Down Syndrome Medical Interest Group

1268

A RETROSPECTIVE STUDY OF COELIAC DISEASE SCREENING AMONG CHILDREN AND YOUNG PEOPLE WITH DOWN'S SYNDROME

¹James Church, ¹Beth Balint, ²Christo Benite, ¹Hemant Bhavsar. ¹University Hospitals of Leicester NHS Trust; ²University Hospitals of Leicester and Leicestershire Partnership NHS Trusts

10.1136/archdischild-2021-rcpch.521

Background Coeliac disease (CD) is an immune-mediated condition which develops in genetically susceptible individuals and is triggered by the ingestion of gluten. An estimated 1% of the UK population have CD. In persons with Trisomy 21 or Down's syndrome (DS), the lifetime prevalence of CD is significantly increased (5–12%). National guidance therefore recommends routine screening for CD among children and young people (CYP) with DS. This specifies an initial screen of HLA-DQ status, which need only be followed by subsequent tTG-IgA surveillance in HLA-DQ2 or HLA-DQ8 positive subjects.

Objectives We sought to determine the prevalence of CD among CYP with DS in our region and describe current screening practices in this at-risk group.

Methods Data were collected retrospectively from an active database of CYP diagnosed with DS being managed by the Leicester and Leicestershire Community Paediatrics service. Subjects were excluded if younger than six months or where electronic records were unavailable. Baseline characteristics and data on timing, frequency and tests used for coeliac screening were collected from electronic records and analysed using Microsoft Excel.

Results We identified 257 children with DS under active follow-up with the Leicester and Leicestershire Community Paediatrics service. Four were excluded (3 had no laboratory records and 1 was <6 months). Among 253 included children, there was a male preponderance (58% male) with age at time of survey ranging from 6 months to 21 years, mean (SD) 8.7 (4.8) years. At least one tTG-IgA result was available in 147 (58%) children. HLA typing had been performed in 9 (3.6%) children (8 with confirmed CD). Overall, CD was confirmed in 14 (5.5%) children. The mean age (SD) at diagnosis was 7.5 (3.8) years, 12 (85.7%) were symptomatic pre-diagnosis and 9 (64.3%) had tTG-IgA >128. Anti-endomysial antibodies were positive in 12/14 (85.7%) children. Overall, 106 (42%) children had neither a tTG-IgA nor HLA typing performed. Among the children without CD with available tTG-IgA results, 61/133 (45.9%) had a tTG-IgA result within the last 15 months. The mean (SD) frequency of tTG-IgA testing in those with at least one tTG-IgA was every 4.0 (4.8) years. Limitations to this study include the retrospective design.

Conclusions In this local cohort of 253 CYP with DS, CD prevalence was 5.5% in keeping with national trends. However, routine tTG-IgA surveillance was less frequent than is recommended, which risks missing detection of asymptomatic patients. The majority of CD confirmed cases were symptomatic prior to their diagnosis. Improved screening and earlier diagnosis of CD among CYP with DS may therefore help to reduce morbidity. In this community setting, testing of HLA-DQ status was not routinely practiced. Early knowledge of negative HLA-DQ2/8 status can reassure most parents that their children do not have a CD risk. This negates the need

for serial tTG-IgA testing in some CYP and is a more cost-effective strategy. We intend to disseminate these results locally with re-audit in two year's time.

Quality Improvement and Patient Safety

1269

COVID-19, LOCKDOWN 1.0, AND THE MOVE TO TELEMEDICINE: IMPACT ON GLYCATED HAEMOGLOBIN IN PAEDIATRIC DIABETES MELLITUS

Emily Armon-Drewett, Nivedita Aswani, Julie Smith, Tracy Tinklin. University Hospitals of Derby and Burton NHS Foundation Trust

10.1136/archdischild-2021-rcpch.522

Background Maintaining blood glucose levels within target is the cornerstone of diabetes mellitus management, reducing the risk of complications. Glycated haemoglobin (HbA1c) is the gold standard assessment, reflecting plasma glucose over 2–3 months. NICE guidance recommends four clinic attendances and HbA1c measurements per year, with a target of 48mmol/mol or lower. The National Paediatric Diabetes Audit showed a mean of 64.6mmol/mol in 2018/19. At a UK paediatric diabetes unit, face-to-face clinics (F2F) were converted to telephone appointments on 30/03/2020 due to the first COVID-19 UK lockdown. There was a phased return to F2F and HbA1c testing from June 2020.

