International Journal of Medicine Research
ISSN: 2455-7404; Impact Factor: RJIF 5.42
Received: 20-11-2019; Accepted: 21-12-2019
www.medicinesjournal.com
Volume 5; Issue 1; January 2020; Page No. 82-85

A study of spectrum of gastrointestinal manifestations of dengue fever in rural population

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Abstract
Dengue is an emerging pandemic-prone mosquito-borne viral infection which causes a flu-like illness, and sometimes severe dengue. Most of the patients diagnosed to have dengue fever present with gastro-intestinal manifestations along with classical viral symptoms. The present study was conducted to outline spectrum of gastro-intestinal manifestations in dengue fever patients in rural population.

Methods: Total 50 patients with Dengue fever were taken as test subjects under this cross-sectional observational study. A detailed and thorough clinical history and physical examination was performed and relevant investigations were done. Gastro-intestinal manifestations were noted and correlated.

Results: Out of 50 patients under study 54% (27) were males and 46% (23) female with male to female ratio of 1.17:1. Gastrointestinal manifestations were noted in form of nausea and vomiting in 38% (19) of patients while pain abdomen in 20% (10) and loose stools in 12% (6) of patients respectively. Abdominal tenderness was noted in 28% (14) of patients, out of which 22% (11) of patients had tenderness in epigastrium and 6% (3) had tenderness in right hypochondrium. Liver function derangement was noted in form of elevated SGOT in 74% (37), elevated SGPT in 58% (29), transaminitis in 62% (31) of patients while hyperbilirubinemia was noted in 6% (3) of patients. SGOT was found to be elevated more as compared to SGPT. Ultrasound of abdomen showed evidence of ascites in 20% (10) of patients while gall bladder wall edema was noted in18% (9), hepatomegaly in 16% (8) and splenomegaly in 10% (5) of patients.

Conclusion: Gastrointestinal manifestations are most common presenting manifestations in patients with dengue fever with varying spectrum. Evidence of abdominal pain and tenderness, transaminitis, gall bladder wall edema and ascites on ultrasound are indicators for intensive therapy. Presence of acalculous cholecystitis, acute pancreatitis and acute fulminant hepatitis indicate severe disease. Dengue fever should be considered as probability in patients presenting as acute febrile illness with gastrointestinal symptoms in endemic areas.

Keywords: Dengue fever, Gastrointestinal manifestations, Transaminitis, Acalculous cholecystitis, Hepatitis, Gall bladder wall edema

Introduction

Dengue fever is most rapidly spreading mosquito-borne viral disease of human beings having a 30-fold rise in global incidence over the last five decades [1]. though dengue is a global burden yet the Asia-Pacific region has maximum ratio accounting for 75% of the total cases [2].

In india, multiple virus serotypes exist and cyclical epidemics are frequent. Dengue is maintained in nature by a cycle in which man act as both reservoirs and definitive hosts and Aedes aegypti as the vector.

Disease shows a seasonal pattern with peak cases after the monsoons during the period July–November. Due to expanding urbanization and lifestyle changes more of dengue cases are being reported from semi-urban and rural areas in recent years [3].

Dengue fever has wide spectrum of manifestations varying from 'asymptomatic' infection to mildly symptomatic dengue fever (DF) to more severe clinical conditions like dengue haemorrhagic fever (DHF) and dengue shock syndrome (DSS) as a result of capillary leakage syndrome [4].

Classical clinical symptoms of dengue fever include fever of 2-7 days duration with associated symptoms like headache, pain in retro-orbital area, myalgia, arthralgia, backache and rash.

Other symptoms observed in patients with dengue fever include anorexia with altered taste sensation, constipation, colicky pain and abdominal tenderness, sore throat, dragging pains in the inguinal region and general depression which may vary markedly in frequency, severity and from one individual to another.

Atypical/unusual manifestations of dengue fever with severe organ involvement such as liver, kidneys, brain or heart are clubbed under expanded dengue syndrome, term coined by WHO in year 2012 [5].

