

Trend of chickenpox incident cases through absent vaccination in Najaf Governorate-Iraq from January 2009 to May 2014

اتجاه حالات مرض الجدري المائي مع غياب اللقاح في محافظة النجف للفترة من كانون الثاني ٢٠٠٩ الى أيار ٢٠١٤

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الخلاصة:

خلفية البحث: ان مرض الجدري المائي شائع وعالي العدوى يسببه فايروس فاريسيلا زوستر وهو متوطن مع زيادة سنوية في عدد الإصابات مع عدم وجود برنامج لقاح للمرض حاليا في العراق. ان غالبية الحالات غير المصحوبة بالمضاعفات تغطي على العبء الاجتماعي والاقتصادي للمرض مع زيادة مخاطر المضاعفات لدى المرضى اليافعين. وان الجدري المائي يعتبر من الامراض الممكن الوقاية منها باستخدام اللقاح في عدة بلدان يضمها العراق.

الأهداف: تهدف الدراسة إلى وصف وبائية الحالات المسجلة لمرض الجدري المائي في محافظة النجف للفترة من كانون الثاني ٢٠٠٩ الى شهر أيار ٢٠١٤ وبيان ازدياد حالات الوقوع واعتماد اللقاح ضد المرض مستقبلا.

المنهجية: دراسة مقطعية وصفية تم فيها جمع البيانات من قسم الصحة العامة من الحالات المسجلة في شعبة الرصد الوبائي المسجلة شهريا للفترة من كانون الثاني / ٢٠٠٩ الى أيار / ٢٠١٤ لقطاعات الرعاية الصحية الستة في محافظة النجف وهي قطاعات النجف الشمالي، النجف الجنوبي، الكوفة، المناذرة، العباسية والمشخاب. وشملت المعلومات العمر والجنس وباقي بيانات الرصد الوبائي للحالات المسجلة.

النتائج: ان عدد الإصابات بمرض الجدري المائي يشير الى ارتفاع عدد الإصابات من ١٠٧٦ حالة في ٢٠٠٩ و ٢٥٦٣ في عام ٢٠١٠ الى ٤٦٩٢ في عام ٢٠١٣. وان زيادة معدل الوقوع للحالات قد شهد زيادة ملحوظة في عام ٢٠١١ ليصل الى ٤٠٨ إصابة لكل ١٠٠٠٠٠ نسمة من سكان المحافظة. وان أكثر الإصابات كان في فئة ٥- ١٤ سنة من العمر بنسبة ٧٥% من مجمل الإصابات. وان نسبة الإصابات لا تتجاوز ٣.٠٥% لمن هم فوق ٤٥ سنة من العمر مع فرق غير معنوي بزيادة الإصابات عند الذكور على الاناث. ان توزيع الإصابات شهد ارتفاعا في شهور فصل الربيع (اذار، نيسان و أيار) وبداية فصل الشتاء وان الوسيط الوبائي للإصابات للسنوات ٢٠٠٩ - ٢٠١٣ كان ٦٣٣ بينما تم تسجيل ٥٥٦ إصابة بالمرض للاشهر الخمسة (كانون الثاني الى أيار) من عام ٢٠١٤.

الاستنتاج: لايزال وقوع حالات الإصابة بمرض الجدري المائي سنويا في تزايد في محافظة النجف مما يتطلب التفكير في التوصية بالتحصين ضد المرض.

التوصيات:

ABSTRACT:

Background: Chickenpox infection is a common and highly contagious viral disease caused by the varicella zoster virus. It is highly endemic disease with increasing annual incidence in absence of varicella immunization program in Iraq. The predominance of uncomplicated cases in children tends to overshadow the morbidity associated with social and economic burden of families in addition to risk of complication in younger age groups. Chickenpox now has been considered one of the most common vaccine-preventable diseases in many countries including Iraq.

