British Paediatric Allergy Immunity and Infection Group

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PAEDIATRIC INFLAMMATORY MULTISYSTEM SYNDROME TEMPORALLY ASSOCIATED WITH SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 (PIMS-TS) AND VITAMIN D DEFICIENCY

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Background Coronavirus disease 2019 (COVID-19), has caused mild illness in children, until the emergence of the novel hyperinflammatory condition PIMS-TS: Paediatric Inflammatory Multisystem Syndrome Temporally associated with Severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). PIMS-TS is thought to be a post- SARS-CoV-2 immune dysregulation with excessive inflammatory cytokine release.

Objectives There has been a long-standing interest in the role of 25 hydroxyvitamin D (25OHD) in cytokine-storm induced critical illnesses due to the premise of its anti-inflammatory actions including regulation of cytokine release. Vitamin D deficiency in critically ill individuals in intensive care has been linked to poor cardiovascular outcome and increased mortality.

We report the vitamin D status of children with PIMS-TS admitted to a single tertiary paediatric hospital in the Midlands region of the United Kingdom (U.K).

Methods We studied 25OHD levels in children admitted to a tertiary paediatric hospital in the U.K., fulfilling the case definition of PIMS-TS detailed by the Royal College of Paediatrics and Child Health. Children were managed either on paediatric intensive care unit (PICU group) or on the wards (non-PICU group). 25OHD concentrations were measured by quantitative liquid chromatography tandem mass spectrometry. Statistical analysis used a two-sample t-test, assuming unequal variances.

Results Fifty children [median (range) age 8.8 (0.99 to 14.6) years, male = 24] met the case definition. The majority were of Black, Asian and Minority Ethnic (BAME) origin [78%, 39/50]. SARS-CoV-2 IgG antibodies were confirmed in 64% (32/50) and SARS-CoV-2 RNA detected by PCR in 6% (3/50) of the study population. Of those patients without serology or PCR data available, the majority had a confirmed Covid 19 positive contact.

Eighty-two percent of the cohort were vitamin D deficient (<30nmol/L). The mean 25OHD concentration was significantly lower when compared to the population mean from the 2015/16 National Diet and Nutrition Survey, a cohort of healthy children with no medical conditions, aged 4–10 years [22 vs 54nmol/L (95% CI: 15.9, 24.1); $p < 0.001$]. Children from BAME backgrounds had reduced vitamin D levels compared to children from a white background [mean 25OHD concentration 17.7 vs 28.2; $p = 0.12$]. The PICU group had lower mean 25OHD concentrations compared to the non-PICU group, although this was not statistically significant [16.9 vs 28 nmol/L; $p = 0.071$].

Conclusions PIMS-TS has seen an over-representation of children from BAME background, who are also at greatest risk of vitamin D deficiency. Whilst any link between vitamin D deficiency and the severity of COVID-19 and related conditions, including PIMS-TS, requires further evidence, public health

measures to improve vitamin D status of the U.K BAME population has been long overdue. Given the safety profile of vitamin D supplementation and the over-representation of BAME individuals with vitamin D deficiency and PIMS-TS, mandated year-round supplementation of all high-risk children should be the way forward.

Association of Paediatric Emergency Medicine

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THE UNFULFILLED POTENTIAL OF POINT-OF-CARE ULTRASOUND (POCUS) IN PAEDIATRIC EMERGENCY MEDICINE (PEM) TRAINING

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Background Point-of-care ultrasound (POCUS) has been an essential component of The Royal College of Emergency Medicine's higher speciality curriculum since 2010. However, it has only been part of the Paediatric Emergency Medicine (PEM) syllabus since 2018, with its use less well-embraced by the specialty. In comparison, POCUS has become increasingly established in PEM departments across North America, with widespread evidence supporting its diagnostic and procedural application in PEM. These successful practices highlight the potential for POCUS to be further implemented within PEM departments in the UK.

Objectives The absence of a standardised PEM-specific POCUS training program in the UK led us to suspect a possible wide disparity in the training and delivery of POCUS among PEM clinicians. Following on from the 2019 PERUKI study, which aimed to determine the current implementation and practices of POCUS in various PEM departments, we decided to focus in on and survey a cohort of trainees to evaluate their current opinions, experiences and attitudes towards POCUS in PEM.

Methods We created an online survey and distributed it in October 2020 to a sample of trainees from our tertiary paediatric site. The survey questions not only ascertained variation in POCUS experience and formal training, but had a novel focus in targeting the barriers to its more frequent implementation as well as the attitudes of the trainees towards the future of POCUS in PEM education.

Results We received a 56% response rate from the trainees invited to participate in the survey. Our results confirmed a deficiency in the standardised POCUS training amongst the PEM clinicians, with 89% having no PEM-specific POCUS training. We observed an underuse of POCUS at our site, with 76.9% stating they have 'never' used POCUS for diagnostic purposes. Despite this, >60% agreed with the statement that 'POCUS is a necessary addition to PEM', with zero disagreement. 100% of trainees voted that they would like further teaching, recognising the need for the development of a PEM-specific training curriculum before they can confidently utilise it in their day to day practice. 100% of the trainees believe that POCUS should be taught to postgraduates, 67% to undergraduates.

