Original Articles

Outbreak report

Measles outbreak in the Provence - Alpes - Côte d'Azur region, France, January – July 2003

C Six [1], F Franke [1], K Mantey [1,2], C Zandotti [3], F Freymuth [4], F Wild [5], I Parent du Châtelet [6], P Malfait [1]

At the end of May 2003, the Marseilles Hospital Centre's virology laboratory informed the French public heath institute of 5 cases of confirmed measles among young adults living in Marseilles. An investigation was conducted, consulting different community and hospital health services, to determine the virus circulation in the Provence-Alpes-Côte d'Azur (PACA) region by the southern interregional epidemiological cell. The investigation identified 259 cases: 183 clinical, 74 serologically confirmed and 2 epidemiologically linked cases. The first cases were identified during the first six months of 2003, with a peak in April. This outbreak of measles in the PACA region was favoured by poor vaccination coverage, which created groups of susceptible population. The real number of cases was probably higher than the number identified. This investigation has outlined the limitations of the measles surveillance system in France: the sentinel network had not detected any case for this period. France needs to reach the WHO objective of measles elimination by 2010 and the surveillance tools used must be those already used in the most countries that are furthest advanced in the elimination process. To reach this goal, the Direction Générale de la Santé has nominated a working group to be in charge of proposing a national plan to interrupt indigenous measles transmission in France.

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Key words: disease outbreak, elimination, measles, vaccination

Introduction

Measles was a notifiable disease in France from 1945-1985. Since 1985, a sentinel surveillance network known as "Sentinelles", created by National Institute for Health and Medical Research (INSERM U444), has reported the number of cases each week declared by voluntary general practitioners (GPs). Extrapolation of data obtained from this sentinel network allows the determination of the national incidence, which fell from 300 000 cases per year in 1985 to less than 10 400 cases in 2003 (IC 95%: 6000-15 000). Since 1985, a shift in the age of measles cases has been noted through the sentinel network: the proportion of patients aged 10 years and above was 13% in 1985, 48% in 1997 and 62% in 2002 [1].

In 2001, childhood vaccine coverage against measles in France was estimated to be 84.6% at 24 months, with some differences between the different district areas. The south of France had the lowest coverage [2]. In the region of Provence-Alpes-Côte d'Azur (PACA), the coverage rate by district was 84% in the Alpes-Maritimes, 82% in the Bouches-du-Rhône and Var, 76% in Vaucluse and 59% in the Alpes-de-Haute-Provence. No data was available for the Hautes-Alpes.

In order to apply the World Health Organization (WHO) objectives, France, along with other European countries, has applied a policy of interruption of indigenous measles transmission. This target must be effective by 2010 [3]. However, epidemiological conditions in France are still favourable to the occurrence of outbreaks in high risk population groups for example non-vaccinated children. Outbreaks of measles attributed to inadequate vaccination coverage occurred in Italy, in 2002 with 1571 cases reported in Campania (12 encephalitis cases and 3 child deaths) [4] and in Switzerland, in 2003 with 464 cases reported (3 encephalitis cases) [5].

At the end of May 2003, the Marseilles Hospital Centre's virology laboratory (La Timone) informed the French public heath institute (Institut de Veille Sanitaire, InVS) of 5 cases of confirmed measles in young adults living in Marseilles. An investigation was conducted to determine the measures to be taken, especially in relation to vaccination programmes, and to document the virus circulation in the PACA region by the Cellule Inter-Régionale d'Épidémiologie Sud (south interregional epidemiological cell, Cire Sud), who coordinated this investigation [6].