Amis of the study: Describing the epidemiology of registered clinical cases of chickenpox in Najaf governorate from January 2009 to May 2014. More over verifying the increasing number of incident cases of chickenpox for future need of varicella vaccine in Iraq.

Methodology: A descriptive cross sectional study was conducted from January 2009 to May 2014, and the data was collected from the public health department from the existing anonymous surveillance of chickenpox. Those monthly records were sent from corresponding surveillance units from six districts in Najaf governorate including north of Najaf, south of Najaf, Al-Kufa, Al-manathera, Al-abbassiya and Al-mishkhab districts. The variables included age groups, gender, and district distributions in this study were based on a classification used in the surveillance system in Iraq.

Results: The frequency of chickenpox cases in Najaf Governorate revealed an obvious rise from (1076) in 2009 and (2563) in 2010 to (4692) in 2013. The incidence rate of occurrence of clinical chickenpox cases also shows an obvious rise in 2011 was 408/100000 population. Most often cases occurred in age group 5-14 years (75 %) and only (3.05 %) in those over 45 years. According to gender distribution, there was sustained non-significant preponderance for the male over female. All registered cases had shown the same seasonal distribution with two peaks of infection per year; spring (March, April and May) and early winter (November, December and January) seasons. Median Endemic Index of chickenpox cases in Najaf in May from 2009-2013 was 633 and the number of cases during January through May 2014 was 558.

Conclusion: chickenpox is still increasing in incident cases in Najaf governorate which necessitate thinking of varicella vaccine recommendation.

Recommendations:

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INTRODUCTION

Chickenpox infection is an acute common disease caused by the varicella zoster virus. In general, cases of chickenpox appear among children between the ages of (1 and 14) and when the infection occurs in adolescents or adults the severity is higher than in children. In addition, it is potentially more frequent among immunosuppressed individuals ^(1, 2). The disease can be benign and self-limiting in children ^(4, 5, and 6). In the USA & other temperate climates (90-95%) of individuals acquire varicella zoster virus in childhood, annual varicella epidemics occur in late winter & early spring, in contrast, individuals from tropical countries may not acquire infection until later in life ⁽³⁾.

According to Aristotle's classification of the earth's climatic zones, Iraq is considered to be located in the temperate zones. Family members who have never had chickenpox have a 90 % chance of becoming infected when another family member in the household is infected ^(7, 4). Varicella is transmitted from person to person by direct contact, inhalation of aerosols from vesicular fluid of skin lesions of acute varicella or zoster, or aerosolized respiratory tract secretions. Average incubation period: 14-16 days after exposure to rash (range: 10-21 days). Period of contagiousness: 1-2 days before rash onset until all lesions crusted or disappearance of maculopapular rash (typically 4-7 days) ⁽⁵⁾.

In 1998, the World Health Organization (WHO) recommended that routine childhood varicella vaccination be considered in countries where the disease is a relatively important public health and socioeconomic problem, where the vaccine is affordable, and where high (85 to 90%) sustained vaccine coverage can be achieved ^(6, 7). Chickenpox can be treated with antiviral drugs and can be prevented by immunization (varicella zoster vaccine). In the United States, Sharp decreases in morbidity and mortality rates from varicella have been attributed to implementation of vaccination programs ⁽⁸⁾.

Chickenpox is considered as a monthly notifiable disease in Iraq .The diagnosis is clinical. Clinical cases attending the primary health care centers all over the country are reported to the surveillance section at communicable diseases control center. Data regarding hospitalization and death are lacking ^(9,10).

AIMS OF THE STUDY

Describing the epidemiology of registered clinical cases of chickenpox from the public health department in Najaf governorate from January 2009 to the end of May 2014, And Verifying the increasing number of incident cases of chickenpox for planning future varicella vaccination in Iraq.

