Measles in Kirkuk Governorate: Cohort Study

Sana'a H. Abdul Sahib, PhD*
Nazar A Mahmud, M.Sc.N.**

*** Instructor, College of Nursing, University of Rabareen**
**** Assistant Instructor, College of Nursing, University of Kirkuk**

المستخلص

الهدف: تهدف الدراسة الحالية إلى وصف الخواص الديموغرافية، وحالة التطعيم بالنسبة للمرضى المصابين بالحصبة وكذلك وصف حدوث المرض حسب الزمان والمكان في محافظة كركوك خلال سنة ٢٠١٠.

المنهجيّة: دراسة وبائية (وصفية) أجريت على المرضى المصابين بالحصبة للمدّة من العشرين من كانون الثاني لسنة ٢٠١١ ولغاية الثلاثين من تموز، ٢٠١١. تمّ جمع البيانات عن طريق مراجعة استعادية للحالات المسجلة لمرض الحصبة في قسم الإحصاء بدائرة صحة كركوك خلال سنة ٢٠١٠. أختيرت عينة غرضية "غير إحتمالية" مكونة من(١٥٢) لحالات الحصبة المثبتة (سريرياً ومختبرياً) والمسجلة في قسم الإحصاء بدائرة صحة كركوك خلال سنة ٢٠١٠. تضمنت هذه البيانات الخواص الديموغرافية، حالة التطعيم، زمان ومكان حدوث الحالات. تمّ تحليل البيانات من خلال تطبيق البرنامج الإحصائي SPSS بأسلوب التحليل الإحصائي الوصفي للبيانات (التكرارات والنسب المؤية).

النتائج: أشارت نتائجَ الدراسة بأنّ (٤٩،٣%) من الحالات كانت في عمر أكثر من خمسة عشر سنة و (٥٧،٩%) منهم كانت من الذكور، أكثر من نصف الحالات حدثت داخل مدينة كركوك. أمّا بخصوص حالة التطعيم للمصابين، تبين أنّ (٤٧،٤%) من المصابن بالحصبة كانوا ملقحين.

التوصيات: أوصتْ الدراسةَ بضرورة إجراء حملات التلقيح الإضافية ليشمل أيضاً المراهقين والبالغين الذين قد يكونون من الفئة الحساسة للحصبة، كذلك ضرورة التوعية الصحية للاشخاص الملامسين للمرضى، خصوصاً غير الملقحين منهم أو ليست لديهم إصابة سابقة بالمرض.

Abstract

Objective(s): To describe the demographic attributes, vaccination status of measles patients and the occurrence of the disease according to time and place in Kirkuk governorate during the year 2010.

Methodology: The epidemiological study (a descriptive study) on measles cases was carried out in Kirkuk province which is one of the Iraqi governorates from January 20th to July 30th, 2011. Data were collected retrospectively by review of patients' files that were registered at the department of statistic in health directorate of Kirkuk during the year 2010. A purposive "non-probability" sample of (152) confirmed measles cases (clinically and laboratory) that were registered at the department of statistic in health directorate of Kirkuk during the year 2010, were selected for the purpose of the study. These data include demographic data, vaccination status, place and time of reporting the cases by month. The obtained data of the registered cases were entered in to the computer and analyzed through the use of the statistical package social sciences (SPSS 11.5); the data analysis was preformed through descriptive statistical approach, such as (frequency and percentage).

Results: The study findings revealed that (49.3%) of measles cases were more than fifteenth years of age, (57.9%) of them were male. Up to half of cases occurred inside Kirkuk city, and according to vaccination status, (47.4%) of measles cases were vaccinated.

Recommendations: The study highlighted the necessity of timely measles vaccine campaign, additional dose of vaccine to include also adolescents and adults who may be sensitive to measles, and importance of health education for unimmunized adult person.

Keywords: Measles, Vaccination

Introduction

Measles, also known as Rubeola, is a highly contagious, serious disease [(1)], caused by an Ribonucleic Acid (RNA) virus of the genus Morbillivirus in the family Parmyxoviridae. Clinically measles is characterized by prodromal stage (high grade fever, coryza, conjunctivitis) and an eruptive stage (generalized descending pattern of maculopapular rash [(2)]. It is spread by respiratory system contact with fluids from an infected

person's nose and mouth by either droplet (coughing or sneezing) or aerosol transmission [3]. The first scientific description of measles and its distinction from smallpox and chickenpox is credited to the Persia physician, known as "Rhazes", [4].

