Spectrum of Acute Complications of Measles in Erbil City

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ABSTRACT

Background and Objectives: Measles is an infectious viral disease which is highly communicable and a notifiable disease, it is encountered as a cause of morbidity and mortality. The objective of this study was to find out the most encountered acute complications of measles and relation of these complications to the age of children and vaccination status.

Methods: This is a prospective study done in Raparin pediatric teaching hospital, Erbil city, in the period of December 2008 to May 2009. Sixty eight cases of measles admitted with variable complications were studied. History was taken, complete examination and follow up in the hospital for variable complications was done.

Results: The mean age was 23.28 ±18.91 months, 42 cases (61.8%) of the admitted children were two years or less. Male children were 35(51.5%) cases and female 33 (48.5%) cases. Most of affected cases were unvaccinated for measles 58 cases (85.3%), history of contact in the family was observed in 33 cases (48.5 %) while10 cases (14.7%) has contact history in the pediatric hospital and 25 cases (36.8%) didn't show any clear contact history. The most common complications were diarrhea 45 cases (66.2%), pneumonia and vomiting 36 cases (52.9%) for each and febrile convulsions 5 cases (7.4%) and encephalitis 2 cases (2.9%).

Conclusions: Children who were infected and developed complications were less than two years of age , most of them were not vaccinated and they were from rural areas.

Key words: measles, vaccination .

INTRODUCTION:

Measles is a serious infection characterized by high fever, enanthem, cough, coryza, conjunctivitis, and a prominent exanthem. After an incubation period of 8–12 days, the prodromal phase begins with a mild fever followed by the onset of conjunctivitis with photophobia, coryza, a prominent cough and increasing fever. The enanthem, Koplik's spots, is the pathognomonic sign of measles and appears 1 to 4 days prior to the onset of the rash [1, 2]. Measles is a highly communicable disease transmitted by direct contact with infectious droplets or, less commonly, by airborne spread. Patients are contagious from one to two days before onset of symptoms to four days after appearance of the rash [3]. Measles vaccine available as a monovalent preparation or combined with the rubella (MR) or measles-mumps-rubella (MMR) vaccine [4, 5]. Morbidity and mortality from measles are greatest in patients <5 yr of age (especially <1 yr of age) [5]. Pneumonia, croup, tracheitis, and bronchiolitis are common complications in infants and toddlers with measles. Acute otitis media, sinusitis and mastoiditis also occur as complications [1]. Diarrhea and vomiting are common symptoms associated with acute measles [6].Febrile convulsions occur in <3% of children with measles [4]. Encephalitis occurs in about 1–3/1,000 cases, myocarditis is a rare complication. Miscellaneous complications include cellulitis, and toxic shock

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syndrome [1]. Measles infection can be diagnosed clinically and confirmed by a positive serologic test, including immunoglobulin (Ig) M antibody, a significant increase in measles IgG antibody or isolation of measles virus from clinical specimens, such as urine, blood, throat or nasopharyngeal secretions [6].

PATIENTS AND METHODS:

This is a prospective study done in Raparin pediatric teaching hospital, Erbil city, in the period of December 2008 to May 2009. Sixty eight cases of measles admitted with complications were studied and followed up. Diagnosis was done depending upon clinical examination of cases which includes Fever, cough, coryza, conjunctivitis, generalized maculopapular rash, koplik's spot and who did not fulfils the criterions of measles were excluded. History taken from care takers and complete examination done for all patients. Data analysis was done for different variables by statistician using Graph Pad InStat 3, p value of 0.05 or less was regarded as statically significant.

RESULT:

The mean age of the study group was 23.28±18.91 , minimum age was 2 months and maximum age was 64 months ,most of the admitted children were two years of age or less 42 cases (61.8%) while 26 (38.2%) cases were more than 24 months of age. Male to female ratio was 1.06:1, while most of affected cases were unvaccinated for measles 58 cases (85.3%) and 42 cases (61%) of them were from rural areas, history of contact in the family was observed in (48.5 %) while (14.7%) of cases had contact history in the pediatric hospital while they were admitted for other diseases and about one third (36.8%) of cases didn't show any clear contact history as shown in (Table 1). The occurrence of complications was variable. Diarrhea was the most common complication(45 cases,66.2%) which make the family to seek medical help in pediatric hospital ,while the next complication was pneumonia and vomiting (36 cases & 52.9%) respectively for each, while convulsion occurred in 7 cases (10.3%), two cases had encephalitis and five cases(7.4%) secondary to febrile convulsions ,as shown in (Table 2).

Complications were highly significant statistically in regard to the gender as shown in (Table 3).

The evidence of common complications showed no significance between both sexes as shown in (Table 4).

Regarding the relation of vaccination status to complications, all complications including diarrhea, vomiting, pneumonia, convulsion and skin infection were highly significant statistically as shown in (Table 5).

Table 1: Characteristics of the study group

Characters	Variables	No. of cases and percent
Age	=<2yr	42 (61.8%)
	>2yr	26 (38.2%)
Sex	Male	35 (51.5%)
	Female	33 (48.5%)
Residency	Urban	26 (38.2%)
	Rural	42 (61.8%)
Vaccination history	Vaccinated	10 (14.7%)
	Not vaccinated	58 (85.3%)
Contact history	Family	33 (48.5%)
	Hospital	10 (14.7%)
	Unknown	25 (36.8%)
	Day care center	0 (0%)

Table 2: Distribution and evidence of the complications.