Hepatic involvement in dengue can have wide spectrum ranging from asymptomatic elevation of liver enzymes where AST elevation is proportionately greater possibly attributed to monocyte damage to fulminant hepatic failure. Severe liver damage in fatal dengue haemorrhagic fever is primarily due to massive direct infection of hepatocytes and Kupffer cells with minimal cytokine response [6].

Acalculous cholecystitis has been reported frequently in dengue fever patients which is evident by thickened gallbladder wall, a positive Murphys' sign, peri-cholecystic fluid collection, and no stone(s) in the gallbladder on ultrasound. Cholecystectomy is not advised, however, monitoring for impending gangrenous gall bladder is required [7].

Acute pancreatitis along with raised level of amylase and pancreatic edema is also reported in dengue fever which usually runs a benign course [8]. Very rarely splenic rupture can also be seen in dengue which can be fatal and life-

threatening [9].

Aim

To study spectrum of gastrointestinal manifestations of dengue fever in rural population.

Material and methods

The study was conducted between december 2017 – may 2019 on 50 patients with dengue fever meeting the inclusion criteria, attending medical services at K.V.G. Medical College Hospital, Sullia, D.K. during the study period after obtaining the ethical committee clearance and the informed written consent from the patient.

50 patients with dengue fever were monitored for spectrum of gastrointestinal manifestations under this observational study including-

1. Clinical profile- nausea, vomiting, loose stool and pain abdomen
2. Abdominal examination findings- tenderness in right hypochondrium and epigastrium
3. Biochemical parameters- transaminitis and hyperbilirubinemia
4. Radiological findings- ascites, hepatomegaly, splenomegaly and gall bladder wall edema.

Inclusion criteria

1. Patients with serologically positive dengue fever
2. Patients willing to give written informed consent
3. Age 18 years or more.

Exclusion criteria

1. Pregnancy
2. Not giving consent for the study
3. Immunocompromised state
4. Cancer
5. Other febrile illness.

Results

Out of 50 patients under study 54% (27) were males and 46% (23) female with male to female ratio of 1.17:1. (Fig. 1)

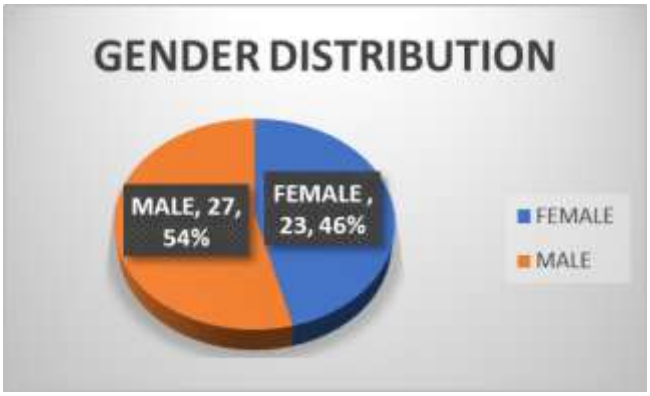

Fig 1: Gender distribution of study population

Distribution of gastrointestinal manifestations was ranging from nausea and vomiting in 38% (19) of patients while pain abdomen in 20% (10) and loose stools in 12% (6) of patients respectively. (Fig. 2)

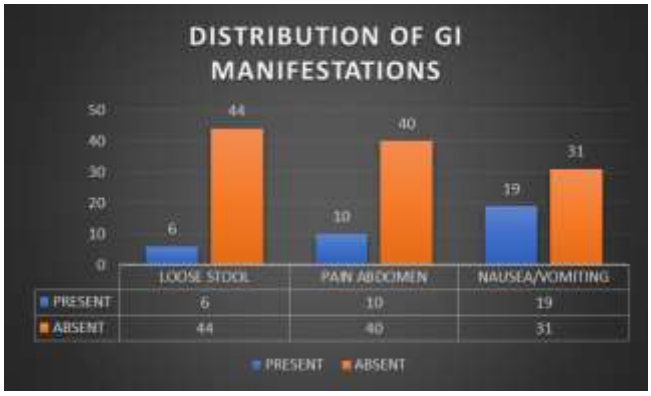

Fig 2: Distribution of gastrointestinal manifestations

On physical examination abdominal tenderness was noted in 28% (14) of patients, out of which 22% (11) of patients had tenderness in epigastrium and 6% (3) had tenderness in right hypochondrium. (Fig. 3)