Methods

The measles investigation [7], which was conducted between 20 May and end of July 2003, consisted of the following steps:

- A response to the alert of the La Timone Hospital virology laboratory with individual case-patient interview (begun 20 May 2003)
- Active case-finding of other measles cases in Marseilles and in neighbouring cities by consulting different community and hospital health services: hospitals (community and private), Conseil Général, hygiene and health community department (City of Marseilles), SOS Médecins, Médecins du Monde, school medical services, etc. (begun 29May 2003)
- A retrospective review of serologically confirmed measles cases in the PACA region from January 2003 by actively contacting the 3 main laboratories in France performing anti-measles IgM determination (begun 2 June 2003)
- A feasibility survey of prospective surveillance of measles among GPs located only in the main cities (restriction due to logistic reasons) of the region where the virus circulation was active (Marseilles, Avignon, Digne-les-Bains) (begun 19 June 2003) [6]
- A retrospective survey among GPs (homeopathic practitioners included) and paediatricians, in an area located between Manosque and Digne, where several cases were reported (begun 27 June 2003).

Definition of the cases

Three definition levels were used to classify the cases:

- Clinical case: when measles diagnosis has been made by a GP;
- Serologically confirmed case: when measles specific IgM serology was positive;
- Epidemiologically confirmed case: clinical case who contact with a serologically confirmed case between 7 and 18 days before clinical symptoms appeared.

Data collection

The following variables were collected for each patient: sex, age, location, date of the first serology for the serologically confirmed cases or date of the clinical diagnosis, admission to hospital, complications, vaccination status and reasons for non-vaccination.

1. Cellule interrégionale d'épidémiologie Sud (Cire Sud), Marseille, France
2. Programme de formation à l'épidémiologie de terrain, Cellule interrégionale d'épidémiologie Sud (Cire Sud), Marseille, France
3. Laboratoire de virologie de la Timone, Marseille, France
4. Laboratoire de virologie du CHU Clémenceau de Caen, CNR associé, France
5. Centre national de référence de la Rougeole, France
6. Institut de Veille Sanitaire (InVS, département des maladies infectieuses), Saint-Maurice, France

Laboratory investigations

Serological analysis (measles specific IgM) was carried out on patients' blood samples. Urinary and saliva samples were tested for measles virus by genetic amplification using reverse transcription-polymerase chain reaction (RT-PCR).

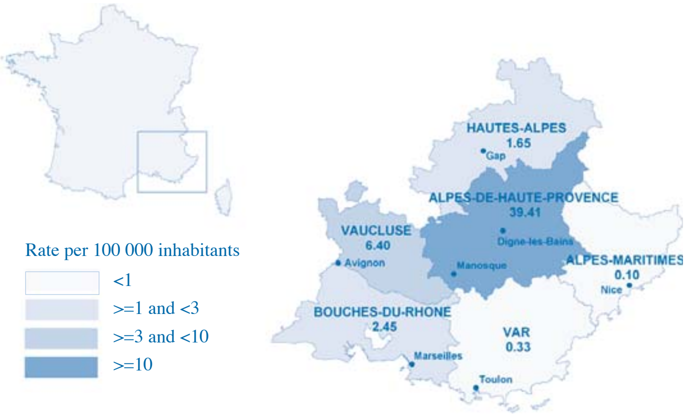
Results

Number of cases

The different steps of investigation identified 259 cases: 183 (71%) clinical cases, 74 (28%) serologically confirmed and 2 (1%) epidemiologically linked. The case detection rate in the PACA region was 3.1 per 100 000 inhabitants. The highest number of cases was identified in Alpes-de-Haute-Provence with a rate of 39.4 cases per 100 000 inhabitants, then Vaucluse (6.4) and Bouches-du-Rhône (2.5) [FIGURE 1].

FIGURE 1

Detected cases rate of measles per 100 000 inhabitants per district, PACA region, January - July 2003



Information concerning 138 cases was collected from medical practitioners (documented cases).

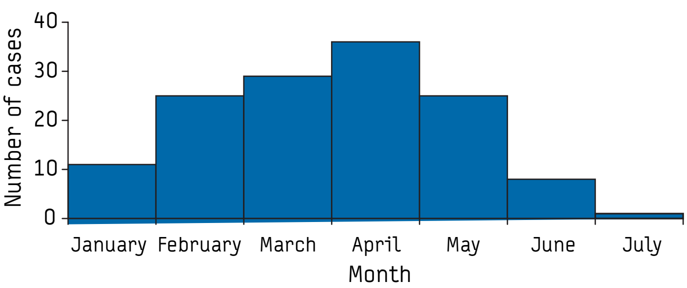
No measles cases were identified through the sentinel system for the period under study.

