Clinical Study on Cholera Patients in Babylon

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Abstract

We made a clinical study on 52 patients with acute diarrhea illness during the Epidemic of Cholera that was anticipated in the city of Hilla, Babylon Governorate, during the years 1998 and 1999 and a plan was made to manage these cases . During the period of epidemic any patient with acute diarrhea admitted to Merjan Teaching hospital,was screened by stool culture using alkaline sea water, TCBS media, confirmatory biochemical and serological tests using monovalent diagnostic antiserum of specific substrains including Ogawa, Inaba; any patient with negative culture excluded from the study. The result of the study showed that 20% of cases were sever at presentation, also the complications of sever cases were described including metabolic acidosis, renal failure and hypotension and case fatality was 1.9%. The study may conclude that: Cholera is still present in our country, the predominant strain 01, El-Tor, Ogawa . Early planning to control dehydration & management of complications will greatly reduce mortality.

الخلاصة

تم إجراء دراسة سريرية على ٥٢ مريضِ مصاب بمرضِ الإسهالِ الحادِّ و أثناء وباءِ الكوليرا الذي حدث في مدينةِ الحلة، محافظة بابل، أثناء السَنَواتِ ١٩٩٨ ١٩٩٩وقد وضعت خطة لإدارة هذه الحالاتِ. وأثناء فترةِ الوباءِ أيّ مريض مصاب بالإسهالِ الحادِّ أدخلَ إلى مستشفى Merjan التعليمي،واجري له زرع عينة البراز بماءِ البحرو إستعمال التوكيدية الكيموحياتية وإختبارات مصلية serological ضِدَّ مصلَ الـ Ogawa، ,Inaba؛والعينات التي اعطت نتائج سلبية استثنيت من الدراسة . وتلخص الدراسة على ان ٢٠ % مِنْ الحالاتِ شديدة ولديها إختلاطات بضمن ذلك الحمّاضِ الأيضي، وإنخفاض ضغط الدم وفشل كلوي ونسبة الوفات في الحالات وبلغت ١,٩ %. نتيجةً لذلك:

الكوليرا ما تزالَ موجودة في بلادِنا، النوع السائد ٠١، ر، Ogawa.و التخطيط المبكّر للسَيْطَرَة على الجفافِ ومعالجة الآختلاطات يؤدي الى السيطرة على المرض والتقليل كثيراً من حالات الوفيات .

Introduction

Illness and deaths due to dehydrating diarrhea and vomiting can be recognized in the writting of susruta (sanskrit); Hippocrates , Galen and Wang Shooho[1]. Cholera can reduce a perfectly healthy , rubust adult to shock and death in (4-6) hours. Despite the capacity of cholera to cause sever illness, many of the infected persons have only mild diarrhea indistinguisable from that of ordinary gastroenteritis, and in epidemics half of those infected have either no symptoms or very mild illness [2].

Individuals with low gastric acid production or those who are on acid suppressing medications or who have had gastrectomies are especially vulenerable and cholera tend to attack persons with blood group O more frequently and with greater severity; whereas individuals with blood group AB have less sever disease [3]. People with "Safe" water supply and effective

waste disposal are at least risk regardless of host susceptibility [4]. Many of the factors which regulate cholera transmission will be lnfleunced by local culture, behavioural practices and socioeconomic conditions and importantly on the level of Herd immunity to the infection in a given population[5].

There are still many unanswered questions about the spread of cholera . The disease even in endemic areas is characterised by periods between outbreake of many months during which there is no evidence of vibrio cholerae in water or food , and there are no animals or vectors [6,7]. The idea that the clinical manifestation of cholera due to toxin really has its roots in the writing of John Snow [8]. No scourge was feared more than cholera and the advent of bacteriological era did not allay that fear. We have learned to treat the disease successfully , but we have not yet over most of the earth succeeded in controlling vibrio cholera [9].

We made a clinical study on patients with an acute diarrheal illness admitted to Merjan Teaching Hospital during the period of Cholera epidemic 1998 and 1999 that was anticipated in Hilla city , Babylon Governorate and a plan was made to manage these cases .

