

Frequency of Gastrointestinal Signs and Symptoms in Patients with Dengue Fever in Tertiary Care Hospital

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ABSTRACT

Objective: The objective behind this study was to determine the frequency of gastrointestinal signs and symptoms in patients with dengue fever in tertiary care hospital

Methods: A cross sectional observational study was conducted on all adult patients diagnosed with dengue disease after taken informed consent from the patients and approval from the ethical committee of the hospital. All these patients were evaluated for the presence or absence of gastrointestinal (GI) manifestations. Those who had GI symptoms were further evaluated for the frequency of different types of GI symptoms. All baseline and clinical data were taken using a structured questionnaire and then entered & analysed using SPSS v. 26.

Results: A total of 174 patients who were dengue virus positive were included for final analysis. Overall mean age and SD was 29.22±8.14 years and majority belongs to young age group, ≥16 – 40 years (60.11%, n = 104). Most of our study participants were males (75.86%, n = 132). Hypertension was the most common comorbid condition observed in our study participants (12.06%, n = 21). The overall prevalence of GI manifestations in our study who were dengue positive was 62.64% (n = 109). The most common GI symptom was presence of nausea/vomiting (70.64%, n = 77).

Conclusion: The prevalence of GI manifestations in patients with dengue is quite high. Nausea/vomiting was the most common GI manifestation while patients with hepatomegaly and GI bleeding were also prevalent.

Keywords: Dengue fever, gastrointestinal symptoms, clinical manifestation, Pakistan

INTRODUCTION

Dengue virus is causing millions of deaths worldwide and is a vector-borne disease belongs to a flavivirus family.¹ Every year there are almost more than 400 million cases diagnosed with dengue and among them approximately 22,000 die due to its complications such as dengue hemorrhagic fever and shock syndrome.² There are four serotypes of dengue virus (DENV 1-4) and in Pakistan DENV-2 is more prevalent.³ First case of dengue in Pakistan was reported in 1994. Authors from Pakistan has conducted a survey on dengue virus prevalence and found that overall prevalence rate was 15.5% in Islamabad.⁴ Another study from Pakistan has observed highest prevalence of dengue in Karachi and Lahore.⁵

Most of the patients suffered are from young age group. Clinical manifestations of dengue vary depending upon the disease severity ranging from nausea, vomiting, rash, body ache, abdominal pain, to hemorrhagic fever, and shock syndrome.⁶ Fever is almost present in all of the dengue patients (100%) followed by gastrointestinal symptoms such as nausea/vomiting (69.6%), severe headache (62.7%), melena (5.4%), and gum bleeding (3.6%).⁷ Another study from Bangladesh also mentioned gastrointestinal symptoms are most common (69.4%) after fever.⁸ Patients with gastrointestinal symptoms were more likely to get admitted in intensive care units (ICU).⁹

Significance of gastrointestinal manifestations in patients with dengue is important to understand on time for multiple reasons such as early diagnosis may prevent these patients to get admitted in ICU and financial burden on patients and their families. That is why, we planned to conduct this study to determine the frequency of gastrointestinal signs and symptoms in patients with dengue fever in tertiary care hospital, Pakistan.

MATERIAL AND METHODS

This was a hospital-based descriptive study in which a total of 174 patients were included for final analysis. This study was conducted through a non-purposes consecutive sampling technique in the department of medicine, Rawal Institute of Institute of Health Sciences, Islamabad for the period of six months from April 2022 to September 2022. All the adult patients having age ≥16 years to 80 years, both males and females, and presented with signs &

symptoms of dengue fever were included in this study. Dengue negative, concomitant gastrointestinal disease, positive malarial parasite, patients with enteric fever, pregnant women, patients on chemotherapy, patients taking drugs that may cause gastrointestinal symptoms, and patients with known coagulopathy were excluded from this study. The study was carried out with the approval of the ethical committee of the hospital and after taking consent from the patients. A gold standard method was used to diagnose the patients with dengue fever. NS1Ag, dengue IgM or PCR was performed in all the suspected patients based on their clinical presentation and signs & symptoms consistent with dengue fever. A structured questionnaire was used to collect the relevant data i.e. baseline & clinical characteristics including; age, gender, area of residence, level of education, social class, comorbid conditions, prevalence of GI manifestation, and types of GI manifestation such as nausea/vomiting, diarrhea, abdominal pain, ascites, gastrointestinal bleeding, acute pancreatitis, hepatomegaly, and splenomegaly. All the data were entered and analyzed using Statistical Package for the Social Sciences (SPSS) version 26 and presented in the form of table and charts.

