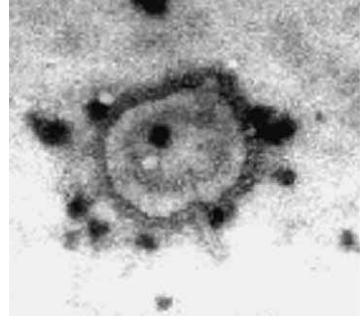


Measles



Measles

The disease ranks as the number one killer of young children in the majority of developing countries. Annually 50 million individuals are affected and almost one million deaths are reported due to measles in developing countries. It is a highly contagious disease, transmitted through aerosol and droplets.

Clinical features

- The incubation period is 10-12 days and the child develops respiratory symptoms.
- Within 2-3 days, the symptoms increase intensively and include high fever, cough, conjunctivitis and maculopapular rash.
- Koplik spots, gray patches appear on the buccal mucosa before rash.
- Rash first appears on the forehead and behind the ears, then spreads all over the body and disappears by the tenth day of the illness.

Diarrhea, pneumonia, laryngotracheo-bronchitis, otitis media, vitamin A deficiency (leading to corneal ulceration and blindness). Acute encephalitis and stomatitis are other complications. Subacute sclerosing pan encephalitis (SSPE) is another important disease caused by measles virus infection.

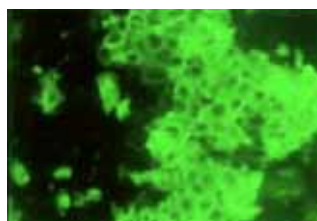
Diagnosis

Serology

- ELISA for IgM and IgG antibodies
- HI test
- Neutralization test

Virus detection

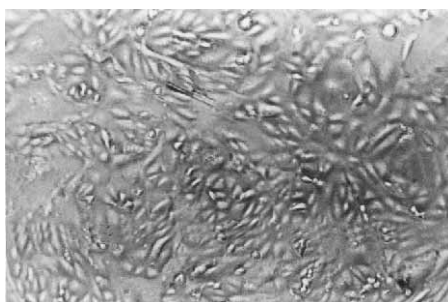
- Virus isolation - Vero and B95a cell lines.
- Immunofluorescence



