Assessment of Measles Surveillance in Iran during 2004-2007

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Abstract: Elimination of measles using vaccination is one of the most important tasks worldwide. Iran is in the elimination phase of measles and health professionals base surveillance system on reporting of suspected cases. The aim of this study was to evaluate measles surveillance in center of Iran. The epidemiological data was collected from immediate telephone reports and follow up results in CDC of deputy of health in Isfahan medical sciences university. 59 suspected cases were reported and only measles in one 2 years Afghanian girl had been confirmed. The incidence rate of suspected cases was 18 per one million under risk population. The average age of cases was 8±8.3 years that varied from 1 to 34 years. Male was more than female and 13.6% of cases were immigrant. One third of patients did not have any previous vaccination. The mean age was different significantly in three years of assessment. Our finding demonstrated that the measles surveillance is effective in Iran and endemic measles have been eliminated in Iran. The measles cases are immigrant from neighbor countries.

Key words: Iran, measles, surveillance, elimination, vaccination

INTRODUCTION

Measles is a communicable disease that is considered as a major health problem worldwide with nearly 45 million cases and 1 million deaths occurring each year[1]. However, because of human is the exclusive reservoir of measles and existing an effective and safe vaccine, it can be eliminated[2]. Three World Health Organization (WHO) regions have targeted measles elimination: the American region by the year 2000, the European region by 2007 and the eastern Mediterranean region by 2010[3]. To achieve this goal, measles elimination programs were developed and are based on strengthening immunization strategies coupled with attentive virological measles surveillance, the latter is required to monitor progress towards elimination goals[4]. In Islamic republic of Iran, measles, mumps and rubella as MMR vaccine is in routine immunization program. In Iran children are scheduled to receive the first (MMR) immunization at 12 months of age and second dose is prescribed at 4 to 6 years of age[5]. In addition, a measles and rubella campaign immunization was done at December 2003 to January 2004 in Iran for young women during reproductive age. This immunization was caused to measles elimination in Iran. The surveillance system during elimination phase is case-based immunization[6]. The aim of this study was to assess the effectiveness of measles surveillance in Isfahan in the center of Iran.

MATERIALS AND METHODS

Setting: Isfahan is one of the important provinces of Iran that has located in center of country. Isfahan spread 107044.3 Km² areas and is covered 3923255 populations by Isfahan Medical Sciences and Health Services University. It is a strategic area in Iran, 400 kilometers far from South of Tehran the capital of Iran and many ethnic groups are resident in it[7].

Data collection: Suspected cases were reported immediately by telephone from every peripheral district area to CDC of provinces health center. Suspected cases are defined every patient with fever, cough, rhinorrhea, conjunctivitis and special maculopopular rash that have been visited by physician. The epidemiological data including sex, age, nationality, residential area, number of family members and vaccination history were obtained.

After that the health professionals visit the patients and obtain a blood sample and then this blood sample under standardized condition was referred to the
Central reference virology laboratory to Tehran for detection of measles virus. At the end the laboratory report confirms the measles infection. All data are registered in special form and repot weekly to Health Ministry. Data for this study were obtained from measles data sheet in CDC of Isfahan provinces health center.

**Statistical analysis:** All data were summarized as mean and standard deviation for continuous variables and as frequency and percentage for categorical variables. The incidence rate was calculated by dividing of suspected and confirmed cases to under infectious risk population that was age 0-45 years.

We used the \(\chi^2\) test for comparison of categorical data; and t-test and analysis of variance (ANOVA) test and Tukey’s post hoc test for continuous variables.

All statistical analyses were performed with SPSS software package version 11.5 (SPSS Inc., Chicago, USA) for Windows. The significance level was set at \(P<0.05\).

**RESULTS AND DISCUSSION**

There was 59 suspected case of measles that was reported to CDC. Only one case was confirmed measles by laboratory. She was a 2-year Afghanian girls that had immigrated from Afghanistan to one of rural area in Borkhar city in Isfahan province. The incidence rate of suspected cases was 18 per one million under risk population.

The average age of cases was 8±8.3 years that varied from 1 to 34 years. Table 1 showed the characteristics of suspected patients in province.

Some epidemic of measles were reported from Iran during last years\[^{6-11}\]. These epidemics had high burden of disease for Health sector\[^{6}\]. Thus vaccination due to elimination of measles was the main goal of all WHO members. Measles elimination was done successfully in the most of country in America, Europe and Asia region and coverage of vaccine have achieved up to 95%\[^{12-24}\]. Although many viruses can present as a febrile-rash illness mimicking measles, particularly in children and in an elimination setting, such as in Iran, when coverage of the MMR vaccine is high, the majority of such cases will not be due to measles. However the immediate report of cases is necessary because the immigration rate in Isfahan is high. Our finding showed the unique case of measles was an immigrant Afghanian girls. The sensitivity of the system is increased through reporting and investigation of all suspected measles cases by means of an inclusive case definition (generalized maculopapular rash and fever) and the specificity is increased through laboratory testing for measles of all suspected cases\[^{25}\]. The CDC and health departments need to continue efforts directed at health care professionals to ensure the recognition, proper diagnostic workup and reporting of measles\[^{26}\].

It seems that the endemic transmission in Iran was eliminated. Guy and coworkers showed in the USA measles patients was imported to America\[^{27}\]. But surveillance of measles is necessary in Iran. Improvement of the current surveillance in Iran helps health sector and health policy makers that decide to control of disease and reduce burden of measles disease.

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