Results A total of 1293 infants were identified over a 5 year period between the two sites. Subgroup analysis of infants with a length of stay ≥ 28 days showed 424 out of 809 infants met biochemical criteria for MBDP (52.4%). The median time to meeting biochemical criteria was 16 days.

Only 54 infants had a documented diagnosis of metabolic bone disease on BadgerNet (4% of all high-risk infants and 6.7% of infants with a length of stay ≥ 28 days); 8 of these babies did not meet biochemical criteria for MBDP.

There were 5 documented fractures (2 humeral and 3 rib fractures), described as incidental findings on routine radiographs.

Conclusions

- The percentage of infants meeting biochemical criteria for MBDP is consistent with published incidence data. Using these biochemical criteria does not overestimate the incidence in this population.
- The median time to meeting biochemical criteria is consistent with published literature and highlights the key period to screen at-risk infants.
- Biochemical MBDP is under-reported on the BadgerNet database. This suggests that increased awareness of MBDP may be required or that biochemical criteria are not being routinely used to make the diagnosis. Caution should be exercised when interpreting BadgerNet data in view of this.
- The documented incidence of fracture related to biochemical MBDP was 1%, well below the published incidence of 10%. This may be due to suboptimal data entry but may also be related to under-recognition of such fractures.

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SERONEGATIVE NMOSD – A POST SARS-COV-2 NEUROLOGICAL COMPLICATION ASSOCIATED WITH PAEDIATRIC MULTISYSTEM INFLAMMATORY SYNDROME (PIMS)?

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Background Neuromyelitis Optica Spectrum Disorder (NMOSD) is an inflammatory demyelinating disease of the central nervous system (CNS) primarily affecting the optic nerves and spinal cord, but also involving other regions of the CNS including the area postrema, periaqueductal gray matter, and hypothalamus. There are limited cases describing the development of NMOSD post SARS-COV-2.

Objectives We present a case of seronegative NMOSD meeting the diagnostic criteria with coronary artery involvement and the probable association of Paediatric Multisystem Inflammatory Syndrome (PIMS)/SARS-COV-2.

Methods A 13-year-old female of Chinese descent met the diagnostic criteria for sero-negative NMOSD:

- Optic neuritis (presented initially with decreased vision right eye, progressed to complete blindness involving both eyes;

optic discs swelling bilaterally) + enhancing focus in left parieto-occipital region

- Area postrema syndrome (intractable vomiting) + enhancing lesion in the left aspect of the dorsal medulla
- Acute brainstem syndrome (autonomic dysfunction, respiratory distress with new-onset squint) + enhancing foci in medulla
- Symptomatic cerebral syndrome (left arm weakness, headache, behaviour change) + several enhancing foci within the cerebral hemisphere and sulcal thickening/oedema enhancement in the right fronto-temporal lobe

She presented initially with headache and behaviour change x8 days; weakness left arm x6 days; loss of vision right eye x6 days; facial numbness x6 days; vomiting x2 days but no preceding viral illness/vaccine. She was initially managed as ADEM/ADS with steroids (imaging at this time revealed cerebral lesions). However, a protracted illness persisted with intractable nausea/vomiting, and development of new symptoms (squint, autonomic dysfunction, respiratory distress). Repeat imaging showed new involvement of the dorsal and ventral medulla. IVIG and rituximab treatment were then commenced.

Results CSF pleocytosis (22 white cells) and elevated protein concentration (131mg/dL) were present.

Anti-MOG and Aquaporin-4 antibodies testing post steroids were negative.

ESR increased to 82 mm/hr and ANA titre was mildly elevated during her illness. ENA, dsDNA titres normal.

COVID-19 IgM antibody level rose to 0.921. Infectious screen negative (Hepatitis studies, HIV, HSV, ASOT).

Neoplastic workup negative (Antineuronal antibodies, CEA, CA-125, AFP, Blood film). MRI pelvis was normal.

Anticardiolipin and lupus anticoagulant antibodies negative.

Interestingly, ECHO done post steroids, IVIG and during rituximab treatment showed moderately dilated left middle coronary artery and severely dilated left anterior descending artery.

Her neurological function has improved post IVIG and rituximab.

Conclusions Due to the evidence of inflammation and neurological and cardiac dysfunction, we question whether this could be a post SARS-COV-2 related presentation of PIMS.

This is our 3rd case in Trinidad & Tobago linking coronary artery and neurological involvement in the same patients possibly in relation to SARS-COV-2.

