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CHRONIC RECURRENT MULTIFOCAL OSTEOMYELITIS/CHRONIC NONBACTERIAL OSTEOMYELITIS (CRMO/CNO)

Abstract

Chronic recurrent multifocal osteomyelitis, also known as chronic nonbacterial osteomyelitis (CNO), is a rare autoinflammatory bone disease. It is characterised by bone pain and swelling. CRMO/CNO occurs primarily in children and teenagers [1]. There is a spectrum of severity with mild cases only requiring nonsteroidal anti-inflammatory drugs (NSAIDs) for disease control, compared to severe cases with serious complications such as vertebral fracture, who require multiple medications such as bisphosphonate and immunosuppressants.

Though first described over four decades ago [2], we still do not know how common CRMO/CNO is. Therefore, this study intends to determine the incidence of CRMO/CNO in the UK and the Republic of Ireland. We will also analyse the disease epidemiology, clinical features, how CRMO/CNO is managed currently, and one-year outcomes.

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Background

No national studies have been carried out to understand the epidemiology of CRMO/CNO in the UK and Ireland. The studies carried out so far [1, 3, 4] consist of descriptive patient cohorts, identified retrospectively from rheumatology clinics with information gathered from the medical notes. This introduces selection bias, and missing data problems. There have not been any prospective epidemiological studies, and we are therefore unclear about the disease burden of CRMO/CNO. There is also a delay to diagnosis due to under-recognition[3].

From this study, we want to know how common CRMO/CNO is, who is involved in their care and this will guide service planning. We also aim to promote awareness of CRMO/CNO among general paediatricians.

Coverage

United Kingdom and Republic of Ireland

Duration

October 2020 to October 2021 (13 months of surveillance) with a 12-month follow-up of reported cases.

Research Questions

- What is the incidence of CRMO/CNO in the UK and ROI?
- What are the usual presenting symptoms and signs of CRMO/CNO in the UK and the ROI?
- What investigations have been performed in terms of imaging modalities and/or bone biopsy
  to aid the diagnosis?
- What is the diagnostic interval between symptom onset (localised bone pain) and

formal diagnosis?
- What are the demographic features of children affected by CRMO/CNO, including age distribution, sex, ethnicity, geographical distribution and indices of deprivation?
- Which clinicians and allied health professionals are involved in the care of children with CRMO/CNO?
- How are these children treated, both at diagnosis and during the first year after diagnosis?
- What is the outcome of CRMO/CNO patients at 1 year after initial diagnosis in terms of function and use of medications?

Case definition

Children and young people up to but not including the age of 16 years with a new diagnosis of possible CRMO/CNO, namely those who have the following features:

- The presence of localised bone pain, which could be single site or multiple sites

AND

- The presence of typical radiological findings on plain X-ray (examples include: lysis, sclerosis, cortical thickening or periosteal reaction) or on MRI (examples include: bone marrow oedema on fluid sensitive sequences, or periostitis (periosteal inflammation))

AND

- The treating clinician has determined that the clinical features are not explained by an alternative diagnosis e.g. trauma, infection or neoplasm

Reporting instructions

Please report children/young people up to the age of 16 years with new diagnosis of possible CRMO/CNO in the last month.

Methods

Paediatricians reporting a child who meets the above case definition will be contacted with a questionnaire. The questionnaire will cover patient's demographic details, clinical presentation, investigations and management. Twelve months after initial case identification, a second follow-up questionnaire will be sent.

Throughout the study, the affected children and families will not be contacted directly by the study team. All patient data will be dealt with in strict confidence.

Ethics approval

This study has been approved by London - Central Research Ethics Committee (REC reference: 20/LO/0195) and has been granted Section 251 HRA-CAG permission (CAG Reference: 20/CAG/0029).

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