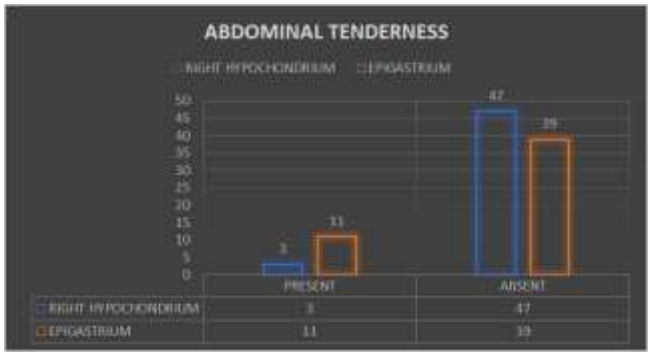

Fig 3: Physical examination findings

Laboratory evaluation demonstrated liver function derangement in form of elevated SGOT in 74% (37), elevated SGPT in 58% (29),
transaminitis in 62% (31) of patients while hyperbilirubinemia was noted in 6% (3) of patients. SGOT was found to be elevated more as compared to SGPT. (Fig. 4)

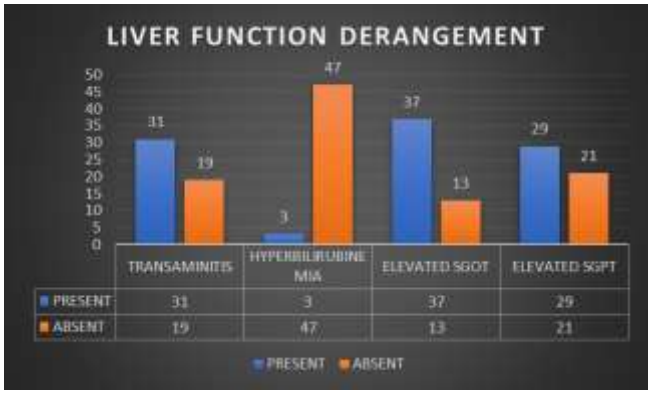

Fig 4: Liver function derangement

Radiological findings on ultrasound of abdomen showed evidence of ascites in 20% (10) of patients while gall bladder wall edema was noted in

18% (9), hepatomegaly in 16% (8) and splenomegaly in 10% (5) of patients. (Fig. 5)

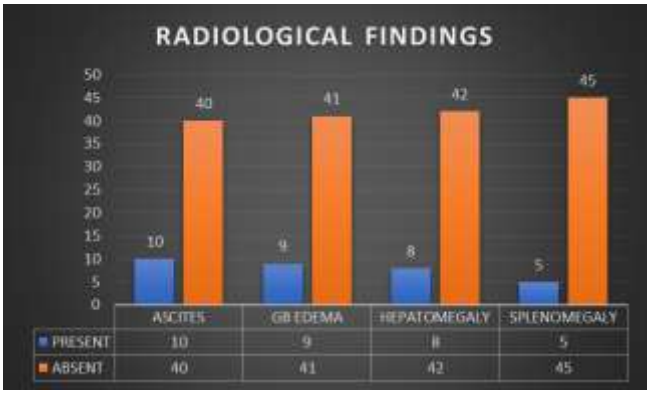

Fig 5: Radiological findings

Clinical spectrum of the 50 patients with dengue fever under study was ranging from uncomplicated dengue in 36% (18), dengue fever with warning signs in 32% (16), DHF-I in 2% (1), DHF-II in 10% (5), DHF-III in 2% (1), expanded dengue syndrome with AKI in 2% (1), acalculous cholecystitis in 6% (3) and hepatitis in 10% (5) of patients. (Fig. 6)