It is estimated that before the implementation of measles elimination activities there were 100 000 deaths each year due to measles in the Eastern Mediterranean Region [5]. Although a vaccine has been available since 1959 [6], measles remains an important cause of morbidity and mortality in children, particularly in developing countries where more than 95% of measles-associated deaths occur [7]. Because of the complications of measles infection, it remains the fifth leading cause of death in children under five years in the world [8]. Measles vaccine is a highly effective vaccine used against measles [9].

Measles remains one of the leading causes of death among young children globally, despite the availability of a safe and effective vaccine. An estimated 164 000 people died from measles in 2008 – mostly children under the age of five [10]. Measles epidemic has been quickly spreading throughout most of the country and remains a serious risk for the children of Iraq. In 2008, 8,134 measles cases were reported in the country. In the first 18 weeks of 2009 alone, 23,336 cases have been reported in the country, nearly 3 times the total number of cases reported in 2008 and more than the number of cases in the rest of the Middle East and North Africa (MENA) region [11].

In 1997, the 23 member countries of the World Health Organization (WHO) Eastern Mediterranean Region resolved to eliminate measles from the region by 2010 [12]. Iraq as a part of the Eastern Mediterranean Region of the WHO, measles vaccination was begun in 1985 and adopted and implemented the measles Elimination Strategies in 2004 the average annual reported measles cases dropped from 9400 cases to around 1000 cases annually. Iraq routine immunization schedules recommend that the first dose of measles vaccine be administered to children age ≥ 9 months. All infants vaccinated before their first birthday must receive another dose of measles-containing vaccine at 15 months of age and at least one month after the first dose of measles vaccine [13].

An understanding of the basic epidemiology of measles is a prerequisite for effective control measures [14]. It is recommended by WHO to collect adequate surveillance data on measles cases and outbreaks and analyze these data to allow further evaluation of vaccination coverage as well as the implementation of the appropriate preventive measures needed to control and prevent measles [15].

Kirkuk as a part of Iraq, has adopted and implemented the measles Elimination Strategies, so that, the aim of the present study was to describe the demographic and epidemiological attributes of measles cases in Kirkuk governorate during the year 2010 in order to notify public health strategies to improve measles control and elimination in the country, as well as Kirkuk governorate.

Methodology

The epidemiological study (a descriptive study) on measles cases was carried out in Kirkuk governorate which is one of the Iraq's governorates from January 20th to July 30th, 2011. Prior to the data collection, an official permission was granted from Iraq ministry of health as well as health directorate of Kirkuk to facilitate the data collection. Data were collected retrospectively by review of patient's files that were registered at the department of statistic in health directorate of Kirkuk during the year 2010. Non-probability sampling a purposive sample of (152) confirmed measles cases (clinically and laboratory) that were registered at the department of statistic in health directorate of Kirkuk during the year 2010, were selected for the purpose of the study. These data include demographic data, vaccination status, place and time of reporting the cases by month. The obtained data of the registered cases were entered in to the computer and analyzed through the use of the statistical package social sciences (SPSS 11.5); the data analysis was preformed through descriptive statistical approach, such as (frequency and percentage).

Results

Table 1. Distribution of measles cases according to age group

Age (Years)	Frequency	Percent
< 1	22	14.5
1-4	39	25.7
5-14	16	10.5
>15	75	**49.3**
Total	**152**	**100**

Table 2. Distribution of measles cases according to gender

Gender	Frequency	Percent
Male	88	**57.9**
Female	64	42.1
Total	**152**	**100**

Table 3. Distribution of measles cases according to districts

Districts	Frequency	Percent
Kirkuk 1	39	25.7
Kirkuk 2	43	**28.3**
Daquq	21	13.8
Dibis	27	17.7
Hawega 2	8	5.3
Other provinces	14	9.2
Total	**152**	**100%**

Table 4. Distribution of Measles Cases according to the months

Months	Frequency	Percent
January	38	**25**
February	29	19
March	19	12.5
April	12	7.9
May	14	9.2
June	21	13.8
July	17	11.3
August	1	0.65
September	1	0.65
Total	**152**	**100**

