 102 patients were included in the study. 77% of the patients had high risk results for Down's syndrome out of which 67% of them accepted amniocentesis. Chromosomal abnormality was identified only in three fetus.

24 women had high risk results for neural tube defects and 3 women had fetus with CNS abonormality.

70% of the women had normal outcome. Less than 1/3 rd of the women developed complication like pre-eclampsia, placental problems like low lying placenta, adherent placenta, abruption etc and difficulties in induction of labour.

45% of fetus had abnormal outcome. Majority (45%) were small for gestation less than 10th centile followed by preterm delivery and macrosomia.

Conclusion Down's screening analytes have low predictive accuracy but may be useful means of risk assessment or of use when combined with other maternal factors.

PF.78 ANTENATALLY DETECTED BILATERAL PLEURAL EFFUSIONS WITH FAVOURABLE POSTNATAL OUTCOME

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Pleural effusions are relatively uncommon in neonates. Most often it is a marker of underlying pathology rather than diagnosis in itself. If bilateral pleural effusions are detected antenatally, this carries an extremely poor neonatal prognosis. The case below demonstrates good team working and liaison between Obstetrics and Neonatal team with prompt management which led to a favourable outcome.

Bilateral pleural effusions were detected from early gestation. Delivery was by Caesarean section at 34 weeks after the findings of absent end-diastolic flow in the uterine artery and suboptimal CTG.

Excellent communication between Obstetrics and Neonatal team ensured adequate preparation for resuscitation of this baby. Senior consultant involvement in the initial management lead to prompt treatment, including bilateral drainage of pleural effusions and high pressure ventilation to achieve oxygenation. High flow oxygen ventilation and Nitric Oxide therapy were administered for pulmonary hypertension. The effusions persisted and the milky white appearance of the fluid draining led to suspicion of chylothorax. This was confirmed on pleural fluid analysis. The baby was then transferred for a respiratory opinion at a tertiary centre.

High resolution CT scan ruled out Pulmonary Lymphangiectasia. A lung biopsy was performed that showed Pulmonary Interstitial Glycogenosis (PIG) which carries good prognosis. The baby's effusions resolved and, following steroid therapy she was extubated and discharged home self-ventilating in air on day 56.

Antenatal and postnatal images will be included in this presentation.

Maternal Medicine Posters

PM.01 MANAGEMENT AND OUTCOMES OF HELLP SYNDROME IN THE UK

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Objective To describe the current management and outcomes of HELLP (haemolysis, elevated liver enzymes and low platelet count) syndrome in the UK.

Methods A national descriptive study using the UK Obstetric Surveillance System, including all women diagnosed with HELLP syndrome between June 2011 and May 2012.

Results 109 women were identified with HELLP syndrome. 69 women (63%) were diagnosed with HELLP syndrome antenatally at a median gestation of 35 weeks (range 21–41). 54% (37/68) of antenatally diagnosed women had a planned management of immediate delivery and delivered a median of 3 h 37 min after diagnosis (range 53 min–21 h 26 min); 43% (29/68) had a planned management of delivery within 48 h and delivered a median of 11 h 40 min after diagnosis (range 1 h 28 min–74 h 43 min); only 2/68 had a planned attempt at expectant management, with one delivering 3 days and the other 12 days after diagnosis. Overall, 41% (45/109) of women received corticosteroids (only three for maternal indications, two of whom were diagnosed postpartum), 78% (84/108) received antihypertensive medication and 78% (85/109) were given magnesium sulphate. Severe morbidity was noted in 15% (16/109) of the women and one woman died (case fatality 0.9%, 95%CI 0.02–5.0%). Major complications were reported in 9% (10/108) of infants and there were two perinatal deaths (perinatal mortality rate 18 per 1,000 total births, 95%CI 2–62). All cases associated with major

maternal or perinatal complication occurred in women delivered within 48 h of diagnosis or in women diagnosed postpartum.

Conclusions HELLP syndrome is associated with severe maternal and perinatal morbidity. Expectant management is rarely used in the UK.

PM.02 EFFECT OF 1,25-DIHYDROXYVITAMIN D_3 (1,25-D_3) ON EXTRAVILLIOUS TROPHOBLAST INVASION IN VITRO

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Introduction The invasion of maternal tissues by extravillous trophoblast (EVT) plays a central role in normal placentation. Inadequate EVT invasion is characteristic of pre-eclampsia, which is associated with low maternal circulatory concentrations of 25-hydroxyvitamin D_3 (25-D_3). Furthermore, trophoblasts from pre-eclamptic placentae demonstrate lower 1α-hydroxylase activity, which converts 25-D_3 to the active ligand, 1.25-D_3. We thus hypothesise that reduced vitamin D action leads to malplacentation and increase pre-eclampsia risk. To elucidate the mechanistic link we determined whether 1.25-D_3 has a regulatory effect on EVT invasion.

Methods Primary EVT cells were isolated from first trimester (9–11 weeks) human placentae (n = 5) following surgical termination of pregnancy. Isolated EVT, and in separate experiments, SGHPL4 (EVT-like cell line) were placed in 8-μm inserts coated with reduced growth factor Matrigel® and treated with increasing concentrations of 1.25-D3 (0.0.1.1.10 nM). EVT invasion was quantified by counting all the invaded cells visualised with Mayer's haematoxylin and eosin at 48 hours. A proliferative response to 1.25-D3 was assessed by MTT assays.