METHODOLOGY

This descriptive study was done at public health department in Najaf directorate of health from first of March to the first of June, 2014. Categorical variables including age groups, gender, and districts distribution, the data was collected from the existing anonymous surveillance of chickenpox from 2009 to 2013. Those monthly records were sent from corresponding surveillance units from six districts in Najaf governorate including; north Najaf, south Najaf, Al-Kufa, Al-manathera, Al-abbassiya and Al-Mishkhab districts. Age classification used in this study was based on age classification used in the surveillance system in Iraq. Case definition used in primary health care centers to diagnose cases of chickenpox is: clinical illness that is characterized by a rash with rapid evolution of macules to papules, vesicles and crusts. All stages are simultaneously present; lesions are superficial and may appear in gropes.

Statistical analysis: Microsoft Excel and SPSS version 20 were used for statistical analysis. Descriptive statistic to present frequency distribution by age and gender, districts distribution

and seasonal variation, Chi Square was applied for categorical association at level of significance $\alpha = 0.05$.

RESULTS

Figure (1): Trend of incident cases of Chickenpox (per 100000 populations) in Najaf Governorate 2009-2013.

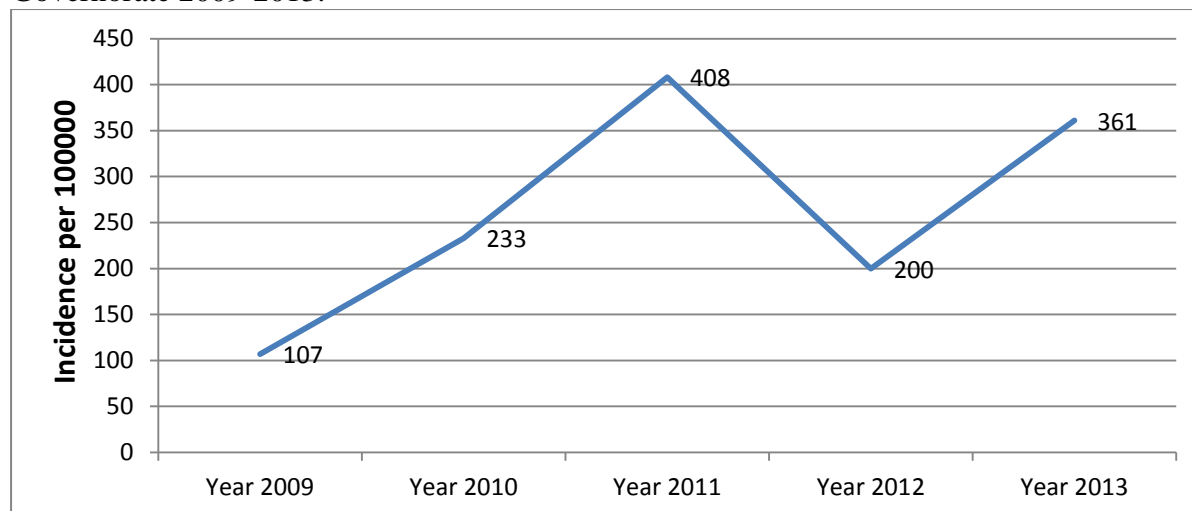


Figure 1 showed the incidence rate of clinical chickenpox cases showed an obvious rise in the occurrence that ranges from 107 cases per 100000 in 2009 to 408 per 100000 populations in 2011.

Figure (2): Frequency of clinically diagnosed Chickenpox in Najaf Governorate 2009-2013

