ORIGINAL ARTICLE

FREQUENCY & CHARACTERISTICS OF DIARRHEA IN PATIENTS WITH ACUTE DENGUE FEVER

Saleem Iqbal, Mahboob ur Rahman, Sheema Khan, Mian Afaq Ali, Mohammad Darwesh Iqbal, Noor ul Iman

Department of Medicine, Khyber Teaching Hospital Peshawar -Pakistan

ABSTRACT

Objectives: To determine the frequency & characteristics of the acute diarrhea in patients admitted with acute dengue fever.

Material & Methods: It was a retrospective study conducted in the medical department of Khyber Teaching Hospital, Peshawar from September 2017 to January 2018. All adult patients, from 14 years of age consecutively admitted in the hospital, having signs & symptoms suggestive of dengue fever & who were NS1 positive, were included in the study.

Results: We examined 260 patients, 174 were males, 144 ie 54.4% had acute diarrhea, 55.172% amongst them were males. 56.93% of the patients developed diarrhoea on the 2nd to 3rd day, which subsided in 2-4 days in 72.91% patients, the frequency of stools was between three to five per day in 81.25% of patients, the stools were watery in 47.91%, mucous was present in the stool in 06.95% of our patients, fresh blood was present in stools in 4.16% patients, while only 00.69% patients had black coloured stools, reflecting blood from stomach, indicating haemorrhagic gastritis..

Conclusion: Acute watery diarrhoea is a common presentation in our patients suffering from acute Dengue fever.

Keywords: Dengue, fever, acute diarrhoea.

This article may be cited as: Iqbal S, Rahman MU, Khan S, Ali MA, Iqbal DM, Iman NU. Frequency & characteristics of diarrhea in patients with acute dengue fever. *J Med Sci* 2019 Oct;27(4):277-80.

INTRODUCTION

Dengue fever is the most rapidly spreading mosquito-borne viral disease in the world.[1] Incidence of Dengue fever has increased 30 fold in the last 5 decades with the annual infections occurring at the rate of 50-100 million per year, resulting in about 200,000 deaths/ year[2]. Dengue fever is prevalent worldwide, including Asia, America, Africa & the Eastern Mediterranean regions.[2] In Thailand, dengue affects about 15,000 to 105,000 people annually, with at least one case of Dengue hemorrhagic fever in each province each year.[3] In Indonesia, 150,000 cases were reported in 2007 with 1% mortality rate.[1] Epidemics of Dengue fever have been reported from Taiwan, China, Srilanka, Indonesia, Philippines, Malaysia, Myanmar, India, Pakistan & other countries.[2,4-7]

The environmental conditions for transmission of dengue fever are quite favourable in Pakistan. First epidemic of dengue fever was reported from Karachi in 1994,[8] subsequently from Lahore & Swat in 2014, & from Peshawar in 2017[9,10]. During the last epidemic of dengue fever in Peshawar which started in September 2017, more than 24,382 patients who attended the Accident & Emergency department of Khyber Teaching Hospital, Peshawar, turned out positive for Dengue fever.[11]

Dengue fever is due to Dengue virus, a flavivirus, of four serotypes transmitted from human to human by the infected Aedes *aegypti*.[1] Needlestick, mucocutaneous & verical transmission is very rare[12]. On an average 84% of the transmissions occur from asymptomatic infected individuals & only 01% from symptomatic infected individuals[13]. Stagnant water, large population with no immunity & frequent contact between vector & people are the main factors leading to transmission in an area[12]. After an incubation period of about 4 to 10 days, only 20% of the recepients develop the clinical disease, the rest remain asymptomatic.[1] The clinical disease varies in severity from mild disease (Dengue fever) to severe haemorrhagic fever to Dengue shock syndrome. WHO classified Dengue as Dengue without warning signs, Dengue with warning signs & severe Dengue in 2009. In febrile phase, patients develop abruptly

Dr. Saleem Iqbal (Corresponding Author)
Associate Professor Medicine
Khyber Teaching Hospital
E-mail: drsalimiqbal1@gmail.com
Cell: +92-333-9125084
Date Received: June 14, 2019
Date Revised: November 27, 2019
Date Accepted: December 20, 2019

highgrade fever with chills, myalgias, headache, retro orbital pain, anorexia, nausea, vomiting[1] & diarrhea[14]. The patient may have injected conjunctivae, facial flushing, maculopopular rash, sore throat & rarely bleeding from vagina or gastrointestinal tract. Febrile phase is usually cleared by 8th day. A subset of patients may develop severe Dengue fever with leakage of plasma from capillaries leading to Pleural effusion, ascites, abdominal pain, haemorrhagic manifestations, hepatitis, myocarditis & encephalitis. This stage last for 24 to 48 hours. The reduction of blood pressure & bleeding may result in shock. The recovery phase follows the critical phase, which may be accompanied by the classical rash of "isles of white in the sea of red".[1] Neurological manifestations eg altered consciousness, convulsions & encephalitis may occur[4,15].

