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Infection Rate of Mumps in Iraq During 2016

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Abstract:
Background: *Mumps is childhood disease characterized by swelling of the parotid glands, salivary glands and other epithelial tissues, causing high morbidity and in some cases more serious complications such as deafness.*
Objectives: *The current work design to determine the infection rate of mumps in Iraq during 2016 due to an outbreak of mumps occurred.*
Patients and methods: *All data presented in this paper was collected from Communicable Disease Control Center - Virology Unit in Baghdad, during the period from January 2016 till December 2016.*
Results: *High percent of infection were recorded in January (31.28%), March (24.12%) and April (20.26%) while lowest rates of infection were showed in February (16.10%) and May (8.22%). On the other hand no positive cases occur during the period from June to December. The ratio of infected males was 66.46%, while in female was 33.54%. In addition most infection 75.01% occur in age group ≤15 years.*
Conclusion: *This epidemiological study offers valuable data that are important to study the efficiency of vaccine use in our county.*
Key words: *Mumps, viral infection, epidemiology, childhood disease. MMR.*

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I. Introduction

Mumps is caused by the mumps virus (MuV), a member of the paramyxoviridae family of enveloped, non-segmented, negative-sense RNA viruses [1]. Mumps is highly contagious and spreads rapidly among people living in close quarters [2] The virus is transmitted by respiratory droplets or direct contact with an infected person [3].

Infection with mumps virus is asymptomatic in one-third of cases. Nonspecific prodromal symptoms include low grade fever, anorexia, malaise, and headache. The Disease can vary from a mild upper respiratory illness to viraemia with widespread systemic involvement [4].

Up to 10% of mumps patients developed aseptic meningitis; a less common but more serious complication is encephalitis, which can result in death or disability; and permanent deafness, orchitis and pancreatitis are other untoward effects that can be prevented by vaccination [5].

Live mumps vaccines are available as monovalent mumps vaccine, bivalent measles-mumps (MM) vaccine, and trivalent measles-mumps-rubella (MMR) vaccine. World health organization (WHO) requirements do not specify the minimum amount of vaccine virus that one human dose should contain; rather, this is determined by the national control authority of the country where the vaccine is produced [6]. Following the use of mumps vaccine in the USA in the late 1960s, disease incidence declined dramatically, and by the 1980s very few cases were reported. By 2001 the disease was on centers for disease control and prevention [7]. However, within a few years of these historic lows, large, sporadic mumps outbreaks began to appear globally, involving a high percentage of persons with a history of vaccination [8].

Several reported surveys for mumps antibodies in different parts all over the world such as Quasim (2010) Who found that seropositivity against mumps virus among different age groups was 68% in Mousal city and Park *et al*., (2007) study the discriminate between primary and secondary vaccine failure in a highly vaccinated population for mumps using IgG avidity testing after an outbreak of mumps occurred in Gyeonggi, Korea in 2006. As well as another studies [11][12][13].

Study done by Baiee and Weli (2018) they found that about half of the patients (56%) were vaccinated against the mumps disease in two districts located in the southern region of Babylon governorate. The current work design to determine the infection rate of mumps in Iraq during 2016 due to an outbreak of mumps occurred.

II. Methods

All data presented in this paper was gathered from the Communicable Diseases Control Center, Virology Units in Baghdad for the period from January 2016 until December 2016. The data analysis was based on results of virology diseases from most Iraqi governorates to the Communicable Diseases Control Center also this dataset was rigorously tested.

III. Statistical analysis

Statistical analyses were performed using statistical package for Social Sciences (Version 17.0 for windows, SPSS, Chicago, IL, USA). Data is presented as number and percentage for qualitative variables. Qualitative data relations were analyzed by Chi-Square test and well-thought-out statistically significant when the P value was <0.05.

IV. Results

The results of figure (1) show that high percent of infection were recorded in January 31.28% (18245), March 24.12% (14069) and April 20.26% (11821) while lowest rates of infection were showed in February 16.10% (9394) and May 8.22% (4798). On the other hand no positive cases occur during the period from June to December.

