Studies into the mechanism of measles-associated immune suppression during an outbreak of measles in The Netherlands

Published: 11-07-2013
Last updated: 22-04-2024

Objective: Using an animal model for measles, we have recently developed a hypothesis to explain the mechanism of measles immune suppression (De Vries et al., PLoS Pathogens 8:e1002885, 2012). We hypothesize that MV causes massive infection and...

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

Summary

ID

NL-OMON38941

Source
ToetsingOnline

Brief title
How does measles cause immune suppression?

Condition

- Viral infectious disorders

Synonym
Measles (Rubeola)

Research involving
Human

Sponsors and support

Primary sponsor: Erasmus MC, Universitair Medisch Centrum Rotterdam

Source(s) of monetary or material Support: Ministerie van OC&W

Intervention

Keyword: Immunosuppression, Measles, Outbreak, Virus

Outcome measures

Primary outcome

Main study parameters/endpoints: The study consists of two cohorts. In cohort A clinical specimens (a blood sample and swabs of the upper respiratory tract) will be collected from children with an acute MV infection, shortly before, at or after onset of rash. The main study parameter in this group will be the characterization of MV-infected lymphocytes in peripheral blood, in order to confirm that the virus predominantly infects memory T- and B-lymphocytes. In cohort B blood samples will be collected from children that have not yet been exposed to MV. A second blood sample will be collected two to three weeks after recovery from measles. The main study parameter in this group will be the quantification of pre-existing memory lymphocyte populations in peripheral blood, to test the hypothesis that these cell populations are decimated during measles.

Secondary outcome

As a secondary objective, we will try to validate and translate observations from our animal model studies to natural measles virus infections in children. To this end, we will measure hematological, virological and immunological parameters in white blood cells, plasma and swabs of the upper respiratory tract.

Study description

Background summary

Rationale: Measles remains an important vaccine-preventable cause of morbidity and mortality. It was estimated that in 2010 the disease was responsible for 139,000 fatal cases world-wide. Hallmark of the disease is a transient but severe immune suppression, which results in increased susceptibility to opportunistic infections. In the Netherlands, children are usually vaccinated against measles at the ages of 14 months and 9 years. However, a group of socio-geographically clustered orthodox Protestants refuses vaccination on religious grounds. As a result, outbreaks of infectious diseases are repeatedly observed in this community. The last measles outbreak occurred in 1999/2000, and a new outbreak has started in June 2013.

Study objective

Objective: Using an animal model for measles, we have recently developed a hypothesis to explain the mechanism of measles immune suppression (De Vries et al., PLoS Pathogens 8:e1002885, 2012). We hypothesize that MV causes massive infection and subsequent depletion of memory lymphocytes, and thus largely wipes out immunological memory. The objective of the current study is to validate this hypothesis in naturally infected measles patients: we will verify if MV predominantly infects memory lymphocytes, and if this results in depletion of pre-existing memory lymphocytes.

Study design

Study design: Observational cohort study

Study burden and risks

The burden is minimal: subjects will either undergo a single collection of throat swab, nose swab and blood sample during the acute phase of the disease, or collection of two blood samples before and after measles. Furthermore, the collection of patient data is minimal: gender, age (in months), number of siblings and the day of onset of rash (in days relative to the moment of sample collection). The risk associated with the performed procedures is negligable: small risk of fainting, developing bruises on the blood collection spot or developing a nose bleed after swabbing.

Contacts

Public
Erasmus MC, Universitair Medisch Centrum Rotterdam

's-Gravendijkwal 230
Rotterdam 3015 CE
AF
Scientific
Erasmus MC, Universitair Medisch Centrum Rotterdam

's-Gravendijkwal 230
Rotterdam 3015 CE
AF

Trial sites

Listed location countries

Netherlands

Eligibility criteria

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

Inclusion criteria

In order to be eligible to participate in this study, a subject must meet all of the following criteria:
- Aged 4-17 years old
- Unvaccinated against measles
- No known history of natural measles

Exclusion criteria

- Chronic disease
- Immune suppression (due to medication or underlying disease)

Study design

Design

Study type: Observational invasive

Masking:	Open (masking not used)
Control:	Uncontrolled
Primary purpose:	Other

Recruitment

NL

Recruitment status:	Recruitment stopped
Start date (anticipated):	16-07-2013
Enrollment:	200
Type:	Actual

Ethics review

Approved WMO

Date:	11-07-2013
Application type:	First submission
Review commission:	METC Erasmus MC, Universitair Medisch Centrum Rotterdam (Rotterdam)

Study registrations

Followed up by the following (possibly more current) registration

No registrations found.

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

No registrations found.

In other registers

Register	ID
CCMO	NL45323.078.13