Table 5. Distribution of measles cases according to vaccination status and age

Vaccination Status	(<1) year		(1-4) year		(5-14) year		(> 15) year		Total f	%
	f	%	f	%	f	%	f	%		
Vaccinated	4	5.5	20	27.8	9	12.5	39	54.2	**72**	**47.4**
Unvaccinated	10	16.7	19	31.6	7	11.7	24	40	**60**	39.5
Not included	8	100	0	0	0	0	0	0	**8**	5.2
Unknown	0	0	0	0	0	0	12	100	**12**	7.9
Total	**22**		**39**		**16**		**75**		**152**	**100**

f= frequency, %= percentage, <= less than, >= more than

Discussion

The findings of the (table 1) show that about half of measles cases were at age group (> 15) year which constitute (49.3%) of total cases, followed by age groups (1-4) year, (<1) year which represent (14.5%) and (5-14) year respectively, these results are in contrast with other study in Qatar, Al-Kuwari and others cited that of (362) confirmed measles cases 56 (17.1%) were under 1 year of age, 121 (33.4%) were 1–4 years, while only 61 (16.9%) were above 15 years of age [(15)]. for interpretation these differences, we support Fiebelkorn and others [(16)] whom stated in their study that age groups most affected varied by year, depending on the setting of the outbreak. In 2002, the majority of cases occurred in infants! 1 year of age, because of an outbreak in a child care center, compared with 2006, when a large office building was the epicenter of an outbreak and persons 20–39 years of age therefore comprised the majority of cases. Furthermore, these suggest that in Kirkuk governorate, the occurrence of measles has shifted to older age groups.

As demonstrated in the (table 2), male cases constitute (57.9%) and the remaining (42.1%) of cases were female, so that, male cases outnumbered female cases and this result strongly supported by Desai and others[(17)] whom stated in their study that male cases outnumbered female cases. Kirkuk city domestically has divided by khasa river into Kirkuk 1 and Kirkuk 2, and as showed in (table 3), altogether Kirkuk 1 and Kirkuk 2 formed more than half of measles cases occurred in inside Kirkuk city (54%) this is indicate that cases of measles in urban areas were higher than in rural areas which may suggest lower case detection in villages or higher urban measles cases as a result of overcrowding because measles is a highly contagious viral illness.

According to the time of measles occurrence, the peak of the cases were in winter and early spring, with (25%) and (19%) reported in January and February respectively (table 4), this result is strongly supported by Pan American Health Organization who stated that measles occurs worldwide in distinct seasonal patterns. In temperate climates, outbreaks generally occur in late winter and early of spring. In tropical climates, transmission appears to increase after the rainy season [(18)]. In contrast to other study, e.g. in 2007, 362 cases of measles were notified from all the health care sectors in Qatar. The peak of the outbreaks was in late spring and early summer, with 207 cases (57.2%) reported during May and June [(15)].

Regarding vaccination status of measles cases (table 5), it has depicted that nearly half of cases were vaccinated (47.4%) and (39.5%) of theme were unvaccinated, (7.9%) of them were with unknown vaccination status and (5.2%) of them were not included by the National Immunization Schedule in Iraq.

If cases of measles occur in individuals who have been vaccinated, or in areas where mass campaigns were carried out and/or coverage rates in 1 year old children are high, the adequacy of the cold chain should be checked because there may be a problem with loss of vaccine potency [(18)].

Iraq conducted a measles campaign to respond to the outbreak that began in 2008. The campaign was conducted in two phases; phase

one in October 2009 targeted children aged six months to 5 years and phase two in December 2009 targeted children aged 5–12 years. During the first phase of the campaign, 4.5 million of the target populations were reached (97.5% coverage) and in phase two, 5.4 million of the target populations were reached (90.7% coverage) [19]. Several outbreaks have occurred in highly vaccinated population groups and many of the cases had been previously vaccinated [20].

In our study most of vaccinated cases were older than fifteenth years old and this suggests that that age group were not included in measles vaccine campaign, so that they were vulnerable to be infected with measles disease. Furthermore, Measles outbreaks in areas with high coverage with a single-dose strategy have been reported in other countries like Sri Lanka [21] and, Latin American countries [22]. Also in our study (27.4%) of vaccinated cases were at age group (1-4) years, and it is high in contrast to total of cases because this age group were included in measles vaccine campaign (2009) and this result may be attributed to vaccine failure. The occurrence of (5.2%) of not included vaccinated cases is attributed to immunization schedule in Iraq because they were below the nine months of age. In Iraq, the children are vaccinated against measles at nine months of age routinely [13].

The study concluded that most of measles cases were adult and male cases outnumbered female cases, more than half of cases occurred inside Kirkuk city, most of them affected by measles virus in winter and early spring and nearly about half of cases have not vaccinated with measles vaccine.

Recommendations

1. Vaccine should be given for each of adolescents and adults who may be sensitive to measles.
2. Health education about mode of transmission of measles can be presented to adult especially, who have been never vaccinated or have history of infection with measles to be aware in case they are involved with infected persons.

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