

A CLUSTER OF MEASLES CASES IN DENMARK FOLLOWING IMPORTATION, JANUARY AND FEBRUARY 2008

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Five cases of measles were reported to the Department of Epidemiology in Denmark between mid-January and early February, 2008. The cluster involved four adults aged between 23 and 39 years and an infant. All cases resided in the greater Copenhagen area. Three cases were unvaccinated, one was vaccinated with two doses, and in one case the vaccination status is not yet known.

The index case was a 23-year-old unvaccinated man who developed a rash on 12 January 2008, nine days after his return to Denmark after travelling to Nepal and India. The following four cases were a 24-year-old woman, a 10-month-old girl, a 26-year-old woman and a 39-year-old man with onset of rash on 1 February. The second case was the girlfriend of the index case. Two cases are believed to have been infected from the index case while at the waiting room of two different general practitioners' practices and another one in the hospital to which the index case was admitted.

All cases were laboratory-confirmed by serology. Furthermore, the measles virus has been detected by PCR and identified as genotype D4 in all cases.

Control measures

The measures taken so far to control the outbreak included the following:

- Immediate follow-up of possible cases by the Medical Office of Health in Copenhagen to identify contacts and the need for prophylactic measures: administration of immunoglobulin and the combined measles, mumps and rubella (MMR) vaccine. Immunoglobulin is recommended to all those above the age of four months within six days of exposure to a measles case. MMR vaccination is recommended within 72 hours following exposure [1]. The investigation did not identify any cases that required post-exposure prophylaxis.
- Increased awareness of the importance of isolating patients and immunising hospital staff in the main hospital in Copenhagen to which the index case and two of the contacts had been admitted.
- The Medical Office of Health in Copenhagen issued a notice to all general practitioners, paediatric wards, departments of infectious diseases and emergency medical services in Copenhagen informing them of the newly diagnosed measles cases.

A day-care/parents' centre and possible contacts were also informed about the cases and the symptoms of the disease. In cases of suspected measles infection, they were asked to first contact general practitioners and emergency medical services by telephone, if possible, so that the appropriate

arrangements could be made to minimise the risk of nosocomial transmission.

- The cluster was described in the national epidemiological bulletin EPI-NEWS to inform general practitioners across the country and to highlight the importance of increasing the vaccination coverage with the MMR vaccine [2].

Discussion

This outbreak shows marked similarities to one reported from central Italy in 2006 that was caused by the measles virus genotype D4 following the index case's return from India [3]. In the ensuing outbreak that mainly affected young adults, nosocomial transmission also played a part in the spread of infection. Genotype D4 is endemic in both India and Nepal [4], which the index case had visited prior to onset of his illness. The prompt laboratory investigation, including the molecular characterisation of these cases, has been useful in confirming them and in identifying measles virus importation from abroad. Rigorous case investigation and laboratory testing, including identification of genotypes, are a necessary component of the measles elimination plan by 2010 [5].

Molecular characterisation has proven very useful in documenting the interruption of endemic measles transmission in Denmark in 2006, when 27 cases were reported and four different genotypes were identified [6]. In that year, two variants of the measles virus genotype D4 that had been imported from Pakistan and Lebanon were identified. The D4 genotype of this cluster is identical to one that has been found in India (GenBank: MVs/Satara. IND/15.05/1).

The high proportion of young adults among the cases reflects a surprisingly low exposure of this age group to the virus even before the national MMR childhood vaccination programme was introduced. In Denmark, MMR vaccination was introduced into the national childhood vaccination schedule in 1987 [7]. Since then, the vaccine has been recommended to all those born after 1974 and is available free of charge to those under the age of 18 years [8,9]. The schedule recommends the first MMR vaccination at 15 months and the second dose at 12 years. However, from 1 April 2008, the age for the second dose will be lowered to four years [2]. Since 2006, MMR vaccination has also been recommended as a pre-travel vaccine to unvaccinated travellers without a history of the disease who are visiting measles-endemic countries and areas in which measles outbreaks are known to occur. The same recommendation extends to children over nine months [8].

This cluster, although small, shows that pools of individuals susceptible to measles infection still exist in Denmark and are brought to light when the measles virus is imported from abroad. The cluster also highlights the role of nosocomial transmission in the spread of infection. Nosocomial transmission of measles virus has also recently been described elsewhere [10,11]. This should raise the awareness of the spread of infection and the potential for serious complications in infants and adults and particularly in immunodeficient patients. It also shows the importance for healthcare workers to be fully vaccinated against measles if they have no history of the disease. The age distribution of the cases in this cluster shows the vulnerability of unvaccinated adults without a history of the disease. Therefore, a higher index of suspicion of measles is required in adults who present with a rash in a known outbreak setting or who have a history of travel to areas endemic for measles.

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