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Original Research Article

A Study of Measles Epidemic in Babylon Teaching Hospital for Pediatrics and Gynecology

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Abstract

Measles is a viral disease with a distinctive maculopapular rash, and the mortality rate might reach about 25% because of malnutrition and lead to devastating complications. The vaccine and the introduction of oral vitamin A in the management of infected children with severe measles has dramatically changed the epidemiology of measles and the morbidity and mortality is greatly reduced.

To study the profile of the measles epidemic in Babylon teaching hospital for Pediatrics and Gynecology. A descriptive observational study was carried out during an outbreak of measles, in 2014, in Babylon City and data was taken from patients' caregivers, admitted to Babylon teaching hospital for Pediatrics and Gynecology. The line lists on measles was investigated include; age, sex, residence, nutritional status, type of feeding, any previous history of vitamin A supplementation, and vaccination status.

The mean age of the patients was about two and a half years, most of them were from rural areas. Those whom had taken their vaccination twice, are the least complicated and milder symptoms. Those who received repeated doses of vitamin A had less severe symptoms, fewer complications, and fewer days of hospitalization.

The study highlights the urgent need for early recognition and interventions for the emergence of new cases of measles and good vaccination coverage programs especially in the towns.

Key Words: Measles, Vitamin A, Measles epidemic.

الخلاصة

الحصبة هي مرض فيروسي مع طفح جلدي مميز. وقد يصل معدل وفيات الحصبة في البلدان النامية إلى حوالي ٢٥ في المائة بسبب سوء التغذية ويؤدي إلى مضاعفات مدمرة. وقد أدى اللقاح و إدخال فيتامين ألف عن طريق الفم إلى تغيير كبير في وبائيات الحصبة، وتقلص إلى حد كبير في عدد الوفيات. التعرف على الخصائص الوبائية والاجتماعية – الديموغرافية للمرضى المصابين بالحصبة، ودراسة دور الحالة التغذوية، ونوع الرضاعه، والمراضة المشتركة كعامل خطر للعدوى بالحصبة لدى هؤلاء المرضى، وتقييم دور التطعيم و فيتامين (أ) في الحد من شدة المرض ومضاعفاته.

أجريت دراسة وصفية رصدية خلال تفشي الحصبة في مدينة بابل عام ٢٠١٤، وتم أخذ البيانات من المرضى الراقدين في مستشفى بابل التعليمي للأمراض النسائيه وطب الأطفال . تم التحقق في عدة جوانب للأطفال المصابين الحصبة وتشمل؛ والعمر، والجنس، ومكان السكن، والحالة التغذوية، ونوع الرضاعه، وأي تاريخ سابق لمكملات فيتامين ألف، والتلقيح.

كان متوسط عمر المرضى حوالي سنتين ونصف السنة، معظمهم من المناطق الريفية. أولئك الذين أخذوا التطعيم مرتين، هي أقل الأعراض تعقيدا وأخف. أولئك الذين تلقوا جرعات متكررة من فيتامين (أ) كان لديهم أعراض أقل حدة، مضاعفات أقل، وأيام أقل من دخول المستشفى.

تسلط الدراسة الضوء على الحاجة الملحة إلى الاعتراف المبكر والتدخلات من أجل ظهور حالات جديدة من الحصبة وبرامج جيدة للتحصين ضد التطعيم وخاصة في المدن.

الكلمات المفتاحية: الحصبة، فيتامين(أ)، وباء الحصبة.