Complications	Variables	No. of cases (Total no.68 cases)	percents
Diarrhea	Present	45	66.2
	absent	23	33.8
Pneumonia	Present	36	52.9
	Absent	32	47.1
Vomiting	Present	36	52.9
	Absent	32	47.1
OM	Present	6	8.8
	Absent	62	91.2
Convulsion	Febrile	5	7.4
	Encephalitis	2	2.9
	No convulsion	61	89.7
Skin infection (cellulitis)	Present	2	2.9
	Absent	66	97.1

Table 3: Relation of the complications to the age of the patients.

Disease	Age	No. of Cases	percent	P value
Diarrhea	≤2 yr	34	75.5	0.0016
	>2yr	11	24.5	
Pneumonia	≤2 yr	28	77.78	0.0058
	>2yr	8	22.22	
Vomiting	≤2 yr	22	61.1	0.1539
	>2yr	14	38.9	
Convulsion	≤2 yr	5	71.5	0.6998
	>2yr	2	28.5	
Otitis media	≤2 yr	2	33.33	1.000
	>2yr	4	66.67	
Skin infection (cellulitis)	≤2 yr	2	100	0.001
	>2yr	0	0	

Table 4: Relation of the complications to gender of the patients.

Complications	Gender	No. of cases	Percent	P value
Pneumonia	Male	20	55.56	1.000
	Female	16	44.44	
Convulsion	Male	5	71.42	0.1429
	Female	2	28.57	
Diarrhea	Male	23	51.11	0.4908
	Female	22	48.88	
Vomiting	Male	21	58.33	1.0000
	Female	15	41.66	
Otitis media	Male	2	33.33	0.4667
	Female	4	66.66	
Skin infection (cellulitis)	Male	2	100	-
	Female	0	0	

Table 5: Relation of the complications to vaccination status of the patients

Complications	Vaccination status	Percents	P value
Pneumonia	Vaccinated	3	0.000
	Not vaccinated	33	
Convulsion	Vaccinated	0	0.000
	Not vaccinated	7	
Diarrhea	Vaccinated	7	0.000
	Not vaccinated	38	
Vomiting	Vaccinated	7	0.000
	Not vaccinated	29	
Otitis media	Vaccinated	1	0.288
	Not vaccinated	5	
Skin infection (cellulitis)	Vaccinated	0	0.020
	Not vaccinated	2	

DISCUSSION:

This study has showed that children of less than 2 years of age are affected more with measles, this may be due to the fact that in crowded areas, measles most likely occurs in infants and preschool children [1, 7].This agrees also with Rice AL et al they found that most of affected children with measles are between one and two years [8]. Both sexes affected equally and sex ratio was nearly equal, this finding agrees with general concept of measles and this is similar to Langmuir's study [9, 10]. Out of 62 patients that admitted to the hospital 42 of them (68.1%) were form rural areas, and about 58 cases (85.2%) were not vaccinated for measles, this may be due to non compliance, overcrowding, undernutrition, and low vaccination coverage in rural areas and this leads to outbreaks of measles and more severe cases need admission to the hospital [9]. Gender related complications found in this study not to be significant; this goes with other studies and general conceptions of measles and most other infectious disease in which infection and complication of the disease depends on the outbreaks and vaccination status [9, 10] , while most of the complications are more common in infancy and early childhood [8] .Diarrhea was encountered in two years old children or less in this study in 34 cases (75.5%) while above two years old showed 11 (24.5 %) cases with p value of 0.0016 which is highly significant, this value agrees with other studies which showed that measles complications are highly observed and more sever in infants who are immune depressed [8, 11]. Contact history was absent in 25 cases (36%) as measles can be transmitted in a considerable cases by air [9] ,while history of contact in pediatric hospital was clear for those children that admitted for other causes, this is occurred probably because there is no specific hospital for pediatric infectious disease which are communicable. The most common complication was diarrhea , occurred in two third of cases , (45 cases ,66.2%) and pneumonia occurred in about half of cases (36 cases ,52.9%) this is agreed with N Deivanayagam et al in India who found that most common complications that occur and for which patients seek for medical help were diarrhea and pneumonia [11] . while encephalitis occurred in larger number 2 cases (2.9%) which doesn't agree with other studies which found that encephalitis as a complication of measles virus dose not occurs more than one per thousand cases (0.1%) [11,12] , this is probably because they take all cases that documented as measles rather than those admitted to the pediatric hospital as in this study, while febrile convulsions occurred in 5 (7.4%) cases this is agrees with other studies but in lesser extent this is probably because of better control of fever and early seeking for medical consultations [1,10,12]. Other complications like otitis media occurred in 6 (8.8%) cases which agrees with other studies done by M I Marks et al, Pemer SR et al who they found that otitis media occurs in about 7% of cases [12, 13].Skin infections found in this study in 2 cases (2.9%) this complication not encountered in this extent in other studies [14], probably it was because of skin infection with other microorganisms.

CONCLUSIONS:

In spite of the vaccination system for the prevention and control of measles in our country, it still occurs in epidemics. Children who were affected and admitted to the hospital were mainly less than two years of age and most of them were not vaccinated and from rural areas with no gender differences. Contact history was obvious in a considerable number of patients in the pediatric hospital, while most common complications encountered were diarrhea, vomiting and pneumonia and found in those children who are not vaccinated and who are below two years of age.

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