RESULTS

A total of 174 patients who with positive dengue included for final analysis. The overall mean age and SD was 29.22±8.14 years. The age range between 16 years to 80 years and majority belongs to young age group, ≥16 – 40 years (60.11%, n = 104). Most of our study participants were males (75.86%, n = 132) as compared to females (24.13%, n = 42). Urban dwellers comparatively more than rural dwellers, 68.39% (n = 119) vs. 31.6% (n = 55). Hypertension was the most common comorbid condition observed in our study participants (12.06%, n = 21). Rest of the detailed description shown in table 1.

The overall prevalence of GI manifestations in our study who were dengue positive was 62.64% (n = 109) while 37.35% (n = 65) did not had dengue associated GI symptoms (chart 1). The most common GI symptom was presence of nausea/vomiting (70.64%, n = 77) followed by abdominal pain (55.96%, n = 61), diarrhea (53.21%, n = 58), hepatomegaly (22.01%, n = 24), gastrointestinal bleeding (11.0%, n = 12), and least common were presence of

splenomegaly & acute pancreatitis in 2.75% (n = 3) and 1.83% (n = 2) and, respectively of patients with dengue fever (chart 2).

Table 1: Baseline and clinical characteristics of the study participants (n = 174)

Baseline characteristics		
Age - years (mean±SD)	29.22±8.14	
Age groups - years	Frequency	%
≥16-40	104	60.11
≥41 – 60	41	23.53
≥61 – 80	29	16.66
Gender		
Male	132	75.86
Female	42	24.13
Area of residence		
Urban	119	68.39
Rural	55	31.6
Level of Education		
Illiterate	27	15.51
Primary	89	51.14
Secondary	38	21.83
≥Bachelor	20	11.49
Socio-economic status		
Lower	82	47.12
Middle	80	45.39
Upper	12	6.89
Co-morbid		
Hypertension	21	12.06
Diabetes mellitus	12	6.89
Known case of IHD	4	2.29

IHD = Ischemic heart disease

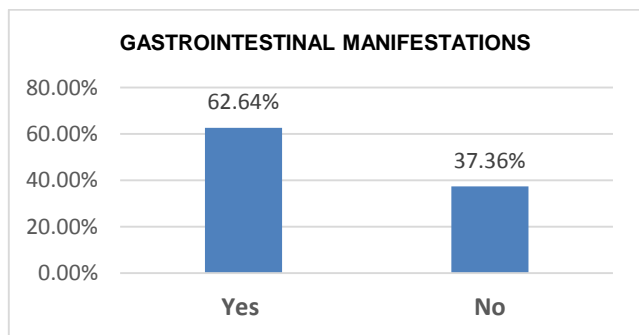


Figure 1: Prevalence of gastrointestinal manifestation among patients with dengue infection (n= 174)

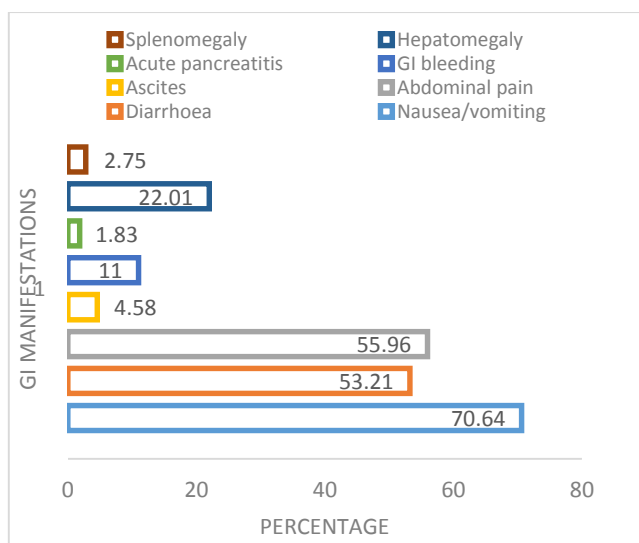


Figure 2: Gastrointestinal manifestation among patients with dengue infection (n = 109)