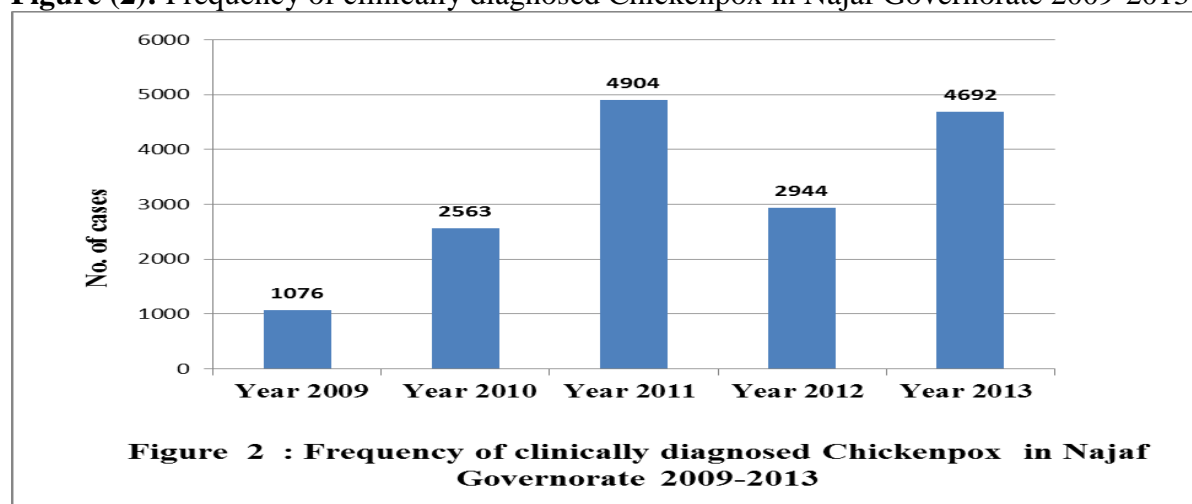


Figure 2 showed the frequency of chickenpox cases in Najaf Governorate revealed an obvious rise from (1076) in 2009 through (2563) in 2010 to (4692) in 2013.

Table (1): Age distribution of chickenpox cases in Najaf governorate from 2009 - 2013.

age group	0-4 years		5-14 years		14-45 years		>45 year		Total
	N	%	N	%	N	%	N	%	
Years									
2009	162	15.05	807	75	133	12.36	4	0.37	1076
2010	471	18.37	1815	70.81	265	10.33	19	0.74	2563

2011	953	19.43	3179	64.82	627	12.78	81	1.65	4904
2012	591	20.07	1905	64.70	349	11.85	90	3.05	2944
2013	740	15.77	3212	68.45	654	13.93	86	1.70	4692

P = 0.0001, X² = 125.83, df = 12

Table 1 showed during 2014; there were 3004 cases in the first fifth months of the year. There is significant difference in age distribution of the registered cases. Most cases (75%) occurred in those with age group 5-14 years (P = 0.0001) versus only 3.05 % in those over 45 years.

Figure (3): Distribution of incident cases of chickenpox by age in Najaf Governorate from January to May 2014.