Characteristics of the documented cases

The first cases were identified during the first week of January and the last notified case appeared in July, with a peak in April [FIGURE 2]. Three district areas accounted for 96% of identified measles cases: Alpes-de-Haute-Provence (40%), Bouches-du-Rhône (33%) and Vaucluse (23%).

FIGURE 2

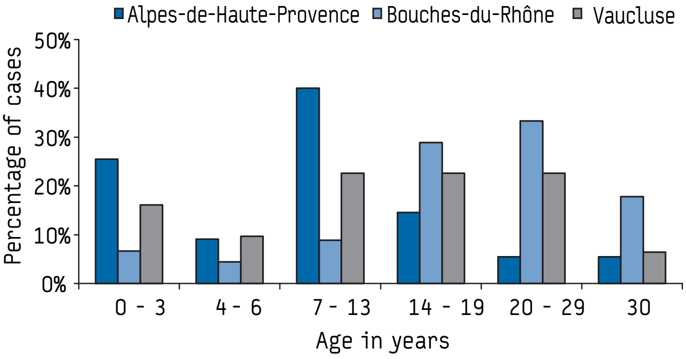
Number of documented cases of measles by month of onset, PACA region, January-July 2003



The male/female ratio was 1.1. The mean age was 15 years in the PACA region (ranging from 11 months to 57 years), 11 years in the Alpes-de-Haute Provence, 14 years in Vaucluse and 20 years in the Bouches-du-Rhône [FIGURE 3].

FIGURE 3

Distribution of documented cases of measles by age in 3 PACA departements, France, January-July 2003



Vaccination status: Information on vaccination status was known for 68 patients (50% of the documented cases) of whom 60 were not vaccinated and 8 had received only one vaccine dose (these cases were aged between 1 and 15 years old).

Clinical characteristics: Complications reported were: pneumonia (2 cases), neurological symptoms (without encephalitis) (2 cases), digestive problems (9 cases) and otitis (1 case). No deaths were reported.

A total of 25 patients (18% of the documented cases) were admitted to hospital. Reasons for admission to hospital were linked to diagnostic difficulties, differential diagnosis such as toxidermia and HIV primary infection, severe clinical symptoms such as cutaneous disease affecting more than 90% of the body surface (3 cases) and severe alteration of health (1 case). Fifteen patients were not vaccinated and ten patients had unknown vaccination status.

Microbiological description: from the 74 biologically confirmed cases, 4 samples (3 urinary, 1 pharyngeal) were sent to the Caen Hospital Centre for analysis by RT-PCR method and were positive. The study of the genotype by the national reference centre (Unité INSERM 404 Lyon) on 3 samples showed them to be of the D7 genotype.

Discussion and conclusion

This outbreak of measles in the PACA region during the first six months of 2003 was favoured by the poor vaccination coverage, which created groups of susceptible population. The investigations showed a link between the vaccine coverage in the different districts and the mean age of cases, suggesting a shift of age at disease occurrence, from childhood to teenage and adults years, linked to the slowing down of the virus circulation [8]. Reasons for inadequate vaccination coverage among children especially in Alpes-de-Haute-Provence district were due to medical follow-up by GPs and homeopathic practitioners.

The decrease in the number of cases, in May and June, can be explained by the seasonal pattern of measles in France [1], more frequent in the first part of the year, and by the closing of the schools due to the teachers' strike before the summer holidays.

The goal of this investigation was to document the virus circulation in the PACA region. This was not completely achieved. The investigation was limited to a restricted number of GPs in three head district cities. This choice was justified by the feasibility criteria (logistical limitations) instead of the representative activities of all GPs in the 3 cities. The participation rate was poor (20% of the GPs responded spontaneously, and 40% after many recalls) despite the mobilisation of an investigation team. Because of these results, the study was not extended to the whole. The different investigations have outlined the limitations of the measles surveillance system in France. Starting with 5 cases identified in Marseilles, 259 cases were been identified through this investigation. The real number of cases is probably higher than the number identified. Without the alert of

La Timone Hospital laboratory, these cases would not have been identified: the Sentinelles network had not detected any case for the first half of 2003.

