Typhoid and paratyphoid fever in children in Kadhimiya Hospital

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Abstract:

Background: Typhoid & paratyphoid fever is an endemic disease in Iraq with increased morbidity & Mortality among children.

Objective: To determine the incidence of the disease in order to provide basis for better management.

Methods: A retrospective study that included reviewing the medical records of 1702 children under 5 years suspected clinically to have typhoid fever and attending Al-Kadhimiya hospital for children during the period from the beginning of January till the end of December 2000. Records of the positive cases for Widal test (546 admitted patients) were studied with regard to age, sex, area of residence, date of admission and discharge. The disease was` diagnosed depending on the clinical presentation and the result of Widal test.

Results: Out of 1702 serum specimens, 546(32.1%) proved to be positive for Typhoid and paratyphoid fever. More females (63.7%) were affected than males(36.%3). The predominant age affected was 3-5 years (72.4%), the incidence was higher in children from rural areas (58%) and during summer (44.7%). Most of the patients proved to suffer from S. Typhi infection (54.9%) but the least number was suffering from S. Paratyphi A (0.7%), However mixed infection was quite common in this study (30.2%).

Conclusion: The considerable high incidence of typhoid and paratyphoid fever in this study indicated that this disease is still an important heath problem in this area.

Keywords: Typhoid and paratyphoid**,** children,Kadhimiya,

Introduction:

Typhoid and paratyphoid fever (Enteric fever) is an acute systemic disease caused mainly by Salmonella typhi and Salmonella paratyphi A and B. It is characterized by prolonged fever, headache, abdominal pain, rose spots, and splenomegaly. The patients gain the disease through entrance of the causative agents with the contaminated food or water[1].

The disease is still very common in many parts of the world especially in developing countries in which it is endemic[2,3,4].

The accurate diagnosis of the disease requires the isolation of the causative agents from the blood, feces, urine and other body fluids[1, 5].

Microbial isolation is not usually done in our laboratories due to unavailability of culture media, improper use of antibiotics prior to the hospitalization, development of bactericidal antibodies and inadequate culturing time[6,7]. Therefore, the diagnosis of the disease rely upon its clinical features and detection of significant titer of agglutinating antibodies against O and/or H antigens of S. typhi, S. paratyphi by widal test[8,9,10].

The rapid slide-widal test is the most widely used procedure in Iraq and other countries because if the simplicity with which the results maybe reported [11,12,13,14].

The aim of this study is to clarify the incidence of Typhoid and paratyphoid in the area in order to provide a basis for better management.

Materials & Methods:

This is a retrospective study included reviewing the medical records of 1702 children under 5 years old whom suspected clinically as typoid fever attending to Al-Kadhimiya hospital for children during the period from beginning of January till the end of December of the year 2000.

Records of the positive cases for widal test (546 admitted patients) were studied with regard to age, sex, area of residence, date of admissions and discharge. The disease was diagnosed depending on the clinical presentation and the result of widal test. The test was done by the rapid slide agglutination as described by Al-Rawi (7) using the suspension of stained bacterial antigen (Iraqi product of sera & vaccine institute). The result was considered to be positive when both flagellar (H) and somatic(O) antibody titers were 1/160 or above(14).

Results:

Out of the total number of examined patient (1702), only 546(32.1%) proved to be positive serologically (widal test) for typoid and paratyphoid fever. From the number of the admitted patients (546), there were 348 females (63.7%) and 198 males(36.3%). Most of the admitted patients were in the age of 3-5 years (72.4%) for both male and female, as shown in table (1).

Table 1: The age and sex distribution in 546 admitted children with typoid and paratyphoid fever during the year 2000

Age	Male		Femal		Total	
Years	**No.**	**%**	**No.**	**%**	**No.**	**%**
<1	8	36.4	14	63.6	22	4.0
1-2	15	42.9	20	57.1	35	6.4
2-3	35	37.2	59	62.8	94	17.2
3-4	60	37.3	101	62.7	161	29.5
4-5	80	34.2	154	65.8	234	42.9
Total	**198**	**36.3**	**348**	**63.7**	**546**	**100**

This study also showed higher incidence of the disease in the rural areas (58%). The highest percentage of patients occurred during summer (44.7%) and the least percent during winter(5.9%) as shown in table (2). The monthly distributions revealed that the most positive cases of the disease appeared in July 80(14.7%), May 63(11.5%) and October 62(11.4%). According to the agglutination titer, manifested by widal test most of the patients proved to suffer from S. typhi infection 300(54.9%), the least number of patients were suffering from S. paratyphi A.4(0.7%).

Some patients showed agglutination titer to S. pararyphi B. 61(11.3%) however mixed infection(Typhoid and pararyphoid) were quite common in this sudty:165(30.2%) as shown in table(3). The positive cases showed a titer level ranging from 1/60 to 1/320 as shown in table(4).

Table 2: Seasonal distribution of 546 admitted patients with typhoid and paratyphoid fever

Season	No.	Percent
Summer	244	44.7
Autumn	171	31.3
Winter	32	5.9
Spring	99	18.1
Total	546	100

Table 3: The distribution of 546 positive serum examined for typhi, S. paratyphi A, S. paratyphi B. and mixed infection

Cases	No.	Percent
Positive for S. typhi	300	54.9
Positive for S. paratyphi A	4	0.7
Positive for S. paratyphi B	61	11.3
Positive for S. paratyphi A, S. paratyphi B	16	2.9
Positive for S. typhi, S. paratyphi A, S. paratyphi B.(mixed 165 infection).	165	30.2
Total	546	100

Table 4: The distribution of H & O agglutinin titers:

H-agglutinin titer	**O- agglutinin titer**		
	1/160	1/320	**Total**
1/80	83 (15.2%)	80 (14.6%)	163 (29.8%)
1/160	90 (16.4%)	94 (17.2%)	184 (33.6%)
1/320	95 (17.4%)	90 (16.4%)	185 (33.8%)
Neg.	10 (1.8%)	4 (0.7%)	14 (2.5%)
Total	**278 (50.9%)**	**268 (49.1%)**	**546 (100%)**

Discussion:

The high number of the admitted children in this study(546) as well as the others whom diagnosed and treated in the private clinics may indicate that the typoid fever is still a common health problem in the area. The majority of the infected patients were within the age of 3-5 years and the disease was less frequent in very young children, this might be due to more contact with the causative agents of the disease, this agreed with some previous works [15,16].

The patients contract the disease from rural more than urban area noticed in this study, indicates the differences in the hygienic standards which seems to be linked with the degree of endemicity of typhoid fever. This confirms the results obtained by earlier reports in Iraq [14], and other countries [3,8]. In Asia, Africa, South America. The disease is prevalent in urban slums and rural [4,8] communities, showing an indigenous trend in the same areas. Holmes et al [17] told that there is no seasonal preponderance and the disease appears sporadically during the year, however this study showed increased incidence in July, May, and October and this may be due to more exposure of children to environmental changes which help development of the microorganisms. The predominance of typhoid fever (54.9%) in this study followed by mixed infection (typhoid and paratyphoid)(30.2%) and then paratyphoid fever (11.3%) may explain the

variation in the severity of the clinical signs and symptoms revealed by the patients.

The high levels of agglutination titer may give an idea about the high endemicity of the disease in the area [12,14]. Although the reliability of single widal test in the diagnosis of typhoid fever has been doubted, but asking for a second test to detect subsequent increase in antibody titters is of more informative value particularly in developing countries where facilities for culture and isolation of the causative microorganisms are not available[18,19].

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