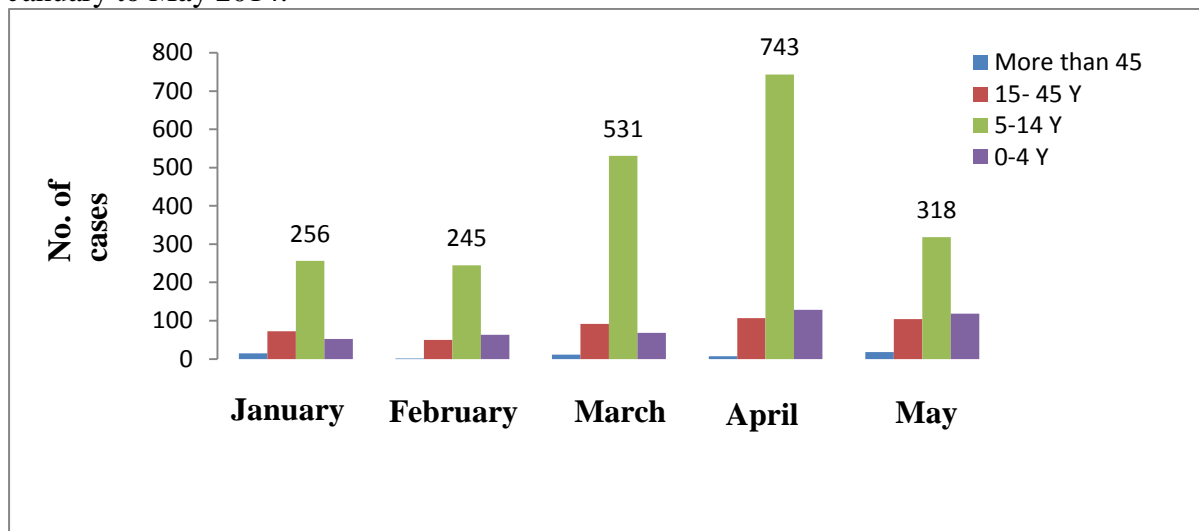


Figure 3 showed during 2014; there were 3004 cases in the first fifth months of the year. There is significant difference in age distribution of the registered cases. Most cases (75%) occurred in those with age group 5-14 years (P = 0.0001) versus only 3.05 % in those over 45 years.

Figure (4): Distribution of incident cases of chickenpox by gender in Najaf Governorate from January to May 2014.

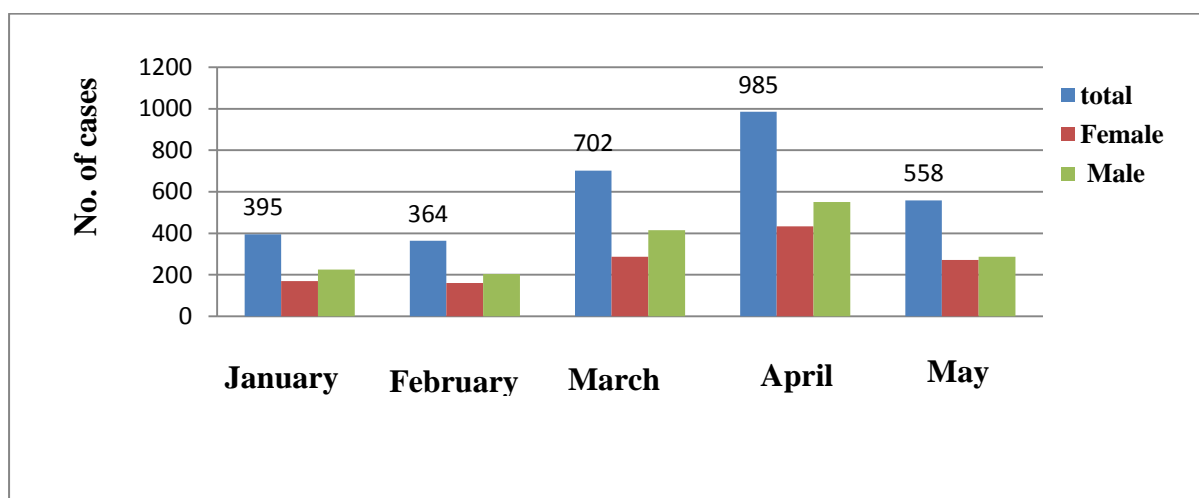


Figure (4) showed there is no significant difference in gender distribution by months from January to December per year (P=0.10) with sustained significant preponderance of males over females.

Figure (5): Distribution of incident cases of chickenpox by districts in Najaf Governorate 2009 - 2012.