In 2015 a large study comprising of 22,777 patients of dengue, conducted in Taiwan, the common clinical features, in order of frequency, were fever (92.8%), myalgias (26.6%), headache (22.4%), bone & joint pains (9.7%), skin rash (8.8%), nausea & vomiting (7.8%), gastrointestinal symptoms (5.4%)[4], leukopenia (3.5%), thrombocytopenia (1.3%), gastrointestinal bleeding (0.3%) & bleeding from other sites (0.6%).

During the outbreak of Dengue fever in Peshawar, in 2017, diarrhea was one of the significant symptoms, seen in the patients admitted to the Khyber Teaching hospital, with symptomatic acute Dengue fever. Therefore in order to determine the frequency & characteristics of the acute diarrhea in these patients, we embarked on this study.

MATERIAL & METHODS

It was a retrospective study conducted in Khyber teaching hospital Peshawar, from September 2017 to January 2018. All patients >14 years of age, having signs and symptoms suggestive of dengue fever & who were NS1 positive, were included. Patients known to have chronic gastrointestinal tract related conditions like inflammatory bowel disease, other causes of acute or chronic diarrhoeal diseases & irritable bowel syndrome, were excluded from the study. Consecutive sampling was done from patients admitted in the hospital. Data was collected using interview based questionnaire asking a few simple questions regarding the diarrhea in the patients who qualified the inclusion criteria. Data was collected, descriptive statistics were used to show the frequency of the diarrhea, its characteristics & duration in the patients under study.

RESULTS

We examined 260 patients, 174(66.92%) were males, with age range from 14 till 69 years, the mean age of patients was 36.79 with standard deviation of 15.487. Out of 260 patients 144 ie 55.38% had the history of acute diarrhoea , and amongst them 66.66% were males, reflecting male predominance. In our study 70.38% of the patients were young in the age range 21-60 years as shown in Table 1. Majority of the patients developed diarrhoea from 2nd to 3rd day, 23.46 % on 2nd day and 21.15% of the patients on 3rd day. Fortunately in 58.44% patients, acute diarrhoea subsided rapidly, in two to four days, 58.07% of patients reported three to five stools per day, while the stools were watery in 41.93%, as shown in the Table No. 2. As far as contents are concerned, 78.45% of patients had normal coloured stools, 23.93% of our patients had mucous, 4.22% patients had fresh blood in their stools while only 3.43% patients had black coloured stools.

Table 1: Age distribution of the Patients

S.no	Age in years	Frequency & %ages
1	14-20	46(17.69%)
2	21-40	114(43.84%)
3	41-60	69(26.53%)
4	61 & above	18(6.92%)
5	Data missing	13(5%)
6	Total	260(100%)

Table 2: Consistency of the Stools

s.no	Consistency	Frequency & %ages
1	Watery	69(47.91)
2	Soft	46(31.94)
3	Semisolid	28(19.44)

DISCUSSION

We examined 260 patients, 174 (66.92%) were males & 86 (33.1%) were females, with age range from 14 till 69 years. Another study published from the same area reported 67.10% males, reflecting that males predominently suffer from Dengue, probably because of more environmental exposure compared to females[16]. The mean age of patients was 36.79 with standard deviation of + 15.487(11-82). The mean duration of Dengue fever in days, was 6.6+1.9[2-14]. Out of 260 patients 144 ie 54.4% had the history of acute diarrhoea, and amongst them 55.172% were males, again the males suffered from diarrhoea more compared to females. Diarrhea is increasingly been reported in patients suffering from dengue fever[17]. Two patients were reported who presented with acute diarrhea & later developed haemorrhagic skin lesions ultimately diagnosed to be suffering from dengue fever[18]. In 2015 a large study was conducted in Taiwan, acute diarrhoea was reported in

only 5.4% of patients sufffering from Dengue fever[4]. In one of the study, conducted in a tertiary care hospital in India reported diarrhea in 9.6% of admitted patients[19], while another study reported the acute diarrhea in 26% of patients admitted with dengue fever[20]. The above four studies show that acute dirrhoea is variable from area to area, being lowest in Taiwan & highest in Peshawar district of Pakistan.

In our study 70.37% of the patients were young in the age range 21-60 years. Another study conducted from the same area reported 93.20% of the patients in the same age group ie 21-60 years16, though slightly high compared to our study, but both the studies reflect that young people suffer from Dengue fever more compared to extremes of the ages. Majority of the patients developed diarrhoea from 2nd to 3rd day, 30.55 % on 2nd day and 26.38% of the patients on 3rd day. The mean of the days, on which diarrhoea started was 3.0, with Standard Deviation of $+1.4^{1-7}$.While the mean duration of diarrhea in days was 3.1 with Standard Deviation of $+ 1.5^{1-8}$. Fortunately in 72.81% patients, acute diarrhoea subsided rapidly, 28.47% in two days, 25.69% in three days, and 18.75% in four days. Classcally acute diarrhea is described as loose stools with frequency of more than three bowel movements per day or liquidity of stools[12]. In our study 81.25% of patients reported frequency between three to five stools per day, while the stools were watery in 47.91%, as shown in the Table No.2. As far as contents are concerned, 95.13% of patients had normal coloured stools, mucous was present in the stool in 06.95% of our patients, 04.16% patients had fresh blood in their stools while only 00.69% patients had black coloured stools, reflecting blood from stomach, indicating haemorrhagic gastritis.