Objectives To determine whether the COVID-19 pandemic and consequent national lockdown and move to telemedicine affected HbA1c levels in children with diabetes mellitus.

Methods HbA1c results were recorded throughout 2020, excluding those diagnosed in 2020. Each patient's final HbA1c in January-March before lockdown (Pre-LD) was compared to both their first HbA1c after lockdown (Post-LD) and the mean of all of their HbA1cs after lockdown (Av-Post-LD). Comparisons were analysed grouping patients by Pre-LD, which was assumed to be their baseline.

Results Of the 258 patients, 61 (23.64%) had no Pre-LD and 38 (14.73%) had no Post-LD, excluding them from further analysis. Numbers of F2F and HbA1c testing varied throughout the year; 92 tests were done in January, pre-pandemic, falling to 1 in April, peaking at 83 in September, dipping to 27 in December. Number of tests per patient post-lockdown varied from 1–5 (mean 1.45). When comparing results grouped by baseline, a correlation was seen (table 1).

Abstract 1269 Table 1 Comparison of average HbA1c(mmol/mol) pre- and post-lockdown grouped by baseline HbA1c

Group	Number of Subjects	Pre-LD (1)	Post-LD (2)	Av-Post-LD (3)	Improved 1–2	Improved 1–3	Improved 2–3
>69	38	86.67	76.94	76.49	Yes	Yes	Yes
64–69	25	65.69	61.82	61.07	Yes	Yes	Yes
58–63	44	60.14	58.31	59.78	Yes	Yes	No
53–57	23	55.35	54.23	54.63	Yes	Yes	No
48–52	18	50.51	52.25	52.59	No	No	No
<48	13	42.07	44.24	46.50	No	No	No

In the four groups with the highest initial HbA1c, improvements were seen when comparing Pre-LD to both Post-LD and Av-Post-LD, with the >69 group improving by 9.73mmol/mol and 10.18mmol/mol respectively. Only the two highest groups demonstrated a sustained improvement. In the two groups with the lowest initial HbA1c, a slight deterioration was seen when comparing Pre-LD to both Post-LD and Av-Post-LD, with a trend towards deterioration.

Conclusions Perhaps unsurprisingly, HbA1c testing fell during lockdown and never returned to pre-lockdown levels, highlighting the pandemic's disruption to the care of patients with long-term conditions. Contrary to guidance, 14.73% of patients were not tested in the nine months post-lockdown, potentially reflecting reluctance to attend hospital during the pandemic. Nevertheless, where results were available, lockdown seemed to have a positive impact on HbA1c despite the enforced use of telemedicine, unless the patient was already close to target. It is possible that lockdown provided more routine and parental supervision for those with initially high HbA1c but disrupted the successful routine and sporting activities of those initially closer to target.

British Paediatric Allergy Immunity and Infection Group

1272

DIAGNOSING EARLY-ONSET NEONATAL SEPSIS IN LOW-INCOME AND MIDDLE-INCOME COUNTRIES: DEVELOPMENT OF A MULTIVARIABLE PREDICTION MODEL FROM ROUTINE CLINICAL DATA

¹Samuel Neal, ²Hannah Gannon, ³Gwendoline Chimhini, ⁴Felicity Fitzgerald, ²Michelle Heys, ³Simbarashe Chimhuya, ²Mario Cortina-Borja. ¹UCL Great Ormond Street Institute of Child Health; ²Population, Policy and Practice Research and Teaching Department, UCL Great Ormond Street Institute of Child Health, University College London, London, UK; ³Department of Primary Healthcare Sciences, Paediatrics and Child Health Unit, Faculty of Medicine and Health Sciences, University of Zimbabwe, Zimbabwe; ⁴Infection, Immunity and Inflammation Research and Teaching Department, UCL Great Ormond Street Institute of Child Health, University College London, London, UK