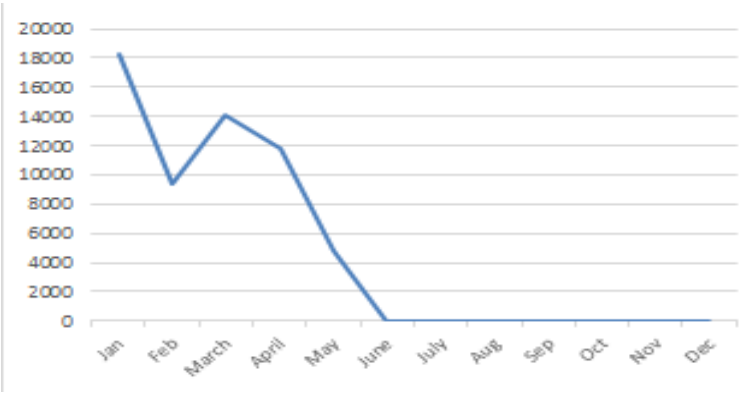

Figure (1): Distribution of mumps infection in 2016.

According to ELISA results, the infection rate of mumps in males was (66.46%) more than females (33.54%). Chi-square analysis show statistical significant association between mumps infection and gender (P-value< 0.05) as shown in table (1).

Table (1): Gender distribution of mumps infection in Iraq during 2016.

Gender	Tested number	Percentage (%)
Male	**38768**	**66.46%**
Female	**19559**	**33.54%**
Total	**58.327**	**100%**

P-value = 0.000.

Regarding age group, patients with ≤ 15 years older has a higher percentage (75.01%) while patients with > 15 years had the lowest percentage (24.99%). Chi-square analysis shows statistical significant association between mumps infection and age group (P-value< 0.05) as shown in table (2).

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Table (2): Age distribution of mumps infection in Iraq during 2016

Age	Tested number	Percentage (%)
≤ 15 years	**43752**	**75.01%**
> 15 years	**14575**	**24.99%**
Total	**58.327**	**100%**

P-value = 0.000.

V. Discussion

The result of current study showed that infection rate was elevated among different Iraqi cities and number of infection was higher as compared with numbers in neighboring countries in the same period as documented by who updating report 14 cases in Saudi Arabia, 84 cases in Syrian, 168 in Jordan, 318 in Kuwait and 344 Turkey [15][16]. There are significant differences to mumps infection and months of infection during 2016, so most infection was in January and agreement with [14], also this may be related with mode of transmission more common in late winter and early spring, but the disease has been reported throughout the year [17].

High percentage of infection was recorded among males than females, this result was consistent with previously reported studies [9][14][18][19]. And may be related with high risk activities in males as compared with females such as occupational factors, travel and social differences.

According to age group, the current study showed that less than 15 years old was exposed to infection more than others also this result agreement with two studies done Tehran by [20] they found that children between 0-9 or 5-9 years old had highest susceptibility to mums infection. Another study done conducted in USA found that the susceptibility to mumps infection arrived to 90% in children under 14 years old [21].

Several factor may be responsible for this outbreak and the most important one immunogenicity, efficacy, and safety of mumps vaccine it was used as well as storage condition. Several studies found that measles virus vaccine induced 3-fold higher levels antibodies than mumps virus due to weak B-cell responses induced by the strain in vaccine [9]. Another study done in Egypt showed (88.9%) of the surveyed children were seropositive to measles, (77.8%) to mumps, (86.7%) to rubella and (38.9%) to varicella [22]. But in contrast with other [23].

The high rates of mumps infection among Iraqi cites in the current study this may be related with the high susceptibility of the target groups, low level of public awareness about the transmission of the disease and the dropinglets precautions, overcrowding, un healthy housing and improper behaviors of patients and their families with the disease during epidemics such as the social un healthy habit of kissing which is very common in our society.

In conclusion, infection rate was more common in males and less than 15 years old. further studies will be focusing on the other causes of the high rate of infection among vaccinated population such as storage condition and genetic background of vaccinated population. Taking every effort to achieve the required dose of the vaccine to Iraqi children with the proper time schedule.

References

[1]. Rubin S, Michael E, Linda J R, Connor GG B, Paul DW. Molecular biology, pathogenesis and pathology of mumps virus. J Pathol. 2015 January ; 235(2): 242-252. doi:10.1002/path.4445.

[2]. Kutty PK, Kyaw MH, Dayan GH, Brady MT, Bocchini JA, Reef SE, Bellini WJ, Seward JF. Guidance for isolation precautions for mumps in the United States: a review of the scientific basis for policy change. Clinical Infectious Diseases.2010; 50 (12): 1619-28.

[3]. Atkinson W. Mumps epidemiology and prevention of vaccine-preventable diseases (12 ed.). Public health foundation. pp. Chapter 14. 2012.

[4]. Baum SG, Litman N. Mumps virus. In: Mandell GL, Bennett JE, Dolin R, eds. Principles and practice of infectious disease, 4th edit. London, Churchill Livingston, 1995: 1496-1501.

