

BRITISH PAEDIATRIC SURVEILLANCE UNIT

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Enterovirus and Parechovirus meningitis in infants <90 days of age

(Short Study Name: Enterovirus and Parechovirus meningitis)

Abstract

Approximately 85% of childhood meningitis in the conjugate vaccine era are due to enteroviruses and Human Parechoviruses (HPeV). Young infants are particularly susceptible to enteroviral and HPeV meningitis and often present with non-specific symptoms which are difficult to differentiate from serious bacterial infections. Real-time PCR is becoming increasingly available and it is anticipated that more cases will be diagnosed in the coming years.

There are, however very limited data on the incidence, clinical features, sequelae and outcome of infants with meningitis as a result of these viruses. Furthermore, there is no data linking the molecular subtypes of enteroviruses and HPeV currently circulating in the UK and Ireland with clinical severity, laboratory markers or outcomes. No specific antiviral treatments are licenced or in the immediate pipeline to treat these important viruses.

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Background

Enterovirus and Parechovirus (HPeV) meningitis accounts for the overwhelming majority of infant meningitis cases in highly immunised populations. However, the incidence, clinical features and outcomes are poorly understood. Moreover, no antiviral therapies or vaccines are currently available. Knowledge of the current epidemiology and management of enterovirus and HPeV meningitis in this age group is needed to allow prioritisation and development of new strategies.

Coverage	United Kingdom and the Republic of Ireland
Duration	July 2014 – July 2015 (13 months surveillance) with a 12 month follow-up
Research Questions	<p>In infants aged <90 days in the UK and Ireland, this study will aim to:</p> <p>Primary Aims</p> <ul style="list-style-type: none"> • Describe the clinical burden (rate of hospitalisation including NICU/PICU admission) of enterovirus (EV) and parechovirus (HPeV) meningitis <p>Secondary Aims</p> <ul style="list-style-type: none"> • Describe the clinical presentation, laboratory features (haematological, liver function, renal function, clotting factors, inflammatory markers and strain types), as well as complications and outcome at hospital discharge • Describe the severity of clinical disease, complications and outcome at discharge and any associations with EV and HPeV molecular subtypes and viral loads • Describe the investigation and management of EV/HPeV meningitis (method and sample type at diagnosis; timing of diagnosis; place of treatment; medication used; follow-up) • Describe the treatments used • Describe outcome of EV/HPeV meningitis at 12-months using a follow-up questionnaire
Case Definition	<p>Any infant aged less than 90 days old with clinical symptoms of meningitis* AND laboratory confirmation of enterovirus or parechovirus from any site**</p> <p style="padding-left: 40px;">* fever (≥ 38 degrees Celsius), coma, seizures, neck stiffness, apnoea, bulging fontanelle, irritability, lethargy, poor feeding</p> <p style="padding-left: 40px;">**CSF, blood, throat, stool, peri-anal swab</p>
Reporting instructions	Please report any baby seen in the last month who meets the case definition in the UK or the Republic of Ireland from 01 July 2014 regardless of country of birth.
Methods	Paediatricians reporting a case through the orange card system will be asked to complete a questionnaire, which requests demographic and clinical information about the infant and mother.
Funding	Paediatric Infectious Diseases Research Group, St George's University of London
Support Group	Meningitis Now and Meningitis Research Foundation.
Ethics approval	This study has been approved by the NRES Committee London - Queen Square (Ref: 14/LO/0229). Public Health England has approval under Section 251 of the NHS Act 2006 to process confidential patient information for public health purposes (see http://www.legislation.hmso.gov.uk/si/si2002/20021438.htm).
References	<ul style="list-style-type: none"> • Berlin LE, Rorabaugh ML, Heldrich F Aseptic meningitis in infants < 2 years of age: diagnosis and etiology. The Journal of infectious diseases. 1993;168(4):888-92. • Rotbart HA. Enteroviral infections of the central nervous system. Clin Infect Dis. 1995;20(4):971-81 • Harvala H, Wolthers KC, Simmonds P Parechoviruses in children: understanding a new infection Curr Opin Infect Dis. 2010 ;23(3):224-30