Introduction

Measles is a viral disease of high infectivity, which presents with an acute catarrhal illness, fever, characteristic Koplik spots on the buccal mucous membranes followed by a distinctive maculopapular rash [1,2]. The mortality rate of measles in developing countries might reach about 25% because of malnutrition and lead to devastating complications. The risk of death continues for a year after infection with measles owing to impairment of cellular immunity [3,4]. The measles vaccine has changed the epidemiology of measles interestingly. The measles vaccine has changed the epidemiology of measles dramatically. Once worldwide in distribution, endemic transmission of measles has been interrupted in many countries where there is widespread vaccine coverage [5]. Measles is diagnosed by expert clinicians on the basis of clinical grounds [6]. There are currently no antiviral agents available with demonstrated efficacy *in vivo* against measles virus [2]. Oxygenation, maintenance of hydration, and comfort are a priority in the management. Antipyretics for fever control and also comfort are useful, humidification of airway and supplemental oxygen may be useful [7]. Vitamin A therapy is indicated for all patients with measles. Vitamin A should be administered once daily for 2 days at doses of 200,000 IU for children 12 mo of age or older; 100,000 IU for infants 6 mo through 11 mo of age; and 50,000 IU for infants younger than 6 mo of age. In children with signs and symptoms of vitamin A deficiency, a 3rd age-appropriate dose is recommended 2 through 4 wk after the 2nd dose [5]. A wide variety of complications may be observed during the acute stage of measles or shortly thereafter. The respiratory tract is involved most often, but severe gastroenteritis also occurs [6].

The aim of this study was to analyze epidemiologic and socio-demographic characteristics of the patients with measles admitted to Babylon Teaching Hospital for Pediatrics & Gynecology. To study the role of nutritional status, type of feeding, and co morbidity as risk factors for measles infection in those patients.
To evaluate the role of vaccination and supplementation by vitamin A in reducing the severity of the disease and its complications.

Materials and Methods

A descriptive observational study was carried out during an outbreak of measles in Babylon City and data was taken from patients' caregivers, admitted to Babylon teaching hospital for Pediatrics and Gynecology, in the period from 1st of July 2014 to the 1st of January 2015. The total number of the patients was 100. The variables investigated include; age, sex, residence, nutritional status, vaccination status, any co morbidities, any history of contact with other cases of measles, presentations and complications.

Results

One hundred clinically diagnosed measles were admitted to Babylon Teaching Hospital for Pediatrics & Gynecology from the 1st of July 2014 to the 1st of January 2015. No difference regarding gender (male 48, female 52), the mean age of the patients (in months) 31.1±26 (ranging between one month to 11 years). Seventy four patients from rural area and 26 patients were from urban area. Nutritional assessment was done using Modified Wellcome Classification, nutritional status was poor in 61 patients, while 39 patients had good nutritional status as showed in table (1). Fifty seven of them had been breast fed, 43 patients were bottle

fed, while no one of them had a previous history of vitamin A supplementation. Twenty one patients were received their vaccination; 13 patients with one vaccine (M or MMR), eight patients with two vaccines (M & MMR), and 57 patients had no vaccination history. The age of 22% of the patients was less than nine months (below the measles vaccination age). The patients who were vaccinated twice had the least severe and least complications and milder symptoms. Fifty two patients had co-morbidity, 29 patients with acute gastroenteritis and twenty three had respiratory tract infections. About 78% of them had a history of contact with other patients with measles. The typical presentation was observed in 92% of the patients, and only 8% with atypical one. This study showed that the complications of measles were noted in 71% of the patients and as follow; upper respiratory tract infection (croup) was found in 10 (16.4%), pneumonia in 10(16.4%), bronchiolitis in 12(19.7%), while diarrhea, dehydration and poor feeding in 39(65.6%) of the complicated patients. There were combined complications in 23 patients; upper respiratory tract infections and diarrhea in 8 patients, pneumonia and diarrhea in 5 patients, and bronchiolitis and diarrhea in 8 patients, as showed in Table-2. Regarding the treatment, all of the patients had taken antibiotics and IV fluid, and about 95% of them received vitamin A either as a single dose in 80 patients, or as a repeated dose in 15 patients, while 5 patients didn't receive any dose of vitamin A. Those who received repeated doses of vitamin A had less severe symptoms, fewer complications, and less days of hospitalization (mean~4days), in the other hand, those who didn't receive vitamin A had the more severe the symptoms, the more frequent the complications, and more days of hospitalization (mean~6days).