Results 1,25 D_3 promoted EVT invasion in a dose-dependent manner peaking at a dose of 1 nM. EVT exposed to 0.1 nM and 1 nM concentrations showed a 1.9-fold ($p < 0.05$) and 2-fold ($p < 0.01$) increase respectively in the numbers of invaded cells compared with untreated controls. Treatment with 10 nM 1.25-D_3 induced a 10-fold ($p < 0.05$) increase in invasion by SGHPL-4 cells compared with 0 nM but did not affect proliferation.

Conclusion This is circumstantial evidence that Vitamin D supplementation during pregnancy may potentially reduce the risk of developing pre-eclampsia as 1.25-D_3 promotes EVT invasion.

PM.03 RELATIONSHIP BETWEEN FETAL GROWTH, CARDIOVASCULAR ADAPTATION AND BIRTH WEIGHT

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Maternal cardiovascular adaptation in pregnancy is necessary for optimal fetal growth. The objective of this study was to explore the relationships between growth rate, fetal size at 10–14 weeks, birth weight and maternal cardiovascular adaptation in pregnancy.

This was a prospective study of 143 women planning to conceive. Crown rump length (CRL) was measured in 71 viable pregnancies at 6–7, 8–9 and 10–14 weeks in 1st trimester and biometry was performed at 22–24 and 32–34 weeks. First and 2nd to 3rd trimester growth rates were calculated. Cardiovascular assessments were performed pre-pregnancy, at 6–7 weeks, in 2nd and 3rd trimesters. We examined the relationships between 1st trimester CRL growth rate, CRL z-score at 10–14 weeks, 2nd to 3rd trimester fetal growth rate, birth weight z-score and cardiovascular adaptation.

First trimester fetal growth and CRL z-score were not related to 2nd to 3rd trimester fetal growth rate ($P = 0.2$, $P = 0.4$) nor to birthweight z-score ($P = 0.5$). However, 2nd to 3rd trimester fetal growth rate was positively correlated to birthweight z-score ($\rho = 0.758$, $P < 0.001$). Amongst the maximum cardiovascular changes the pre-pregnancy to 2nd trimester increase in cardiac output (CO) was significantly correlated to birthweight z-score ($\rho = -0.257$, $P = 0.03$).

Pregnancy induced cardiovascular changes by 2nd trimester may 'drive' later pregnancy fetal growth and birthweight. Contrary to previous reports based on assumption of growth on a single CRL measurement at 10–14 weeks, birthweight was not related to 1st trimester growth; but was related to 2nd to 3rd trimester fetal growth and maximum increase in CO by 2nd trimester.

PM.04 CARDIOVASCULAR INDICES IN THE EARLY IDENTIFICATION OF PRE-ECLAMPSIA IN WOMEN AT HIGH-RISK FOR HYPERTENSIVE DISORDERS OF PREGNANCY

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Objective Biochemical markers such as PlGF have been proposed as point-of-care tests for the early identification of women at risk of hypertensive disorders. The aim of this study was to ascertain whether biophysical markers are similarly predictive for the subsequent development of pre-eclampsia.

Methods This was a prospective study of women presenting in the third trimester of pregnancy to the day assessment unit with non-proteinuric hypertension and suspected diagnosis of preeclampsia. Stroke volume index (SVI), cardiac index (CI), systemic vascular resistance index (SVRI), pulse wave velocity (PWV), aortic augmentation index (AIx) and uterine artery Doppler mean pulsatility index (PI) were measured at recruitment. Comparisons of medians between groups were performed using Mann Whitney tests.

Results A total of 102 women took part in the study and 42 women developed hypertensive disease in pregnancy. At presentation, compared to those who remained normotensive, women who develop hypertensive disease in pregnancy have significantly higher SVRI (3251 vs 1851 dynes – sec/cm^{-5}/m^2, $P < 0.001$), aortic AIx (18.0 vs 5.05%, $P < 0.001$), PWV (8.41 vs 7.70 m/sec, $P = 0.003$) and uterine artery Doppler mean PI (0.87 vs 0.77, $P = 0.044$). However they had significantly lower heart rate (79.8 vs 87.3 beat/min, $P = 0.006$), CI (2.86 vs 3.83 L/min/m^2, $P < 0.001$) and SVI (37.5 vs 45.3 mL/m^2/beat, $P = 0.01$).

Conclusion Women who subsequently develop pre-eclampsia have distinct cardiovascular indices that may help discriminate them from those at high-risk of pre-eclampsia who remain normotensive. It remains to be established whether these indices may be used prospectively, either alone or in conjunction with biochemical markers, for triage and follow-up.

PM.05 POSTPARTUM DYSLIPIDAEMIA IN WOMEN DIAGNOSED WITH GESTATIONAL DIABETES MELLITUS

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Background Outside of pregnancy diabetes mellitus is an accepted risk factors for cardiovascular disease which should prompt screening for dyslipidaemia in adults.