- 2.. Rob Trubey, Chao Huang, Fiona V Lugg-Widger, Kerenza Hood, Davina Allen, Dawn Edwards, David Lacy, Amy Lloyd, Mala Mann, Brendan Mason, Alison Oliver, Damian Roland, Gerri Sefton, Richard Skone, Emma Thomas-Jones, Lyvonne N Tume, Colin Powell. Validity and effectiveness of paediatric early warning systems and track and trigger tools for identifying and reducing clinical deterioration in hospitalised children: a systematic review. PMCID: PMC6502038, DOI: 10.1136/bmjopen-2018-022105

British Society of Paediatric Endocrinology and Diabetes

1707

PROFILE OF THYROID DISORDERS IN CHILDREN WITH DOWN SYNDROME

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10.1136/archdischild-2021-rcpch.807

Background The prevalence of thyroid disorders in children with Down syndrome is 6–10%. Guidelines on thyroid disorders in children and young people with Down syndrome: surveillance and when to initiate treatment in April 2020 were published by the Down Syndrome Medical Interest Group U.K & Ireland in 2020. The spectrum of thyroid disorders in children with Down syndrome includes congenital hypothyroidism and autoimmune thyroid disorders.

Objectives We undertook a retrospective study to review the profile of thyroid disorders of children with Down syndrome currently served by our child development centre serving a child population (0–19 years) of 64,500 children.

Methods A retrospective electronic case notes review was undertaken of 69 children with Down syndrome attending the child development centre, to identify children with a diagnosis of thyroid disorder and assess their biochemical and clinical presentation.

Results One infant (male) was diagnosed with congenital hypothyroidism. Six children were diagnosed with autoimmune hypothyroidism. Prevalence rate 8.8 percent. The median age at diagnosis was 6.6 years. The gender ratio was 3 female: 4 male. Two of these children had a borderline TSH for prolonged period before formally receiving a diagnosis of hypothyroidism, this ranged between 8 months and 45 months, the thyroid function was monitored every 6–12 months during this period. At the time of the initial raised TSH levels the TPO antibodies were normal and increasing to 997 and >1300. Two children have free T4 levels above the normal range (21) despite their TSH levels being above the local reference range and good compliance with medication. There was a rise in BMI at the time of diagnosis in six children (data not available for remaining children). Symptoms noted at diagnosis of thyroid disorder were weight gain, tiredness and sleep disturbance particularly in female patients. None of the children were recorded to have goitre. Two additional children were noted to have persistently raised TSH levels currently undergoing close monitoring, interestingly both these children have a slight rise in their TPO levels but less than 100 and a marginal increase in their BMI at the time of the initial rise in TSH levels, both sets of parents declined repeat serum thyroid testing within 1–5 days as recommended in the updated guidelines. There were no children diagnosed with hyperthyroidism or Graves' disease.

Conclusions Thyroid disorders in children who have Down syndrome appear to follow a more insidious course with

borderline or subclinical hypothyroidism being more commonly present than the general population. It is important to closely monitor the thyroid function to prevent additional disability. With the introduction of earlier thyroid surveillance at 4–6 months as per the updated DSMIG guidelines, it is important to undertake large-scale prospective population studies to evaluate the developmental outcomes in children with Down syndrome and subclinical hypothyroidism.

Quality Improvement and Patient Safety

1709

THE IMPACT OF COVID-19 ON PARENTAL EXPERIENCE IN A TERTIARY NEONATAL UNIT

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10.1136/archdischild-2021-rcpch.808

Background All neonatal units, have implemented policies designed to prevent the spread of COVID-19 infection. Parents of babies admitted to neonatal units have had to make adjustments to comply with such guidance and visiting restrictions. Only one parent could visit their baby at a time and they were required to wear a surgical mask while on the neonatal unit. On site parent accommodation was not available.

Objectives

1. To assess parental experience on a tertiary neonatal unit during the COVID-19 pandemic.
2. To determine if the support received was deemed adequate.
3. To identify ways to improve family experiences.

Methods Parents of babies who had been admitted to the neonatal unit for at least one week, were asked to complete a questionnaire regarding their experience during the Covid-19 pandemic. Parents of babies receiving palliative care were excluded from the study. One questionnaire was completed by each household. The questionnaire took into account guidance from RCPCH, BAPM and the charity Bliss. Data were collected prospectively over approximately six weeks between 25/6/20 to 5/8/20. The data was analysed using Microsoft excel software. Differences were assessed for statistical significance using the chi square test.

Results A total of 38 questionnaires were completed. Thirty four (89.5%) parents felt either quite involved or fully involved in caring for their babies (e.g. feeding, bathing, skin care, taking the temperature and changing their nappy), while four parents (10.5%) felt a little involved ($p < 0.05$). There were 21 parents (62%) out of 34, who stated that there was no impact on the amount of time they spent giving kangaroo care and 13 parents (38%) felt it had decreased as a result of the pandemic.

Most parents (70%) did not experience any effect on the time spent breast feeding. Twenty four (63%) parents expressed concern with the quality of time they were able to spend with their babies. Thirty one parents (97%) were moderately to very satisfied with the updates from the neonatal team ($p < 0.05$). Fifty percent of parents had no problems visiting their babies in hospital, while 50% found it difficult.

Parents, generally felt they received excellent care. Concerns were expressed over the visiting restrictions and the impact of this on bonding with their babies. Some parents believed that

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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10.1136/archdischild-2021-rcpch.809

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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10.1136/archdischild-2021-rcpch.810

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