Patients and Methods

An Epidemic of Cholera was anticipated in the city of Hilla , Babylon Governorate, during the years 1998 and 1999 and a plan was made to manage these cases . During the period of epidemic any patient with acute diarrhea admitted to Merjan Teaching hospital ,was screened by stool culture using alkaline sea water , TCBS media, confirmatory biochemical and polyvalent and monovalent serological tests using antiserum of specific subs trains including Ogawa, Inaba; any patient with negative culture excluded from the study and a total of 52 samples were positive for cholera .

Blood urea, Serum Creatinine , Serum Electrolytes and arterial blood gas analysis were done in most moderate and sever cases. The Clinical course and outcome of the cases including case fatality rate were recorded. IV fluids used in the rehydration included Normal saline(0.9%), Ringer solution, Lactated ringer , and $NaHCO_3$ 1.4% solution used. ORT(Oral Rehydration Therapy) used in mild cases according to WHO recommended Dextrolytes solution containing 3.5g NaCl, 2.5g $NaHCO_3$, 1.5g KCl and Glucose 20g/L or Sucrose 40g\L.

Antibiotics used are either single or combination used for 3 – 5 days .

Results

A total of 52 cases of Cholera were diagnosed , 23 males and 29 females ; their age ranged from 12 – 65 years with a mean of 28.8 ± 12.5 years .Most cases (38) were from Villages and rural areas of Hilla Districts , where there is poor sanitation and inadequate, unsafe water supply .

The Duration of symptoms before admission ranged from Few Hours to 5 days .The duration of stay in hospital ranged from (1 – 8 days)

The severity of cases ranged from mild cases with little complications to severe cases as shown in table 1.

The major manifestations are acute watery diarrhea in all cases and the rice watery stool was described in 50% of cases, other manifestation is shown in table 2

The main major presenting symptom and sign is Diarrhea 100% and the rice-Watery stool seen in 50% of cases .

The principle complications of the clinical cases noticed mainly in moderate and severe cases and include (shock, hypotension, severe

dehydration , oliguria , metabolic acidosis and renal failure and six patients required peritoneal dialysis(PD) out of nine uremia patients and one died during PD. Table 3 describes these complications and Table 4 shows the types of fluid therapy used in the treatment of clinical cases and table 5 describes the antibiotic therapy used in the treatment .

The outcome was a complete recovery in about 92% of cases and 9 patients developed uremia and 6 of them required PD and one died making case fatality of 1.9%

The strain isolated in hospitalized cases was mostly V. cholera biotype El-Tor and serogroup 01 with serotype Ogawa .

Antibiotics used :

Tetracycline, Ciprofloxacine, Doxicycline , and Cotrimaxozol

Table 1 Types of cases according to their severity :

Type	No.	Percentage %
Mild	17	32.7
Moderate	25	48.1
Sever	10	19.2
Total	52	100%

Table 2 The principle clinical manifestations in 52 cases

Symptoms	No. Of cases	Percentage
Diarrhea	52	100%
Bloody diarrhea	2	3.8%
Vomiting	٤٥	87%
Oliguria	20	38%
Abdominal pain	15	30%
Tiredness & Lethargy	12	23%
Fever	5	10%
Hematemesis	1	2%
Confusion & Drowsiness	20	38%
Some Respiratory symptoms	2	4%

(presence of blood was attributed to local anal fissure rather than due to cholera) but haematemesis was realy seen in one patient most probably due to mucosal tear or erosion

Table 3 the main complications in 52 patients with Cholera

Complications	No. of patients	Percentage %
Shock & Hypotension	١٦	30.8
Metabolic Acidosis	٧	13.5
Electrolytes disturbances	٩	17.3
Renal failure	٩	17.3
Death	١	1.9
No complications	10	19.2
Total	52	100%

Table 4 show Type of Fluid Therapy :

Fluid	No. Of Cases	Amount

Ringer solution & KCl infusion	**For all moderate & sever cases**	**2 – 8 units \ day**
Normal Saline	**Moderate & sever cases**	**2 – 8 units \ day**
Na Bicarbonates	**5 cases**	**2 Bottles**
(ORS) oral Rehydration	**Mild cases**	**2 – 4 pach \ day**

Table 5 shows type of Antibiotics :

Agents	Indications
Tetracycline	**Used for most cases except uremic patient and those under 12 years**
Doxycycline	**Used for contacts & those with renal insufficiency**
Erythromycine	**Used in two pregnant ladies and also those under the age of 10 years**
Co trimoxazol	**Used for those under the age of 12 years , also used in one pregnat lady**
Clarithromycine	**Recently used in Cholera**

Discussion and Conclusions

It seems from the results of this study that cholera predominates in younger age group (mean of age is 28.8 years) and there is slight female preponderance. In endemic areas, the disease attacks more children than adults [9-11]. This is partly due to immunity in adult age group . In Italy and in 1973, the median age of patients was 52 years and few childrent get infection at that time [12].

