wearing a face mask may affect their babies development. They also expressed an impact on their emotional wellbeing from the lack of shared experience with their partners and family support. They made suggestions about alternative ways of updating parents such as telephone conferencing.

Conclusions Most parents felt they received excellent care but some expressed concerns about bonding with face masks identified as a particular stressor. Given the challenges of the pandemic, there is need to embrace different modalities to update parents and enhance family centered care. These methods include telephone conferencing and secure video messaging services.

British Association of Perinatal Medicine and Neonatal Society

1710 INVESTIGATING THE ASSOCIATIONS BETWEEN PRENATAL AND NEONATAL VITAMIN D STATUS AND ASD DIAGNOSIS IN CHILDREN: A SYSTEMATIC REVIEW

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Background Autism spectrum disorder (ASD) is a neurodevelopmental disorder characterized by dysfunction in social interactions, communications, and/or behaviour. Whilst the aetiology of ASD is poorly understood, a combination of genetic and environmental factors has been suggested to contribute to ASD pathophysiology. Vitamin D deficiency during pregnancy has shown to play a role in the development of maternal complications including preeclampsia, gestational diabetes, and infant conditions including bone and autoimmune diseases, respiratory illness and neurodevelopmental disorders. Recently studies have investigated the role of prenatal vitamin D status (25-hydroxyvitamin D [25(OH)D] concentrations) in the development of ASD in children.

Objectives The aim of this review is to systematically search literature investigating the associations between maternal, cord or neonatal vitamin D status and the diagnosis of ASD in children.

Methods A systematic search was conducted within Medline, EMBASE, PsycInfo and CINAHL databases using 'pregnancy', 'vitamin D' and 'autism spectrum disorder' as the main search concepts, to identify studies investigating the association between prenatal or neonatal vitamin D status and ASD diagnosis in children. The eligibility criteria were: (a) human based epidemiological studies; (b) available information on 25(OH)D concentrations during the prenatal period which included samples collected during pregnancy, from newborns at birth or cord blood samples; and (c) offspring that had a diagnosis of ASD.

Results A total of 11 studies met the inclusion criteria, originating from four countries, and which were conducted between 2015 and 2020. Seven studies investigated associations between child ASD diagnosis and maternal vitamin D status, five investigated vitamin D status during the neonatal period and one investigated in associations with cord blood vitamin D status. Vitamin D status ranged from 8.4nmol/L (vitamin D deficiency) to 116nmol/L (vitamin D sufficiency). Six of the eight case-control studies reported a significantly

lower vitamin D status in the ASD group compared to their controls. A majority of studies that had maternal insufficiency (25(OH)D <50nmol/L) observed associations with an increased risk of children developing ASD. Some studies investigating neonatal vitamin D status and child ASD diagnosis, have shown that a deficient status of ≤25nmol/L is associated with a higher risk of diagnosis compared to those with an insufficient status (≤50nmol/L) and above. There were no significant associations observed in the study investigating cord vitamin D status and child ASD diagnosis.

Conclusions These results highlight that vitamin D insufficiency during pregnancy and the neonatal period may be a risk factor for ASD diagnosis in children. The findings of this systematic review suggest that vitamin D status should be optimised prior to and during pregnancy and early life to levels of >50 nmol/L to reduce the possible risk of development of ASD in children, albeit these findings are based on observational studies only. Further research is needed to investigate the effects on vitamin D supplementation to optimise vitamin D status and associations with child ASD diagnosis.

British Paediatric Neurology Association

1713 CASE SERIES: THE ROLE OF NEUROIMAGING IN IDENTIFYING TUBULINOPATHY IN UNEXPLAINED MOTOR IMPAIRMENT

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Background During embryonic and fetal life, tubulin genes play an important role in the cortical cerebral development. Mutation in this genes results in tubulinopathies which manifest as microcephaly, developmental abnormalities in motor and cognitive aspect as well as early-onset epilepsy. To date there are several tubulin gene mutations described in literature namely, TUBA1A, TUBB2A, TUBA8, TUBB2B, TUBB3, TUBB5, TUBG1.

Objectives To discuss clinical manifestations of children with tubulinopathy.

Methods We discuss two toddlers who presented with microcephaly and global developmental delay.

Results Patient A was delivered at term with a birth weight of 3220g. He was treated for neonatal sepsis after developing bouts of vomiting. He had delays in motor development, abnormal posturing with generalised upper motor neuron signs at 9 months of age which led to further work up. Initial blood investigations which comprised of a metabolic screen yielded normal results. MR neuroimaging found asymmetrical cortical malformation with central pachygyria and polymicrogyria-like cortical dysplasia, basal ganglia malformation and corpus callosum dysgenesis which was suggestive of tubulinopathy.