DISCUSSION

There are no specific signs & symptoms of dengue fever but majority of the patients will experience severe generalized body ache, headache, and orbital pain leading them to take medical attention (10, 11). However, course of clinical manifestations may vary from one person to another person, geographical area, age of patients, and severity of disease. Gastrointestinal manifestations may present as chief presenting complain in these patients and may be the independent predictor of ICU admission and mortality (12). That is why, determination of true burden of GI manifestations in patients with dengue fever is very important.

Our study findings demonstrates that gastrointestinal manifestations are quite common in patients with dengue fever, 62.64% of the patients had GI manifestations at the time of enrollment in this study. These findings are also observed in previously conducted multiple studies.¹³⁻¹⁵ But, the prevalence of GI manifestations has varying prevalence in different studies such as study conducted by La Medina¹⁶ has observed 50% prevalence in Mexico and authors from Spain has observed 100% prevalence of gastrointestinal symptoms in patients with dengue.¹⁷

In our study the most common GI manifestations was presence of nausea/vomiting in 70.64% of the patients. Our findings are in consistent with the previously published study¹⁸ by the A. Ramos-De La Medina and colleagues. In another study, GI symptoms were considered a sign of alarm and also mentioned that nausea was the most common GI symptom in patients with dengue.¹⁷ Dengue sometimes associated with severe complications like gastrointestinal bleeding which may be life-threatening if left untreated. The true burden of GI bleeding varied in different studies and shows severity of dengue infection. The prevalence of GI bleeding in our study is comparatively low 11.0% while other studies have documented 48.6%¹⁹ and 13.1%.²⁰ In a meta-analysis conducted by Zhang H et al has observed that dengue patients had 14 times higher risk of progression to severe dengue disease (SDD).²¹ That is why the importance of early recognition is very important to prevent from morbidity and mortality caused by dengue. Another systemic review and meta-analysis conducted by Jayarajsh and colleagues in which 22 studies were included and most of them from South Asia has shown that acute abdomen sometimes the main complaint of patients with dengue infection and its cumulative prevalence was 16%.²²

Understanding these complaints in patients with dengue has multiple benefits for the patients and also for the physicians. Timely identification of such patients reduces the cost of unnecessary admission, investigations, and procedures. This study has certain limitations that should be addressed in future studies. Foremost importantly, this was a single centered study and mainly covered patients of Rawalpindi and adjoining areas. The sample size of this study is also small hence the true burden of GI manifestations may not be identified.

CONCLUSION

The prevalence of GI manifestations in patients with dengue is quite high. Nausea/vomiting was the most common GI manifestation while patients with hepatomegaly and GI bleeding were also prevalent.

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Ethical Statement: This study approved by Medical Research Ethics Committee

Conflict of Interest: The authors declare that there is no conflict of interest.

REFERENCES

1 Roy SK, Bhattacharjee S. Dengue virus: epidemiology, biology, and disease aetiology. Can J Microbiol. 2021;67(10):687-702.