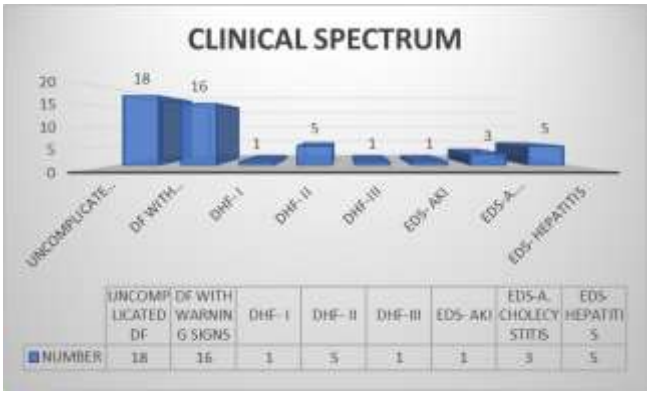

Fig 6: Clinical spectrum of dengue fever

Discussion

Dengue fever has wide variety of classical clinical symptoms which present in varying proportion in different patients. Gastrointestinal manifestations are among the most common presenting symptoms. Present study was conducted to classify the spectrum of gastrointestinal manifestations in patients with dengue fever in rural population. 50 patients with serologically confirmed dengue fever were taken for study after satisfying inclusion and exclusion criteria.

Out of 50 patients under study 54% (27) were males and 46% (23) female with male to female ratio of 1.17:1.

Presenting gastrointestinal manifestations were noted in form of nausea and vomiting in 38% (19) of patients while pain abdomen in 20% (10) and loose stools in 12% (6) of patients under this study. Other studies like Chhotala YH *et al.* [10] reported nausea/vomiting in 49% patients nd Dhar SK *et al.* [11] reported pain abdomen in 21% of patients. Dhar SK *et al.* [11] reported loose stools in 17% and Tahlan A *et al.* [12] in 6.5% of patients.

Abdominal tenderness was noted in 28% (14) of patients, out of which 22% (11) of patients had tenderness in epigastrium and 6% (3) had tenderness in right hypochondrium. Patients with right hypochondrial tenderness had positive murphy's sign and were diagnosed to have acalculous cholecystitis.

Liver function derangement was noted in form of elevated SGOT in 74% (37), elevated SGPT in 58% (29), transaminitis in 62% (31) of patients while hyperbilirubinemia was noted in 6% (3) of patients. SGOT was found to be elevated more as compared to SGPT. In a study by Ferede et al. [13] elevated levels of hepatic transaminases were noted as SGOT elevation in 45.1% and SGPT in 17.6% of patients. In a study by Tahlan A et al. [12] both SGOT and SGPT were elevated in 47.61% patients and 14.28% patients had mild hyperbilirubinemia. In a study by Ram V *et al.* [14] elevated level of SGOT was observed in 80% of patients while elevated SGPT levels in 45.45% of patients.

Ultrasound of abdomen showed evidence of ascites in 20% (10) of patients while gall bladder wall edema was noted in 18% (9), hepatomegaly in 16% (8) and splenomegaly in 10% (5) of patients. Similar results were noted in study done by Ram V *et al.* [14] While study conducted by Manam, *et al.* [15] showed higher incidence of these radiological findings as compared to present study.

Clinical spectrum of dengue fever under present study was ranging from uncomplicated dengue in 36% (18), dengue fever with warning signs in 32% (16), DHF-I in 2% (1), DHF-II in 10% (5), DHF-III in 2% (1), expanded dengue syndrome with AKI in 2% (1), acalculous cholecystitis in 6% (3) and hepatitis in 10% (5) of patients. In a study by Poonam Laul *et al*[16] clinical spectrum of dengue noted was DF (73%), DHF (16.5%),

DSS (1.7%), and EDS (4.3%). Among EDS patients, the atypical presentations included encephalopathy, lateral rectus nerve palsy, acalculous cholecystitis, and myocarditis.

No patient with acute pancreatitis, acute fulminant hepatitis or acute appendicitis was diagnosed under present study and there was no mortality reported in present study.

Conclusion

Gastrointestinal manifestations are very common in Dengue fever along with classical viral syndrome. Most alarming gastrointestinal manifestations which are indicative of severe disease and warrant intensive medical attention include severe abdominal pain and tenderness, transaminitis, acalculous cholecystitis, acute fulminant hepatitis and acute pancreatitis.

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