The other cases:

1) 20-month-old with corpus callosal lesions and right coronary artery ectasia post-treatment

2) 2-year 7-months-old with long segment of cord enlargement with heterogenous appearance from C1 to C6 and dilated coronary arteries/mild mitral regurgitation/pericardial effusion

Quality Improvement and Patient Safety

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OXYGEN SATURATION TARGETING IN INFANTS ON THE NEONATAL UNIT

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Background The NHS East of England guideline regarding administration of oxygen to infants (PNPG0161) was revised in 2019. It details the oxygen saturation target range and pulse oximetry monitoring alarm limits required by infants depending on their gestational age and comorbidities.

Objectives We set out to improve the prescribing and monitoring of oxygen saturation in the neonatal unit at Southend Hospital, with a view to making improvements should the standard fall below those set out in the guideline. Southend has a Level 2 unit which is able to care for infants born at from 27 weeks and monitors functional pulse oximetry using the Philips Intelliview MP70 Neonatal.

Methods We audited the unit between September and December 2019, 6 months after dissemination of the guideline within the neonatal department. This involved random spot checks of the prescriptions for oxygen and the saturation alarm limits set for all infants on the unit to assess compliance with the following 4 standards:

- 100% of infants receiving oxygen should have oxygen prescribed in a drug chart with a specified saturation target range.
- 100% of infants receiving oxygen should be on continuous pulse oximetry.
- 100% of continuous pulse oximetry should have appropriate set saturation alarm limits.
- 100% of infants requiring deviation from the recommendations should have this documented by a clinician in their notes.

Following the initial results, we worked with the unit manager and neonatal educational nurse to improve our performance. Departmental teaching was organised regarding the content of the guideline and we introduced a sticker into the oxygen section of the drug charts. This was to be acknowledged and validated twice daily by the nursing staff. We also displayed the recommended oxygen saturation targets for prescription and monitoring alarm limits on the unit and in the doctors' office.

Results 4 months after making improvements, we repeated random spot checks of the unit between May and June 2020. The overall rate of accurate oxygen prescribing rose from 22.9% to 87.9% and all cases with a correct prescription were associated with a sticker. The unit remained consistent in monitoring 100% of infants receiving oxygen, however, the rate of infants below 34 weeks gestation on continuous pulse oximetry fell to 95%. The rate of correctly set saturation alarm limits rose from 81.9% to 85%. Notably, it was term infants and those on air who frequently had incorrect settings. There remained no cases in which deviation from the guidelines was justified in the notes.

Conclusions Certain improvements, particularly use of a sticker in the drug charts, increased the accuracy with which oxygen saturation target ranges were prescribed. Further improvements are required for our unit to achieve the standards set by NHS East of England, such as ensuring all infants have an oxygen prescription and correctly set saturation alarm limits. We recommend augmentation of the sticker with more information and space to document justification of any deviation from the guideline. We suggest further departmental teaching regarding this, in particular the pulse oximetry monitoring of term infants on air and those younger than 34 weeks.

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A SYSTEMATIC REVIEW OF URINE BIOMARKERS IN CHILDREN WITH IGA VASCULITIS NEPHRITIS

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Background Nephritis is a recognised complication of IgA vasculitis (IgAV, Henoch-Schoenlein purpura, HSP) and contributes to 1–2% of all chronic kidney disease (CKD). Improved detection and understanding of kidney inflammation may reduce irreversible kidney damage in IgA vasculitis nephritis (IgAV-N).

Objectives The primary aim of this study was to perform a comprehensive systematic review to evaluate the current literature to identify promising urine biomarkers that can predict and assess the severity of kidney disease in children with IgAV.

Methods A systematic literature review was performed using 4 search engines and a search term strategy with predefined inclusion and exclusion criteria. Promising biomarkers were divided in terms of clinical or pre-clinical and described using statistical significance and area under the curve (AUC) values.

Results 121 studies were identified and thirteen were eligible for inclusion. A total of 2,446 paediatric patients were included; 51% male, median age 7.9 years (range not available). This comprised of healthy controls (n=761), children with IgAV-N (n=1,236) and children with IgAV without nephritis (IgAV-noN, n=449). The clinical markers for assessing severity of nephritis, 24-hour protein quantity, urine protein:creatinine ratio were both acceptable (AUC <0.8) and urinary albumin concentration (Malb) performed well (AUC 0.81–0.98). The most promising pre-clinical urinary biomarkers were kidney injury molecule-1 (KIM-1) (AUC 0.93), monocyte chemotactic protein-1 (MCP-1) (AUC 0.83), N-acetyl-beta-glucosaminidase (NAG) (0.76–0.96), and angiotensinogen (AGT) (no AUC available).

Conclusions Further longitudinal studies are needed to assess whether these biomarkers enhance standard of care in the management of IgAV-N.

Paediatricians with Expertise in Cardiology Special Interest Group

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MAKING PAEDIATRIC ECG INTERPRETATION IN THE PAEDIATRIC EMERGENCY DEPARTMENT EASIER AND SAFER BY INTRODUCTION OF AN ECG CHECKLIST

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