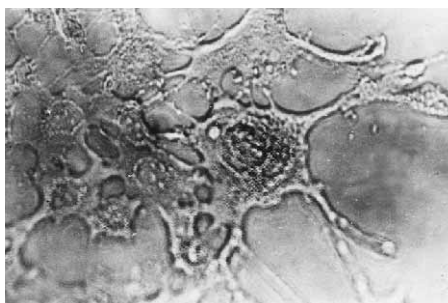
Immunofluorescence in infected cells

Genomic detection

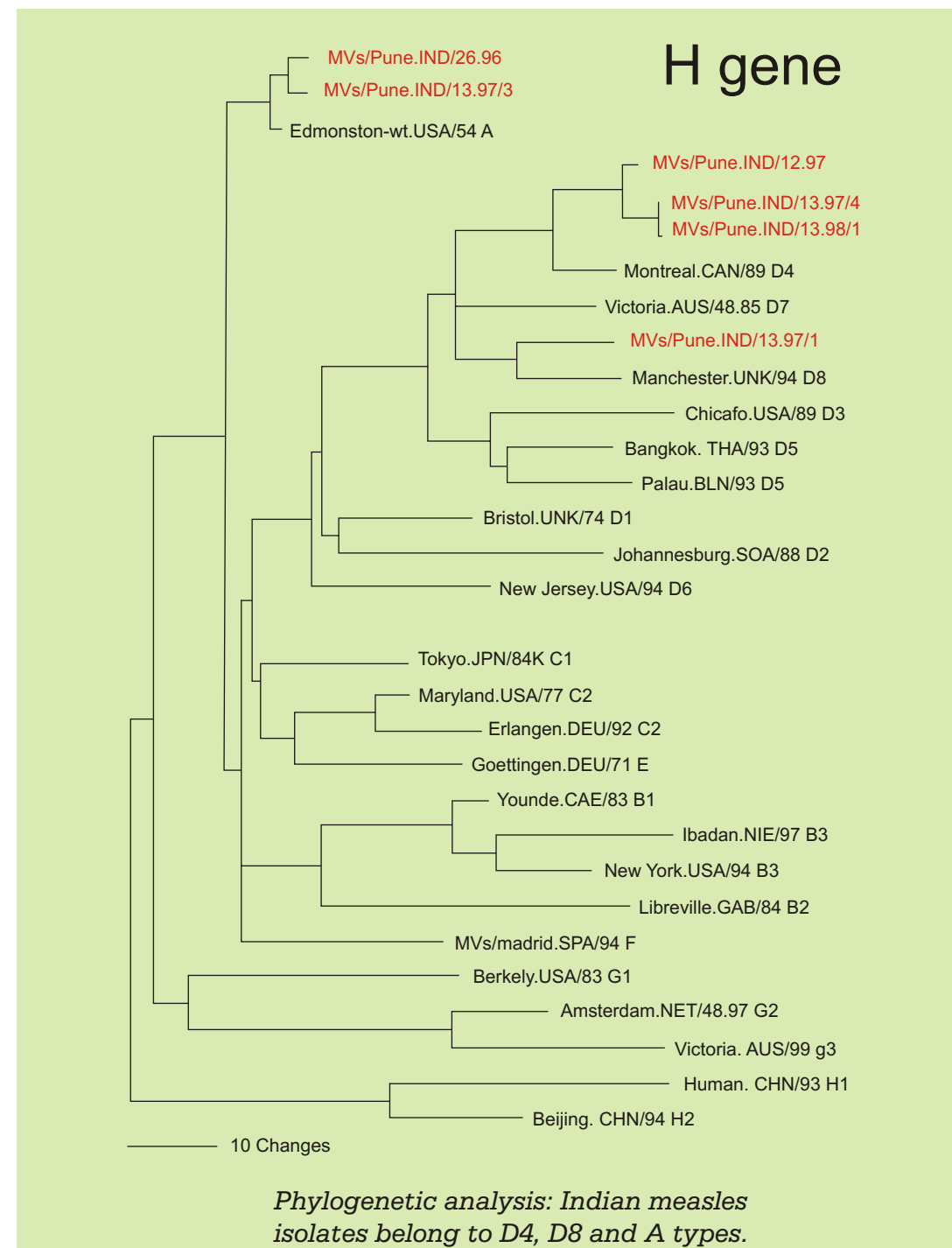
RT-PCR and sequencing



Normal cells



Infected cells showing CPE



Genotyping of Indian isolates

NIV has isolated 48 strains of measles virus in India. Molecular genotyping shows that genotype D4, D8 and A are circulating in India.

Vaccine trials

Edmonston Zagreb (EZ) measles vaccine manufactured by Serum Institute of India, Pune (SII) was tested in Pune in children below two years of age for determining seroconversion rate and reactogenicity, if any.

- Five hundred and twenty seven children from 7 months to 2 years, immunized and followed up to day 30-post vaccination.
- Seroconversion in 98.4% antibody naive children.
- Boosting of antibodies in 68.5% children with pre-existing antibodies.
- Minor adverse events in 5/527 subjects. Symptoms such as high fever, diarrhea, rash and local indurations noticed.
- The vaccine found to be safe and immunogenic.
- Another trial included SII, Schwarz and Edmonston Zagreb vaccines.
- Seroconversion with SII vaccine (98.4%), Schwarz vaccine (93.4%) and EZ (93%) was observed.
- Sero conversion with SII vaccine 100% below nine months of age, while for Schwarz and EZ it was 71.5%.
- No adverse event reported.

Measles aerosol vaccine project

Since current injectable route of measles immunization poses problems for effective vaccine delivery in public health Settings, WHO-ICMR has initiated search by aerosol route of delivery. NIV is participating in WHO-ICMR measles vaccine trial by aerosol route. Availability of aerosol vaccine will facilitate mass immunisation campaign for measles eradication.

Development of ELISA

Indirect IgM and IgG ELISAs were developed and standardized locally.

Treatment

No specific antiviral treatment; Ribavirin inhibits replication in vitro and reduces severity in patients. High doses of vitamin A prevent blindness.

Vaccine

NIV will be participating in aerosol measles vaccine trial.