Conclusions The results of our survey have emphasised the need for a PEM-specific POCUS training pathway in the UK.

We confirmed that the severe underuse in POCUS application was not due to a lack of enthusiasm, but rather a lack of training. The large majority of our respondents believe POCUS to be an essential adjunct to paediatric emergency medicine, however its user-dependency in the absence of well-established training severely restricts its potential as a diagnostic and procedural tool. Given current circumstances, an endeavour into implementing standardised teaching in post-graduate training would be worthwhile. The role of POCUS could prove useful in this COVID era, such as the potential to reduce clinician's exposure to the virus in the examination of COVID lung pathologies.

British Association of Perinatal Medicine and Neonatal Society

1462 OPTIMAL LEVEL AND BEVEL POSITION FOR ENDOTRACHEAL TUBES IN PRETERM NEONATES

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Background Most acceptable endotracheal tube (ET) tip position quoted in literature is between T1 and T2 vertebrae. Currently, there is no standards in term of optimal endotracheal tube bevel position in neonates.

Objectives Prevalence of right upper lobe collapse/consolidation (RUC) and its association with various ET bevel and level position.

Methods In this retrospective single center study (level 3 neonatal unit), chest radiographs of ventilated extreme preterm neonates (≤ 28 weeks) were reviewed for a period of two years (2019 and 2020). Data was collected for ET tip position, bevel position, presence or absence of right upper lobe collapse. Multiple X-rays taken on different days from the same baby were included for the X-ray analysis. We defined sub-optimal ET position when the ET tip is above T1 or at/below T3 vertebrae.

In our unit, we used the formula $6 + \text{body weight in kg}$ for fixing ET and always confirmed by chest X-ray. RUC is a discrete common lung pathology in preterm infants and hence used in his study. The project was registered with hospital authorities and approved by the audit department.

Results 429 X-rays from 104 preterm infants on mechanical ventilation were reviewed. After exclusion 419 X-rays were available for analysis (10: incomplete X-ray information). Mean birth gestational age in weeks and birth weight in grams ($\pm$ SD) were 25.9 ± 1.7 and 847.5 ± 248 respectively. Number of X-rays with (Sub-optimal) ET tip above T1 and $\geq$ T3 vertebrae were 58 (14%) and 128 (30.5%) respectively. There were 349 (83%) X-rays with ET tip bevel facing left side. There was 57 (13.6%) X-rays with definitive diagnosis of RUC. 21 (37%) cases of RUC occurred despite the optimal ET tube position. Odds ratio and statistics were calculated for RUC with bevel facing left and different ET position were calculated (table 1).

Limitations: Some of the preterm infants might have had persistent RUC in subsequent X-rays, which would have falsely increased the prevalence of RUC.

Conclusions In our study, 44% of ET were in sub-optimal position and commonly fixed with bevel facing left side

Abstract 1462 Table 1

ET Tip position with vertebrae body	Proportion of infants with RUC	Odds ratio	P-value
Above T1	7/58 (12%)	0.85 (0.31–2.0)	0.83
T1	10/59 (17%)	1.35 (0.57–2.9)	0.41
T1-T2 (intervertebral space)	1/43 (2%)	0.13 (0.003–0.83)	0.01
T2	10/86 (11.6%)	0.79 (0.34–1.7)	0.60
T2-T3 (intervertebral space)	8/45 (17.7%)	1.4 (0.54–3.3)	0.36
T3	11/65 (17%)	1.35 (0.59–2.9)	0.43
Below T3	10/63 (15.8%)	1.23 (0.52–2.7)	0.55
ET bevel facing left	50/349 (14%)	1.5 (0.63–4.1)	0.44
ET bevel facing left but excluding at or below T3	34/241 (14%)	3.9 (0.93–34)	0.05
ET bevel facing left but excluding above T1	44/305 (14.4%)	1.4 (0.54–4.2)	0.49
ET bevel facing left between T1 & T2	20/159 (12.5%)	3.88 (0.5–30.1)	0.20

(83%). RUC is commonly noted (13.6%) discrete lung pathology. Bevel facing left side in the optimal position could play a role in pathogenesis of RUC. Further insight is needed in terms of optimal ET bevel position. RUC could be reduced by placing the ET between T1-T2 (OR: 0.13 (0.003–0.83)).

British Society of Paediatric Gastroenterology, Hepatology and Nutrition

1463 THE IMPACT OF CARING FOR A CHILD WITH A GASTROSTOMY – A SYSTEMATIC REVIEW

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Background Gastrostomy insertion in a child is the start of a long-term commitment. The physical benefits of a gastrostomy in ensuring adequate nutrition and growth are well recognised. Less well recognised are the social and psychological effects of gastrostomy insertion on the family caring for the child.

Objectives To determine the psychological and social impacts of a gastrostomy in childhood on carers and families.

Methods An electronic search of Medline and Embase was undertaken in September 2020 using a combination of the relevant subject heading (MeSH) terms, key words and word