Patient B was an asymmetrical SGA delivered late preterm at 36 weeks with a birth weight of 2.12kg. He had presented with global developmental delay predominantly gross motor component with hypertonia. An MRI brain done at age 15 months showed bilateral peri-sylvian polymicrogyria, asymmetry basal ganglia, thalamus and midbrain with abnormal basal ganglia and corpus callosum dysgenesis. Patient B presented

again at age 3 years and was diagnosed with spastic diplegic cerebral palsy

Conclusions This case series report highlights the importance of neuroimaging as part of an assessment for children who otherwise have unexplained non-progressive motor impairment. Tubulinopathy should be considered as a possible diagnosis for children with unexplained motor impairment. Specific genetic testing should be performed for confirmation.

British Association of General Paediatrics

1714

JUST IN CASE TRAINING

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Background The Trust introduced Just in Case (JIC) training in 2014 in the ITU areas under the global PediRES-Q research study.

The initiative reinforces traditional annual resuscitation training, delivering refresher and preparatory training at the bed side to help staff become more focused and aware of essential skills and interventions that may be required for individual patients, meeting the learners needs when it arises, through collaborative learning with peers. It supports at the point where greater performance is required, promoting a confident and responsive workforce, providing a timely, child centric approach to the delivery of resuscitation skills at the bed-side where all clinical staff can be engaged and appreciate the end goal of identifying those at risk of deteriorating and prevention.

Objectives To improve the recognition and enable early intervention and management of the acutely unwell child in order to prevent deterioration into cardiorespiratory arrest and rapid response in paediatric resuscitation by providing Just in Case training to clinical staff.

Methods In response to the impact of the Covid 19 pandemic, there were opportunities to extend the JIC training, bringing additional expertise, support and reassurance to all clinical areas but especially where Covid 19 patients were identified, increased acuity of patients, staffing levels where stretched, the PEWS >9, ward teams, Clinical Site Practitioner's (CSP) or parents had identified a high risk of deterioration or collapse. Also, to support to staff redeployed from the North Central London Paediatric Network, ward-based training regarding the Trust emergency response systems and familiarisation and use of Trust emergency equipment was delivered.

Success led to an extension of the initiative and collaboration with the CSP team and clinical staff, identifying JIC opportunities, including a refresher of the skills of effective bag-valve-mask ventilation, application of defibrillator pads and quality CPR. Reviewing emergency processes such as algorithms and protocols, highlighting situational awareness including bedspace preparation, role allocation and clinical decision-making is supported. Furthermore, expertise within the team encourages the staff to explore clinical conditions of patients, giving context to the disease process including support for modified approaches to resuscitation. Increased visibility in the clinical areas, has resulted in increased requests from staff for

this training to develop their confidence, supporting the complex and progressive clinical needs of the child requiring a higher dependency.

Results

	Jan 2019–Dec 2019	Jan 2020–Dec 2020
Total 2222 calls attended by Clinical emergency Team	147	125
Cardiorespiratory arrests	13	10
Respiratory arrests	34	48
Unplanned admissions to Critical Care Units	158	168
Number of staff trained	-	384

Conclusions Aside from the earlier escalation and interventions, resulting in a decrease in 2222 calls overall and cardiorespiratory arrests, the positive impact of this additional bedside teaching has been very well received and praised by the staff in clinical areas, especially those caring for complex, high risk patients at the point of care and in context of the specific disease process.

British Society of Paediatric Gastroenterology, Hepatology and Nutrition

1715

THE USE AND DIAGNOSTIC VALUE OF FOECAL CALPROTECTIN LEVELS IN PAEDIATRIC POPULATION: A STUDY OF THOSE AGED LESS THAN 4 YEARS

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Background In children with inflammatory bowel disease, faecal calprotectin is commonly used as a non-invasive marker for diagnosis and monitoring of disease activity. Although there are well established cut off values for diagnosis of IBD in adults, this is less well studied in children, especially in children less than 4 years of age. In both primary and secondary care settings, faecal calprotectin requests are on the rise. This coupled with the lack of well-established reference ranges, results in unnecessary referrals, investigations and increased parental anxiety over raised faecal calprotectin levels.

Objectives The objective was to look at faecal calprotectin requests from primary and secondary settings in children less than 4 years of age, to identify common paediatric conditions that contribute to raised faecal calprotectin level. A secondary objective was to obtain evidence to provide guidance to local biochemistry lab on reporting faecal results in this age group.

Methods We liaised with the local biochemistry lab and obtained faecal calprotectin requests in the paediatric population between 04/01/2019 and 30/08/2019. 313 requests were made in children aged 0–16yrs during this period. Results for children less than 4 years of age were analysed based on source of the request (primary or secondary care setting), calprotectin level and final clinical diagnosis.

Results Out of the cohort studied (313), a total of 41 requests (13%) were made in children aged less than 4yrs. 78% of requests came from the primary care setting (32 out of 41)