- 2 Khetarpal N, Khanna I. Dengue Fever: Causes, Complications, and Vaccine Strategies. *J Immunol Res.* 2016;2016:6803098.
- 3 Ali L, Gul Z, Ijaz A, Khalid N, Zeb F, Afzal S, et al. An overview of dengue viral infection circulating in Pakistan. *J Vector Borne Dis.* 2022;59(2):109-14.
- 4 Mehmood A, Khalid Khan F, Chaudhry A, Hussain Z, Laghari MA, Shah I, et al. Risk Factors Associated with a Dengue Fever Outbreak in Islamabad, Pakistan: Case-Control Study. *JMIR Public Health Surveill.* 2021;7(12):e27266.
- 5 Shabbir W, Pilz J, Naeem A. A spatial-temporal study for the spread of dengue depending on climate factors in Pakistan (2006-2017). *BMC Public Health.* 2020;20(1):995.
- 6 Dellamonica P. [Dengue fever: clinical features]. *Arch Pediatr.* 2009;16 Suppl 2:S80-4.
- 7 Hasan MJ, Tabassum T, Sharif M, Khan MAS, Bipasha AR, Basher A, et al. Comparison of clinical manifestation of dengue fever in Bangladesh: an observation over a decade. *BMC Infect Dis.* 2021;21(1):1113.
- 8 Hasan MJ, Tabassum T, Sharif M, Khan MAS, Bipasha AR, Basher A, et al. Clinico-epidemiologic characteristics of the 2019 dengue outbreak in Bangladesh. *Trans R Soc Trop Med Hyg.* 2021;115(7):733-40.
- 9 Ooi ET, Ganesanathan S, Anil R, Kwok FY, Sinniah M. Gastrointestinal manifestations of dengue infection in adults. *Med J Malaysia.* 2008;63(5):401-5.
- 10 Thisyakorn U, Tantawichien T. Dengue vaccine: a key for prevention. *Expert Rev Vaccines.* 2020;19(6):499-506.
- 11 Tantawichien T. Dengue Fever and Dengue Hemorrhagic Fever in Adults. *Southeast Asian J Trop Med Public Health.* 2015;46 Suppl 1:79-98.
- 12 Padyana M, Karanth S, Vaidya S, Gopaldas JA. Clinical Profile and Outcome of Dengue Fever in Multidisciplinary Intensive Care Unit of a Tertiary Level Hospital in India. *Indian J Crit Care Med.* 2019;23(6):270-3.
- 13 Jahan F. Dengue Fever (DF) in Pakistan. *Asia Pac Fam Med.* 2011;10(1):1.
- 14 Wang JY, Tseng CC, Lee CS, Cheng KP. Clinical and upper gastroendoscopic features of patients with dengue virus infection. *J Gastroenterol Hepatol.* 1990;5(6):664-8.
- 15 Htun TP, Xiong Z, Pang J. Clinical signs and symptoms associated with WHO severe dengue classification: a systematic review and meta-analysis. *Emerg Microbes Infect.* 2021;10(1):1116-28.
- 16 la Medina AR-D, Ceron T, Diaz-Vega A, Hernandez A, Remes-Troche JM. Liver and Gastrointestinal Manifestations of Dengue Hemorrhagic Fever. An Analysis from a Cohort of 263 Hospitalized Patients: 257. *Official journal of the American College of Gastroenterology | ACG.* 2007;102:S211.
- 17 Duran A, Ochoa E, Alcocer S, Gomez M, Millano M, Martinez O, et al. [Frequency of gastrointestinal signs and symptoms of dengue. Analysis of a cohort of 1484 patients]. *Invest Clin.* 2013;54(3):299-310.
- 18 Ramos-De La Medina A, Remes-Troche JM, Gonzalez-Medina MF, Anitua-Valdovinos Mdel M, Ceron T, Zamudio C, et al. [Abdominal and gastrointestinal symptoms of Dengue fever. Analysis of a cohort of 8559 patients]. *Gastroenterol Hepatol.* 2011;34(4):243-7.
- 19 Perng DS, Jan CM, Wang WM, Lan TS, Chen LT, Chen CY, et al. [Gastroduodenoscopic findings and clinical analysis in patients with dengue fever]. *Gaoxiong Yi Xue Ke Xue Za Zhi.* 1989;5(1):35-41.
- 20 Tsai CJ, Kuo CH, Chen PC, Changcheng CS. Upper gastrointestinal bleeding in dengue fever. *Am J Gastroenterol.* 1991;86(1):33-5.
- 21 Zhang H, Zhou YP, Peng HJ, Zhang XH, Zhou FY, Liu ZH, et al. Predictive symptoms and signs of severe dengue disease for patients with dengue fever: a meta-analysis. *Biomed Res Int.* 2014;2014:359308.
- 22 Jayarajah U, Lahiru M, De Zoysa I, Seneviratne SL. Dengue Infections and the Surgical Patient. *Am J Trop Med Hyg.* 2021;104(1):52-9.