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