in the neonatal population. Preterm low birth weight neonates represent the group at highest risk of infection, mainly attributed to immunodeficiency present at birth. Antimicrobial therapy remains the main strategy for prophylaxis and treatment of infection. However, due to associated adverse effects, research into alternative therapeutic strategies such as immunoglobulin therapy has been prompted. One of the most important immune developments occurs intrauterine. Between weeks 30–32, transplacental transfer of maternal IgG to the foetus begins, conferring passive immunity. There is an incremental rise in foetal IgG with gestational age, thus preterm low birth weight neonates are born with a true deficiency of IgG antibodies. As low serum IgG has been reported to increase the risk of infection, IgG replacement therapy offers hope of enhancing immune competence and decreasing infectious episodes in this vulnerable population.

Aim We aimed to assess the efficacy of IVIG therapy in the prophylaxis of infection in preterm and low birth weight infants.

Methods All published studies of intravenous humanised IgG antibody use for prophylaxis of infection in preterm (<37 weeks) and low birth weight (<2500 g) infants were reviewed from 1986 to present. Science Direct, Medline, PubMed and Google Scholar were used to retrieve studies using keywords 'Neonatal sepsis', 'Immunoglobulins', 'Immune-modulation', 'Prophylaxis', 'Neonatal infection', 'Hypogammaglobinaemia', 'Systemic infections', 'Primary Immunodeficiency'. Studies which reviewed IVIG therapy in the treatment of infection, where IgG was administered intramuscularly and where the population was outside the definitions of low birth weight or preterm neonates were all excluded.

Results From our review, we note that the literature reviewed concluded that there was either no reduction to a very marginal reduction in infection rates in neonates.

It is conclusive that while IVIG may potentially confer some benefit in infection prophylaxis and potentially other subtler benefits, it does not demonstrate adequate prophylactic properties to justify routine use in preterm low birth weight neonates.

Conclusion While IVIG use is successful in treating hypogammaglobinaemia (low serum Ig) in primary immune deficiencies, IVIG does not confer the same benefits in infection prophylaxis for neonates. Reasons for this may be attributable to the complexity of the interactions between neonatal immunity and neonatal pathogens. Further research to better understand the mechanisms underlying immune deficiency in preterm and low birth weight infants is advised to offer insight into alternative therapeutic solutions.

GP248 MESENCHYMAL STEM CELL THERAPY IN MICROVILLUS INCLUSION DISEASE

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Objective Microvillus inclusion disease (MVID; MIM #251850), is a rare life-threatening secretory and

malabsorptive diarrhea of infancy due to mutations in the Myosin 5B (MYO5B) gene. Most of the patients die before achieving the opportunity of bowel transplantation due to electrolytes and renal tubular function disturbances and complications of parenteral nutrition. In this case report, results of stem cell therapy in a newborn infant with MVID were presented and discussed with the relevant literature.

Case report A 6-day-old male patient was referred to our NICU for profuse diarrhea beginning on the postnatal 2nd day after birth, metabolic acidosis and hyponatremia. He was born at 36⁺4 gestational weeks as the fourth child of non-consanguineous parents. Second and third siblings died at 2 and 3,5 months due to complications of intractable diarrhea. Third child's exom sequencing identified a homozygous, disease-causing nonsense variant C.4399C>T (*p.Gln1467**) in the MYO5B gene. Both parents were heterozygous for the mutation and they did not accept prenatal diagnosis. Our patient was also affected by homozygous mutation in MYO5B gene. With the knowledge of past history, total parenteral nutrition was started and maximum effort was directed to maintain fluid and electrolyte equilibrium. Patient had high fluid (350 ml/kg/day), sodium (20–25 meq/kg/day) and bicarbonate requirements (12–18 meq/kg/day). On 110th day of life mesenchymal stem cells (1×10⁶ Ü transduodenal and 2×10⁶ Ü IV) were administered. Although fluid and electrolyte requirements did not decrease after 2 months of follow up after stem cell therapy, the rate of blood stream infections was reduced.

Discussion and Conclusion In MVID, mutations in the MYO5B gene which encodes a protein called myosin Vb contribute to the dysfunction of enterocytes. Survival rate is less than 25% at the age of 9 months. Mortality rate is also high after bowel transplantation. Recently, stem cell therapy was presented as a promising alternative strategy for overcoming the current limitations of intestinal failure treatment. We concluded that, the reason why our patient did not benefit from the treatment was rapid turnover of the intestine epithelial cells and the lack of receptive surface caused by the genetic defect. Furthermore, using modified intestinal stem cells instead of mesenchymal stem cells may be more beneficial. In our patient, decreased incidence of infection with probable immunomodulatory effects of stem cells was the secondary gain.

GP249 WHITE CELL COUNTS IN EARLY-ONSET NEONATAL SEPSIS – ARE THEY USEFUL?

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Aims We compared newborn infants with positive blood cultures to a control group of negative cultures in order to establish the usefulness of WCC and Neutrophil values in predicting culture-positive Early-Onset Sepsis.