10.1136/archdischild-2021-rcpch.523

Background Neonatal sepsis causes 15% of global neonatal deaths. Non-specific clinical features and unavailability of laboratory tests in many low-income and middle-income countries make it difficult to diagnose. Clinical prediction models could support timely, accurate diagnosis of neonatal sepsis and rationalise antibiotic usage. The NeoTree app is an Android-based quality improvement platform embedded into clinical practice at two neonatal units in Malawi and Zimbabwe. It combines evidence-based clinical decision support, education on neonatal care and immediate digital data capture.

Objectives We aimed to develop a clinical prediction model to diagnose neonatal sepsis with routine clinical data, without the need for laboratory tests.

Methods We analysed secondary data from an ongoing quality improvement project at the neonatal unit of Sally Mugabe Central Hospital, Zimbabwe, collected via the NeoTree app. We included neonates admitted from 1 February 2019 to 31 March 2020 aged <72 hours, born at $\geq 32^{+0}$ weeks with birth weight ≥ 1500 grams. We developed a clinical prediction model with multivariable logistic regression for the outcome of early-onset neonatal sepsis (EOS, <72 hours) as defined by

the treating consultant neonatologist. Candidate predictors were identified from expert opinion and literature review. Missing data were imputed using multivariate imputation with chained equations. We first fitted a 'full' main effects model containing all candidate predictors. We then examined several variations on the full model and selected the model favoured by the Bayesian information criterion. Performance was evaluated in the derivation cohort with the area under the receiver operating characteristic (ROC) curve (AUC) and sensitivity, specificity, predictive values and likelihood ratios at various thresholds of predicted probability.

Results We included 2627 neonates with mean gestational age 38.0 ± 2.5 weeks and mean birth weight 2889 ± 703 grams. EOS was diagnosed in 297 neonates (11.3%). The final model included eight predictors: maternal fever, foul-smelling liquor, prolonged rupture of membranes, neonatal temperature, respiratory rate, activity, chest retractions and grunting. ROC analysis gave AUC = 0.735 (95% confidence interval 0.699–0.771). For a sensitivity of 95 (92–97)%, corresponding specificity = 15 (13–16)%, positive predictive value = 12 (11–14)%, negative predictive value = 96 (93–98)%, positive likelihood ratio = 1.12, and negative likelihood ratio = 0.32.

Conclusions Our clinical prediction model for EOS achieved high sensitivity but with only modest specificity in the derivation cohort. This suggests our model may be best suited to ruling out a diagnosis of EOS, which may support healthcare workers' decisions to withhold antibiotics and prevent unnecessary antibiotic exposure in non-septic neonates. Future work will validate and refine this model before incorporating it into the NeoTree app for clinical use.

British Society of Paediatric Gastroenterology, Hepatology and Nutrition

1275

D LACTIC ACIDOSIS – IS IT MORE PREVALENT CONDITION THAN WE THINK?

Ruth Kwasba, Micheal Nwosu, Sunita Rajani, Zuzana Londt, Katie Green, Arun Urs. *Sheffield Childrens hospital*

10.1136/archdischild-2021-rcpch.524

Background D-lactic acidosis is a known complication in children with short bowel syndrome. The unabsorbed carbohydrates are fermented by colonic bacteria to form D-lactic acid among other organic acids. They typically present with episodic metabolic acidosis and characteristic neurologic abnormalities including confusion, ataxia and slurred speech. Routine clinical assessment of serum lactate covers only L-lactic acid; when clinical suspicion for D-lactic acidosis is high, special assays for D-lactic acid are needed. Standard treatment consists of restricting oral carbohydrates or fasting, correction of acidosis, and long-term suppression of pathogenic floras with antibiotics.

Objectives To create more awareness of D-lactic acidosis and promote early detection as well as more effective management.

Methods A retrospective case notes review with short bowel syndrome identified 3 children presenting with d-lactic acidosis over a 10-year period at tertiary care hospital.