Enterovirus- and parechovirus infection in Dutch children: epidemiology, diagnosis and prognosis

Published: 10-03-2008
Last updated: 15-05-2024

Primary objectives:(1) To describe the incidence of EV and HPeV infections in Dutch children(2) To determine the major symptoms of EV/HPeV infections in children(3) To evaluate the epidemiology and symptoms of the different subtypes of EV and HPeV(4...

Ethical review	Approved WMO
Status	Recruiting
Health condition type	Viral infectious disorders
Study type	Observational invasive

Summary

ID

NL-OMON31728

Source
ToetsingOnline

Brief title
Enterovirus- and parechovirus infection in children

Condition

- Viral infectious disorders

Synonym
common viral infection of the digestive system, Enterovirus infection

Research involving
Human

Sponsors and support

Primary sponsor: Sint Elisabeth Ziekenhuis
Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Children, Diagnosis, Enterovirus, Prognosis

Outcome measures

Primary outcome

- Specific clinical symptoms in patients with proven EV or HPeV infection

- Different laboratory diagnostic methods: viral culture, PCR and serology

- Several body fluids: feces, urine, throat swab, blood, and eventually CSF

- Developmental milestones of children after an EV/HPeV CNS infection

Secondary outcome

- Morbidity due to EV/HPeV infection (hospitalization, duration of hospitalization, duration and severity of symptoms, average school- and work absence, duration use of antibiotics)

- Antibiotic treatment of patients (antibiotics, stop of antibiotics after diagnosis of EV or HPeV infection)

Study description

Background summary

Enterovirus (EV), a picornavirus, is a common cause of infection in children. The incidence of EV infection in Dutch children is not exactly known. There is no official registration. EVs cause a broad range of clinical syndromes from gastro-enteritis to meningitis. The clinical presentation changes between the several subtypes. Human Parechovirus (HPeV), also a member of the Picornaviridae, is recently identified, and is associated with similar symptoms as EV infection. EV and HPeV can be diagnosed with viral cultures, reverse transcription polymerase chain reaction (PCR) of feces, urine, throat swab, blood or cerebrospinal fluid (CSF) or with serology. Hypotheses:
(1) EVs are one of the most important viral agents of infection in Dutch children
(2) EVs are the major cause of meningitis in Dutch children

(3) PCR is more sensitive than viral culture and serology in the detection of EV and HPeV infection in children
(4) HPeV is a major cause of serious infection in younger children (<=2 year) with psychomotoric and cognitive develop deficiencies

Study objective

Primary objectives:
(1) To describe the incidence of EV and HPeV infections in Dutch children
(2) To determine the major symptoms of EV/HPeV infections in children
(3) To evaluate the epidemiology and symptoms of the different subtypes of EV and HPeV
(4) To compare the sensitivity and specificity of different laboratory techniques to detect EV or HPeV during infection: viral culture, PCR and serology
(5) To determine the sensitivity and specificity of the different body fluids in diagnosis of EV or HPeV infection: feces, urine, throat swab, blood, CSF
(6) To determine the sequelae after an EV/HPeV central nervous system (CNS) infection till 5 years after infection

Secundary objectives:
(1) To describe the morbidity of EV and HPeV infection (hospitalization, duration of hospitalization, duration and severity of symptoms, average school- and work absence, duration use of antibiotics)
(2) To evaluate the use of antibiotics before and after the diagnosis

Study design

Observational multicenter study with nested case-control follow-up study. To identify EV or HPeV infection we will examine feces, urine, throat swab, blood and CSF. The definition of cases and controle in the follow-up study is as follows:
Cases: Children with an CNS infection with EN/HPeV, proven with EV/HPeV in liquor (meningitis or encephalitis)
Control group 1: No EV/HPeV meningitis, however EV/HPeV positivity in feces, urine, throat swab or blood
Control group 2: No EV/HPeV or other viral (or bacterial) infection proven
Approximately 2 weeks after the infection, the patient will be invited for check-up for a standardized questionnaire, physical examination and for the second vena puncture. The further follow-up will consist of taking standardized questionnaires and developmental and cognitive tests at 6, 12, 24 and 60 months after the infection.

Study burden and risks

- 1 extra vena puncture for blood sample (2ml) for convalescent serological test 15 days after the begin of the infection. This is routineprocedure with no extra risk involved and will be coupled with the check-up visit by the paediatrician.
- 4 follow up visits at 6, 12, 24 and 60 months after infection for standardized questionnaire, physical examination and developmental tests (m-ABC/ BSID-II).
- Duration: 75 minutes
- Study with minors: burden and risks are extremely minimal. The laboratory tests are routine acts. The follow-up studies are not invasive. Study with minors because especially very young children can become very ill from an EV or HPeV infection.

Contacts

Public
Sint Elisabeth Ziekenhuis

Hilvarenbeekseweg 60
5022 GC Tilburg
NL
Scientific
Sint Elisabeth Ziekenhuis

Hilvarenbeekseweg 60
5022 GC Tilburg
NL

Trial sites

Listed location countries

Netherlands

Eligibility criteria

Age
Adolescents (12-15 years)
Adolescents (16-17 years)
Children (2-11 years)

Inclusion criteria

A + B are required;A. All Children <= 16 years of age with a clinical suspicion of an EV/HPeV infection:
1. Fever (temperature >=38,0°C)
2. Meningeal inflammation: (anamnestic or with examination at least 2 of the following: headache, photophobia, nuchal rigidity, irritability, lethargy, nausea, vomiting, drowsiness, positive sign of Kernig or Brudzinsky) OR
3. At least 3 of the following: hypothermia, headache, drowsiness, nuchal rigidity, irritability, photofobia, vomiting, diarrhea, anorexia, couhing, myalgia, rash OR
4. Sepsis: Clinical suspicion of an infection plus:
- temperature >38,5°C of < 36°C rectal or oral
- tachycardia: heart rate > 2 SD for age OR children < 1 year with a bradycardia: heart rate < 2 SD for age
- tachypnea: breathing rate> 2 SD for age ;B. Signed informed consent by the parent(s)/legal guardian(s)

Exclusion criteria

- Other proven cause of the infection: positive bacterial, viral (other than EV/HPeV), parasitic or fungal/yeast culture or PCR (feces, urine, throat swab, blood, CSF).
- Other causes of illness: neoplasma, auto-immune diseases, rheumatic diseases, endocrinologic diseases, gastrooesophageal reflux, etcetera
- Known psycho-motor retardation, metabolic diseases with neuro-muscular or cognitive abnormalities
- Patients older than 16 years of age
- No signed informed consent from the parent(s)/ legal Guardian(s)

Study design

Design

Study type:	Observational invasive
Intervention model:	Other
Allocation:	Non-randomized controlled trial
Masking:	Open (masking not used)
Control:	Active
Primary purpose:	Diagnostic

Recruitment

NL

Recruitment status:	Recruiting
Start date (anticipated):	18-03-2008
Enrollment:	240
Type:	Actual

Medical products/devices used

Registration:	No

Ethics review

Approved WMO Date:	10-03-2008
Application type:	First submission
Review commission:	METC Brabant (Tilburg)
Approved WMO Date:	28-10-2014
Application type:	Amendment
Review commission:	METC St Elisabeth Ziekenhuis (Tilburg)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

Other (possibly less up-to-date) registrations in this register

ID: 20807
Source: NTR
Title:

In other registers

Register	ID
CCMO	NL21361.008.07
OMON	NL-OMON20807