[5]. Galazka AM, Robertson SE, and Kraigher A. Mumps and mumps vaccine: a global review. Bulletin of the World Health Organization. 1999; 77 (1): 3-14.

[6]. WHO- expert committee on biological standardization. Forty- third report . Geneva, World Health Organization, 1994 (WHO Technical Report Series No. 840).

[7]. McNabb SJ, Jajosky RA, Hall-Baker PA, Adams DA, Sharp P, Anderson WJ, Javier AJ, Jones GJ, Nitschke DA, Worshams CA. Summary of notifiable diseases - United States, 2005. Morb Mortal Wkly Rep. 2007; 54:1-92.

[8]. Rota JS, Turner JC, Yost-Daljev MK, Freeman M, Toney DM, Meisel E, Williams N, Sowers SB, Lowe L, Rota PA, Nicolai LA, Peake L, Bellini WJ. Investigation of a mumps outbreak among university students with two measles-mumps-rubella (MMR) vaccinations, Virginia, September–December 2006. J Med Virol. 2009; 81:1819-1825.

[9]. Quasim TM. Seroepidemiological study of mumps in Mosul. Iraq J Pharm. 2010; 9(1):1.

[10]. Park DW, Nam MH, Kim JY, Kim HJ, Sohn JW, Cho Y, Song KJ, Kim MJ. Mumps outbreak in a highly vaccinated school population: assessment of secondary vaccine failure using IgG avidity measurements. Vaccine. 2007; 25 (24): 4665-70.

[11]. Gupta RK, Best J, MacMahon E. Mumps and the UK epidemic 2005. Br Med J .2005; 330:1132-1135.

[12]. Atrasheuskaya AV, Kulak MV, Rubin S, Ignatyev GM. Mumps vaccine investigation in Novosibirsk, Russia, 2002-2004. Clin Microbiol Infect. 2007; 13:670-6.

[13]. Kutty PK, McLean HQ, Lawler J, Schulte C, Hudson JM, Blog D, Wallace G. Risk factors for transmission of mumps in a highly vaccinated population in Orange County, NY, 2009-2010. Pediatr Infect Dis J. 2014;33:121-5.

[14]. Baiee HA, Weli H. Epidemiological characteristics of Mumps outbreak in the south districts of Babylon province during the years 2016-2017. Medical Journal of Babylon. 2018; 14:3.

[15]. WHO, Mumps reported cases; 2017 (data received as of 11-July-2017). http://apps.who.int/immunization_monitoring/globalsummary/timeseries/tsincidence umps.html.

[16]. Fiebelkorn AP, Barskey A, Hickman C, Bellini W. Mumps. Chapter 9. In: VPD surveillance manual. 5th ed. Atlanta, GA: US Department of Health and Human Services, CDC; 2012.

[17]. Centers for Disease Control and Prevention.Epidemiology and Prevention of Vaccine-Preventable Diseases, 13th Edition, chapter 14, 2015: 251.

[18]. Albertson JP, Whitney JC, Heather DR, Benjamin SA, Julie P, Awais V, Rachella TB, Fredrick E. Mumps Outbreak at a University and Recommendation for a Third Dose of Measles-Mumps-Rubella Vaccine- Illinois, 2015-2016. MMWR Morb Mortal Wkly Rep. 2016;65:731-734.
[19]. Li R, Shenghui C, Cheng L, Shannon R, Jin C, Qinqin X, Xiaodong L, Yanxun L, Fuzhong X, Qing X, Xiujun L. Epidemiological Characteristics and Spatial-Temporal Clusters of Mumps in Shandong Province, China, 2005-2014. Scientific Reports. 2017; (7): 46328.
[20]. Vodjgani M, Hadjati J, Bahrami F. Seroepidemiological study of mumps in 74 children 5 to 10 years old by complement fixation. Iranian Journal of Allergy, Asthma and Immunology. 2000; 1(1): 33-35.
[21]. Chatton Towrence M, Mercus A, Krupp Milton J, Current medical diagnosis and treatment. California: Lange Medical publications. 1986: 839.
[22]. Arafa RS, Ghada SA, Raneyah HMS, Inas AE, Rabab FSB, Nesreen MZE, Lamyaa HAS. Seroprevalence of measles, rubella, mumps and varicella specific antibodies in primary school children. Middle East Journal of Family Medicine. 2016; 14(1): 21-32.
[23]. Poethko-Muller C, Mankertz A. Seroprevalence of measles, mumps and rubella specific IgG antibodies in German children and adolescents and predictors for seronegativity. PLoS ONE 2012; 7(8): e42867.

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