Infection is not the same thing as clinical illness and most people who become infected with Vibrio Cholera have no or little signs and symptoms of the disease . These asymptomatic but infected people , are non the less jnfectious and can spread the disease and much difficulties in controlling spread due to so many infected but asymptomatic people and in El Tor infection the number without symptoms may be 4 times or larger than those with symptoms [13]

In clinically typical cases with the passage of rice-water stool and early dehydration, especially during the period of outbreak, there is no difficulty in the diagnosis, and the disease severity range from mild to sever type and in mild cases , there are no clinical findings to distinguish the disease from many other causes of acute diarrheal illness, but during thr outbreak of cholera, any acute diarrhea should be considered cholera until proved otherwise . In all cases , but the mildest cases, the loss of fluid in the stool exceeds the oral intake and symptoms and signs of dehydration appear and obviously most of those severly dehydrated patients are oliguric . The complications of cholera are direct results of loss of body fluid , in moderately severe cases, which represent about 48% of the studied cases responding rapidly to treatment .The hypovolumic shock and hypotension noticed in about 31% of the studied patients also these were the basic cause of renal failure, and early rapid treatment had made rapid recovery of renal function in these patients [14,15].

The fluid lost in cholera contains much bicarbonates and this quikly leads to metabolic acidosis, furthermore renal failure may add to acidosis, because the kidney produces no longer bicarnonates nor excretes acids. The acidosis leads to hyperventilation, pulmonary hypertension and tendency to

pulmonary oedema. The addition of bicarbonate lactate or acetate will correct the acidosis and the tendency to pulmonary oedema and this is true even when there is some overhydration [16].

After correction of acidosis by lactated ringer or bicarbonates infusion it is preferebly later to correct further dehydration and fluid loss by normal saline in order to prevent alkalosis and their consequences .The essence of treatment is to replace quicly what has been lost with particular attension to correction of acidosis and hypokalemia, in addition oral rehydration therapy (ORT) can reduce the needs for skilled intravenous therapy particularly in districts areas and rural health centers .

The main roles of antibiotics in the treatment of cholera is to shorten the excretion and also the volume and duration of fluid stool and they do not otherwise affect the recovery. The diarrhea of cholera is caused by changes in fluid transport in the small intestine, not primarily by increased peristalsis, so anti – peristaltic drugs had not been tried in most our patients , nor other specific therapy that aimed at stopping the secretion of fluid (e.g.) chloropromazine, nicotine or ethacynic acid[17].

If we compare the Case Fatality Rate (CFR) in 3 studies,1.3%(In Al-Abbassi,Eastern Mediterranean Health Journal) [18] ,3.6%Globaly (Cholera 1998, Weekly Epidem. Record)[19] 1.9%in the present study it is less than the global figure .

Positivity rates of detection of *Vibrio cholera* from the stool samples in northern of Iraq (23 August – 8 Sept. 2007) to that detected in Babylon Governorate during this recent outbreak and the outbreak happened in 1998 - 1999 [20- 22]:

Table 6

Province	ratio	%
Northern of Iraq	1078/ 13934	7.74%
In Babylon 1998	52/600	8.6%
In Babylon 2007	No cases reported	0

In conclusion

Cholera is still present in our country , the predominant strain 01 , El-Tor , Ogawa.Early planning to control dehydration and management of complications will greatly reduce mortality.

Proper & careful stool screening and culturing to detect cases before epidemic should be applied , in addition to proper sanitation , hygiene and water supply . Also in Cholera outbreak Teams must be available And includes experts in diagnosis , treatment and prevention and experts ready to train local teams to tackle the problem during emergency situation .

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