Methods All positive cultures less than 48hours from birth in infants born in the Rotunda from 2001 to 2017 were identified. WCC and neutrophil values at the time of culture were recorded, and compared to a similar cohort of infants aged less than 48hours with negative blood cultures from 2001–2017. Data was analysed using MedCalc software.

Results 105 positive blood cultures were returned for the time period. 6 did not have an FBC result performed close to the time of culture (N=99). These were compared to a control group of 269 negative blood cultures. Infants were matched for year of birth, birth weight and gestation.

The mean WCC in the culture-positive group was 14.2 (CI 5.76 – 18.45), and 18.63 in the negative group (CI 17.7 – 19.56).

ROC analysis revealed an Area Under Curve of 0.802 ($p < 0.0001$). A WCC cut-off value of 9 had a PPV of 0.8 (CI 0.5–1.3) and Specificity of 93.02% (CI 88.8–96.0) in predicting culture-positive EOS, a NPV of 100% (CI 99.9–100) and Sensitivity of 54.55% (CI 44.2–64.6).

Analysis of the mortality rate amongst positive cultures revealed that a WCC value of less than 4 gave an Odds Ratio (OR) for death of 3.66 (CI 1.14–11.8; $p < 0.03$) and relative risk for death of 2.92 (CI 1.17–7.5; $p < 0.03$) amongst infants with positive cultures.

Conclusions Our research has demonstrated a subgroup of WCC and neutrophil values which can help to identify infants who are likely to have EOS. This may aid neonatal staff in cohorting infants for admission and observation, or for earlier LP and high dose antibiotics.

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GP250 NEONATAL JAUNDICE SURVEILLANCE- ARE WE WINNING?

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Objectives To determine the incidence of babies presenting with Serum bilirubin (SBR) >400 micromol/litre in last five years (2013–2017)

To review the factors leading to admission of neonates with SBR >400 micromol/litre in last 2 years (2016–2017)

Method A multicentre retrospective review of the yearly data of neonates <28 days treated for very high SBR >400 micromol/litre across GGC between years 2013–2017 was collected from the Laboratory database. Detailed retrospective review of all the neonates treated for SBR >400 micromol/litre in three NNU in 2016 & 2017 was done by case notes, midwifery record notes and online patient database

Variables including gestational age, age at presentation, gender, family history, type of feeding, serial bilirubin levels (transcutaneous bilirubinometer (TcB), blood) before and at the time of start of treatment were reviewed to determine the causes of presentation with high bilirubin levels in spite of having a Jaundice surveillance system in place.

Results The number of babies needing treatment due to high SBR (>400 micromol/l) has significantly declined from year 2013 to 2017 across GGC (p value=0.002).

Total 18 patients with SBR >400 micromol/l were admitted in 2016 (n=10) and 2017 (n=8). Majority of the babies were male (n=10, 55%), commonest gestational age group was between 37–40 w (n=14, 78%), presenting between 5–10d of life (n=13, 72%) and referred by the community midwives (n=17, 94%). TcB was most commonly used to assess SBR before referral to hospital (n=11, 61%), majority of the babies received treatment for the first time (n=16, 89%) and most of the babies were breast fed (n=8, 44%). Predisposing factors for jaundice included breast feeding (n=10), cephalhematoma/bruising (n=3), Hereditary Spherocytosis (n=1) and G6PD deficiency (n=1). Other factors included lack of close monitoring for jaundice in community (n=8), discrepancy of correlation between TcB and SBR values (n=6), inappropriate plotting on bilirubin charts (n=2).

Conclusion Incidence of babies presenting with SBR >400 micromol/l has significantly reduced in last five years. This could be secondary to introduction of TcB in community and improvement in jaundice surveillance system. However there is still margin for improvement as new cases are still presenting either due to inappropriate monitoring in community or discrepancy in co-relation of levels between TcB and SBR.

GP251 IS HEART RATE VARIABILITY (HRV) A PREDICTOR OF INTRAVENTRICULAR HAEMORRHAGE (IVH) IN PRETERM INFANTS?

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Introduction Intraventricular haemorrhage (IVH) occurs in up to 15–20% of babies born before 32 weeks, and up to 30% in babies less than 28 weeks gestation.

Injury can cause detrimental short and long-term health outcomes.

Heart rate variability (HRV) is a measure of autonomic function controlled by cardiorespiratory reflexes.

Depressions and decelerations in HRV are sometimes witnessed clinically with acute central nervous system injury, such as haemorrhage.

Aim This study aims to describe HRV as a prognostic tool in diagnosing IVH.

Method This project analysed ECG data from 28 preterm infants (<32 weeks gestation) who have been enrolled in a prospective randomised trial of umbilical cord management in CUMH.

The HRV was computed from the ECG. This was achieved by

1. Extracting a 15 minute epoch of ECG free from major artefacts from the long-duration recordings. Two time points were chosen, 6 and 12 hours.
2. Identifying the ECG R-peaks by visual inspection using HRV Analysis (a UCC software package designed specifically for this task)
3. Extracting quantitative HRV features from the R–R interval.

The 7 HRV features were defined in 1996 by the Task Force of the European Society of Cardiology and the North American