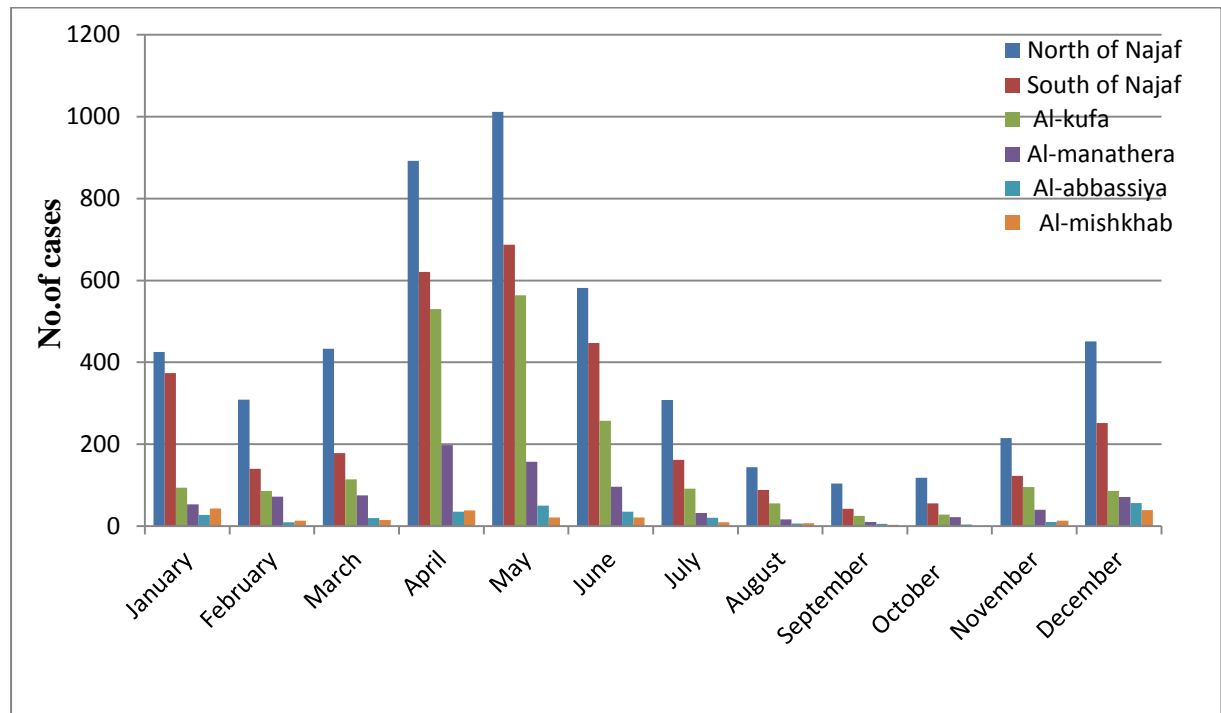


Figure 5 showed although the total number of chickenpox varies from 2009-2013 but all have shown the same seasonal distribution with two outbreaks in the year; spring (March, April and May) and early winter (November, December and January) seasons. Regarding districts distribution, the highest registered number of chickenpox cases was in north and south of Najaf with peak of infection during April and May.

Figure (6): Median Endemic Index of chickenpox cases in Najaf in May from 2009-2014.