CONCLUSSION

Acute watery diarrhoea is a common presentation in our patients suffering from acute Dengue fever.

REFERENCES

1. WORLD HEALTH ORGANIZATION. Dengue – guidelines for diagnosis, treatment, prevention and control: new edition 2009 [Available from: http://www.who.int/tdr/publications/documents/dengue-diagnosis.pdf.
2. World Health Organization. Global Strategy for dengue prevention and control, 2012–2020[August 2012. Available from: http://apps.who.int/iris/bitstream/handle/10665/75303/9789241504034_eng.pdf?sequence=1.
3. Lauer SA, Sakrejda K, Ray EL. Prospective forecasts of annual dengue hemorrhagic fever incidence in Thailand, 2010-2014. Proc Natl Acad Sci U S A. 2018;115(10):E2175-E82.
4. Yeh CY, Chen PL, Chuang KT. Symptoms associated with adverse dengue fever prognoses at the time of reporting in the 2015 dengue outbreak in Taiwan. PLoS Negl Trop Dis. 2017;11(12).609-11.
5. Wang J, Chen H, Huang M. Epidemiological and etiological investigation of dengue fever in the Fujian province of China during 2004-2014. Sci China Life Sci. 2017;60(1):72-80.
6. Pooja S, Sabeena S, Revti B. Circulating Genotypes of Dengue-1 Virus in South West India, 2014-2015. Jpn J Infect Dis. 2017;70(6):663-5.
7. Debnath F, Ponnaiah M, Acharya P. Dengue fever in a municipality of West Bengal, India, 2015: An outbreak investigation. Indian J Public Health. 2017;61(4):239-42.
8. Qureshi JA, Notta NJ, Salahuddin . An epidemic of Dengue fever in Karachi--associated clinical manifestations. J Pak Med Assoc. 1997;47(7):178-81.
9. Ahmad H, Ullah I, Ahmad T. Outbreak investigation report of dengue fever during June-November 2014: A case study of district Swat, Pakistan. J Pak Med Assoc. 2018;68(2):192-4.
10. Haider Z, Ahmad FZ, Mahmood A, et al. Dengue fever in Pakistan: a paradigm shift; changing epidemiology and clinical paterns. Perspect Public Health. 2015;135(6):294-8.
11. International Federation of Red Cross And Red Crescent Societies. Pakistan: Dengue Outbreak Khyber Pakhtunkhwa (MDRPK014) DREF Operation Final Report 2018 [Available from: http://adore.ifrc.org/Download.aspx?FileId=187335.
12. Wayne XS, Dima D. Viral and Ricketsial infections. Maxine A Papadakis, Stephen J Mcphee, Michael W Rabow. Current Medical Diagnosis & Treatment, Fifty eighth edition, New York, Mc Graw Hill, 2019; 58:1413-5.
13. Ten Bosch QA, Clapham HE, Lambrechts. Contributions from the silent majority dominate dengue virus transmission. PLoS Pathog. 2018;14(5):e1006-9.
14. Shirtcliffe P, Cameron E, Nicholson KG. Don't forget Dengue!Clinical features of Dengue fever in returning travellers. J R Coll Physician Lond. 1998; 32(3): 235-7.
15. Solomon T, Dung NM, Vaughn DW. Neurological manifestations of dengue infection. Lancet (London, England). 2000;355(9209):1053-9.
16. Uddin J, Asghar M, Shahzad A. Clinical and laboratory profile of Dengue fever in Khyber Teaching Hospital, Peshawar. J Med Sci, Dec 2018; 26(4): 317-21.
17. Nimmagadda SS, Mahabala C, Boloor A. Atypical Manifestations of Dengue Fever (DF) - Where Do We Stand Today? Journal of clinical and diagnostic research : JCDR. 2014;8(1):71-3.
18. Helbok R, Dent W, Gattringer K, et al. Imported Dengue fever presenting with febrile diarrhoea: report of two cases. Wien Klin Wochenschr. 2004;116 Suppl 4:58-60.

19. Chatterjee N, Mukhopadhyay M, Ghosh S, et al. An observational study of dengue fever in a tertiary care hospital of eastern India. J Assoc Physicians India. 2014;62(3):224-7.

20. Duran A, Ochoa E, Alcocer S, et al. [Frequency of gastrointestinal signs and symptoms of dengue. Analysis of a cohort of 1484 patients]. Investigacion clinica. 2013;54(3):299-310.

CONFLICT OF INTEREST: Authors declare no conflict of interest

GRANT SUPPORT AND FINANCIAL DISCLOSURE NIL

AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Iqbal S: Main Idea.

Rehman MR: Data Collection.

Khan S: Research Work.

Nabi A: Data Collection and Formulation.

Iqbal MD: Clerical Work, Proof Reading, Research Work.

Iman NU: Overall Supervision.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.