Table 1 : Baseline characteristics of measles patients

Variables	Number of the patients	value
• Age(months)		31.1±26
• Gender Male Female	 48 52	 48% 52%
• Residence rural area urban area	 74 26	 74% 26%
• Nutritional status Poor Good	 61 39	 61% 39%
• Feeding Breast feeding Bottle feeding	 57 43	 57% 43%
• Previous history of vitamin A supplementation	0	0%`
• Vaccination: vaccinated patients not vaccinated patients below vaccination age	21 57 22	21% 57% 22%
• History of contact • No history of contact	78 22	78% 22%

Vitamin A supplementation during treatment	95	95%
o single dose	80	80%
o repeated doses	15	15%
No vitamin A supplementation	5	5%

Table 2: Complications of measles patients

Complications	Number of patients	Value
Upper RTI (croup)	10	14%
Pneumonia	10	14%
Bronchiolitis	12	17%
Diarrhea, dehydration, and poor feeding	39	55%
Total	71	100%

Discussion

In July 2014 and afterwards, there was a huge internal displacement in the Iraqi populations from the areas of northern and western of Iraq, after the brutal invasion of ISIS to these regions, it was hard to face the health and humanitarian needs for those displaced people, making them in the face of a lot of health problems including poliomyelitis and measles [8]. Of the 100 patients studied in Babylon Teaching Hospital for Pediatrics & Gynecology, with measles, diagnosed clinically, sex ratio was equal, this is similar to D'Ortenzio study [9], the mean age of the patients (in months) 31.1±26 (maximum age 11 years and minimum age is one month), the result matches well together with Sniadack's review [10], this may be due to the fact that measles is most likely to occur in infants and preschool children in crowded areas [2]. Seventy four patients from rural area and 26 were from urban area. This difference may be related to differences in access to health care and vaccination coverage [11]. Nutritional status was poor in 61% of the patients, while 39% of them had good nutritional status, this is true because those with poor nutritional status having low immune state, making them more liable for infections than the well-nourished children [12]. Fifty seven percent of them were breast fed and 43 patients were bottle fed, while no one of them had a previous history of vitamin A supplementation. In spite of the protective role of breast feeding, still the protective role of vitamin A supplementation more important [13,14]. Twenty one patients were received their vaccination; and 57 patients had no vaccination history, while twenty two patients were less than nine months (below the age of measles vaccination). This result is compatible with that of Jagar's study [15]. The patients whom vaccinated twice had the least severe and least complications and milder symptoms, this is consistent with So JS study[16]. Seventy eight patients had a history of contact with other patients with measles, while only twenty two patients had no history of contact, this is comparable with the references [5]. About half of the patients had co-morbidity, 17 of them (29.5%) with acute gastroenteritis and twelve (19.1%) had co-morbidity with respiratory tract infections, this is a fact that co-morbidities ameliorate the immune system. The typical presentation was in ninety patients, and only 10 patients were atypical one. The most common complication of measles is diarrhea and dehydration with poor feeding, followed by respiratory tract infections (upper and lower tracts infections) this result is matching that of a similar Turkish study [17]. Regarding the treatment, all of the patients had taken antibiotics and IV fluid, and about 95% of them received

vitamin A either as a single dose in 80 patients (80%), or as a repeated dose in 15 patients (15%), while 5 patients (5%) didn't receive any dose of vitamin A. Those who received repeated doses of vitamin A had less severe symptoms, fewer complications, and less days of hospitalization, in the other hand, those who didn't receive vitamin A had the more severe the symptoms, the more frequent the complications, and more days of hospitalization. This was proved by Mishra study [12].

Conclusion

Despite the primary prevention program of infectious diseases adopted by the local health authority, measles epidemics still happening. Insufficient vaccination coverage, especially in the rural areas, and probably the emergence of new virus strains resistant to the supplied vaccine, poor nutritional status, bottle feeding, comorbidity, and ignorance of the value of vitamin A in prevention and treatment of measles and its complications may be the risk factors behind these outbreaks.

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