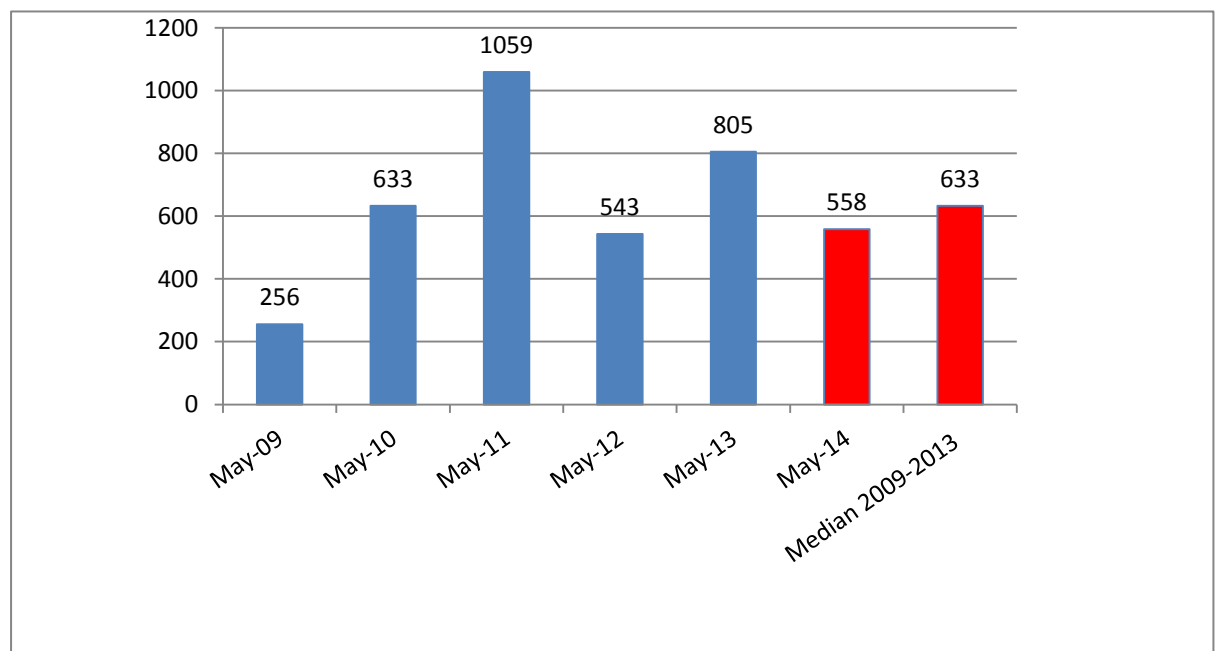


Figure 6 showed that Median Endemic Index of chickenpox cases in Najaf in May from 2009-2013 was 633 and the number of cases in May 2014 was 558.

DISCUSSION

In this study, there is an obvious rise in the registration of chickenpox cases in Najaf governorate from (1076 case) in 2009 through (2563) in 2010 to (4904) in 2011 to (4692) in 2013 as shown in figure (2) and during 2014 (3004) cases in the first fifth months of the year. These frequencies are much higher than what was reported in Saudi Arabia. A total of 3802 cases of chickenpox were reported between 1 June 2001 and 30 December 2003 ⁽¹¹⁾. Rate of occurrence of clinical chickenpox cases had also showed an obvious rise in the incidence that ranges from 107 cases per 100000 populations in 2009 to 408 per 100000 populations in 2011. The rate in 2011 and 2013 is suggestive of a possible outbreak. However, this rise can be attributed to increasing the number of primary health care centers that eased the access of the population to medical care whenever they need it.

In Iraq, Rate of occurrence of clinical chickenpox cases also showed an continuous rise in the occurrence that ranges from 73 per 100000 populations in 2007 to 408 per 100000 in 2011 while the frequency of clinical cases revealed a rise in the reported cases of chickenpox from 21798 case in 2007 through 59681 in 2008 to 74195 in 2011 in all provinces of Iraq ⁽¹²⁾. In Taif - Saudi Arabia, a descriptive study was done to show incidence of chickenpox cases over the period of five years starting Jan. 1st 2007 till Dec.31th 2011 revealed that a total of 3,382 incident cases with Varicella during this period ⁽¹³⁾.

In the current study, age distribution of the registered cases occurred mostly in those of age 5-14 years and least in those over 45 years. The explanation of this age distribution 5-14, as it is school age when the disease is highly contagious. In Iraq, 65% of cases of chickenpox occurred in those of age 5-14 years and only 1% in those over 45 years. In Baghdad-Iraq, the highest rate of chickenpox was observed during 5-10 years of life (75% of cases) higher than in the first three years of life while in Saudi Arabia, 78% of cases occurred in children less than 15 years of age ^(1, 2). The rise in incident cases of varicella was reported in different countries worldwide such as Latin America and the Caribbean, where the global pooled varicella incidence in subjects under 15 years of age was 42.9 cases per 1000 individuals per year; children under 5 years of age were mainly affected ^(6,7).

