Abstract
Recent reports have suggested that vitamin D deficiency (VDD) is increasing in prevalence in children in the UK\(^1\). However, there is extremely limited epidemiological data regarding the incidence of the various clinical manifestations of VDD (e.g., rickets, impaired growth, hypocalcaemic seizures and tetany, cardiomyopathy) in UK children\(^2,3\). Hypocalcaemic seizures represent one of the most severe complications of VDD, and literature is lacking regarding their incidence and clinical outcomes.

Vitamin D deficiency is preventable by simple dietary supplementation. However, current UK guidance regarding supplementation for pregnant women and children is inconsistent\(^4,5\), and it is thought that uptake of supplements in the population is low.

Using the BPSU national surveillance system we aim to investigate the incidence of hypocalcaemic seizures caused by vitamin D deficiency in children in the UK and Ireland, and describe the demographic characteristics of affected children. We will also investigate morbidity and mortality in affected children with follow-up questionnaires at one year. The study will contribute to our understanding of the epidemiology of profound vitamin D deficiency in children in the UK and Ireland, and help us to evaluate the effectiveness of current public health measures.

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Website
www.rcpch.ac.uk/bpsu-vitamin-D-deficiency

Coverage
United Kingdom and Republic of Ireland

Duration
September 2011 – September 2012 (13 months).

Research Questions
- To determine the incidence of hypocalcaemic seizures resulting from vitamin D deficiency (VDD) amongst children in the UK.
- To report the distribution of the condition by age, sex and ethnic group.
- To describe the prevalence of various factors known to influence the development of VDD (including infant feeding, vitamin D supplementation, dress) in affected children.
- To describe the levels of serum calcium and vitamin D observed in affected children.
- To report medium term outcomes (at 1 year) in affected children.
Case definition

Any child under 16 years of age who develops a suspected seizure* in the presence of BOTH of the following biochemical criteria:

1. Low serum corrected calcium: <2.0 mmol/L
2. Low serum 25-hydroxy vitamin D (25-OH-D) level: < 50 nmol/L (<20 ng/ml)

Excluding children with a history of a previous confirmed hypocalcaemic seizure due to vitamin D deficiency (prior to this presentation).

*Include cases where the event is felt to most likely represent a true seizure, as opposed to another paroxysmal event. A seizure can be defined as a paroxysmal, time-limited change in motor activity and/or behaviour that results from abnormal electrical activity in the brain.

Reporting instructions

Please report any child under 16 years of age who has had a first episode of a hypocalcaemic seizure secondary to vitamin D deficiency within the last month. Please report all suspected cases, even if the results of investigations are pending.

Methods

Paediatricians reporting a case through the BPSU orange card system will be sent a questionnaire which explores demographic and clinical information about the affected child. A postage paid return envelope will be enclosed with the questionnaire. A follow-up questionnaire will also be sent to reporting clinicians after one year, which explores medium term outcomes in the affected child.

Ethics approval

This study has been approved by the London Central Research Ethics Committee (Ref: 11/LO/0838) and by the National Information Governance Board (ECC/BPSU 6-02(FT7)/2011).

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References