Considering the decrease of the number of cases reported by the sentinel GPs during previous years and the fact that the positive predictive value of a clinical case definition is poor, the Sentinelles network cannot identify measles residual transmission areas and does not allow us to know the proportion of measles among the suspected cases. Thus, a low proportion of real measles cases can be expected in patients with febrile rash symptoms. This proportion has been estimated in the United Kingdom as 3%.

The Italian outbreak in Campania during 2002 was predominantly detected by the national paediatric surveillance system (4 times more sensitive than mandatory notification) but data were only obtained from children under 15 years of age, and the extent of the outbreak in adolescents and adults was probably underestimated [4]. In Switzerland, the increase in measles cases during 2003 was detected by the mandatory notification system and not by the sentinel surveillance system [5]. In 2001, only 16 of 19 countries in Europe had a mandatory notification system for measles, and some countries had a sentinel surveillance system in addition to this [10].

France needs to reach the WHO objective of measles elimination by 2010 [3]. The surveillance tools must be those already used in the countries that are furthest advanced in the elimination process: exhaustive notification; wide clinical definition to obtain a high sensitivity and to detect all suspected cases; laboratory confirmation to improve specificity and only detect the real cases; strain determination to trace their origin; vaccine coverage follow-up for each dose; and estimation of the proportion of susceptible population by modelling or serological studies [8]. To reach this goal, the Direction Générale de la Santé has nominated a working group to be in charge of proposing a national plan to interrupt the indigenous measles transmission in France.

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ORIGINAL ARTICLES

Outbreak report

Communicable disease control in a migrant seasonal workers population: A case study in Norway

PJ Guerin [1], L Vold [1], P Aavitsland [2]

Reliable data on the health status of migrant seasonal workers in Europe is scarce. Access to public health care for this population depends on national regulations, and their legal status in host countries. In this manuscript we describe a case study of a salmonellosis outbreak that occurred in Norway, and highlight the difficulties encountered in applying control measures in a population of seasonal migrant farm workers. Surveillance and control of infectious diseases need to be supported by legislation which makes implementation of control measures possible. Efforts have been made to improve the rights for migrants in Europe with regard to healthcare, but seasonal migrant workers still remain largely outsiders where these measures are concerned. Special attention should be given to this disadvantaged group in terms of social rights and healthcare. Preparedness plans should be improved to deal with contagious pathogens involving the seasonal migrant population.

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Key words: Agricultural workers, communicable diseases, health services accessibility, international migration, seasonal workers

1. Division for Infectious Disease Control, Norwegian Institute of Public Health, Nydalen, Norway
2. Department of Infectious Disease Epidemiology, Divisioan of Infectious Disease Control, Norwegian Institute of Public Health, Nydalen, Norway

Introduction

Seasonal migrant farm-workers (SMFW) all over the world travel frequently and over significant distances to secure their employment. The transient nature of their employment, migration in and out of countries, and the desire by some to avoid contact with governmental agencies, makes the exact number of SMFW difficult to determine [1]. The number of SMFW in Europe is believed to be substantial, but few data are available [2].

In many cases the SMFW and local populations differ with regard to nutrition, language, family structure, religion and health. Epidemiological studies of the health of SMFW are scarce, although some public health concerns have been identified [3,4]. Seasonal migrant farm-workers often come from countries that are poorer than the countries to where they travel for work, and these countries often have different disease epidemiology. Diseases, which can be endemic in the SMFW countries of origin, may be unusual and cause a lot of attention in the new, host countries. This can cause concern in the local communities employing SMFW. A substantial number of SMFW are never registered as employees, and therefore do not benefit from sick-leave in case of illness. They may feel forced to work even when ill. Seasonal migrant farm workers have been implicated in the contamination of produce at source, or hypothesised to be the source of contamination. [5-7].

Every summer and early autumn, more than 15 000 SMFW come