In Turkey, Most cases were in children under 5 years of age, and 29.5% were in children under 1 year of age ^(8, 9). The age-specific distribution of varicella cases reported by general practitioners is similar between the United Kingdom and Canada (around 85% are in children under 15 years) and is comparable to surveillance data in France (92% of consultations) and Scotland (79%). The highest consultation rate is in 0-4 year olds for Canada and the United Kingdom. Finally, it should be noted that the overall consultation rates are slightly higher in the United Kingdom than in Canada. This is to be expected since varicella cases reported by general practitioners are determined by patient consultation patterns, which partly depend on the primary health care system of each country ^(10, 11).

A vaccination program for susceptible adolescents and adults could potentially prevent about 30% of varicella deaths and hospital admissions if high coverage could be achieved in these age-groups ^(12, 13). The USA has a universal varicella-vaccination program and other countries have added varicella vaccine to their childhood immunization schedule e.g., Uruguay, Qatar, parts of Italy and Israel, Taiwan, Germany, Australia, Canada, and South Korea. Many European countries, such as Switzerland, recommend the vaccine for specific risk groups such as immune compromised people, health-care workers, and susceptible adolescents and adults. Availability of a combination MMRV vaccine, recently licensed in the USA, Germany, and Australia and expected in other countries soon, might simplify implementation of childhood varicella vaccination programs in countries considering such programs. In developing countries, the health burden caused by other diseases is higher than that of varicella, so varicella vaccination is a low priority for introduction into their national immunization programs ⁽¹⁴⁾.

A program of varicella vaccination has the potential to change the epidemiology of herpes zoster as well as varicella in Iraq^(15, 16). In this study, gender distribution of the cases throughout the years has shown sustained preponderance for the males over females. This might be attributed to the social preference and care for the males in the Iraqi community that leads to seeking health care for the ill male more seriously. In Iraq, regarding gender distribution there was sustained preponderance for the male over females with nearly the same percentage over the years^(15, 16). For all years between 1976 and 1985 the rate for males exceeded that for females by a ratio of 1.1:1 by the Royal College of General Practitioners (RCGP).

Although the total number of chickenpox cases varies from 2009 to 2013, all have shown the same seasonal distribution with two peaks in the year; spring (March, April and May) and early winter (November, December and January) seasons. The largest number of reported cases was in 2011 while the lowest number in 2009. These findings are similar to what was reported in Saudi Arabia^(12, 13).

In Iraq, seasonal distribution being highest in spring (April, May) season, it shows that the start of rising cases is in December and January^(14, 15 and 16). However, chickenpox infection was detected with a higher prevalence, in (April 2002-May 2002) & year round i.e. in late winter - spring season. This seasonal variation may be due to low temperature, relative humidity & rainfall. The detection of chickenpox cases round might be attributed to demographic distribution in Middle East^(17, 18 and 19).

Median Endemic Index of chickenpox cases in Najaf in May from 2009-2013 was 633 and the number of cases in May 2014 was 558. There is a significant difference in distribution of chickenpox cases by months in Taif (KSA) and Najaf (Iraq) with obvious reduction of incidence in Taif 2011^(11, 20). The explanation for this difference, that the Saudi Ministry of Health in 2008 took the proper action and introduced Varicella vaccine as a part of the Expanded Program of Immunization, that might lead to the seen reduction in numbers, possibly together with the fact of reduction of susceptible and the shift in incidence probably to the older age group where complications are more likely to happen and this is the price nations have to pay when such vaccines are introduced during childhood^(21, 22 and 23).

CONCLUSION

This study has provided important epidemiological data about rising trend in the registration of clinical chickenpox cases. The reported cases are still exceeding the median endemic index of the last five years.

Furthermore, most of cases occurred in age group of 5-14 years and the male distribution was slightly more than female. Regarding seasonal distribution, the disease occurs in two peaks in the year; spring (March, April and May) and early winter (November, December and January) seasons. Median Endemic Index of chickenpox cases in Najaf necessitates thinking of varicella vaccine to reduce morbidity of the disease.

RECOMMENDATIONS:

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