

CASE REPORT

Mysterious dengue-like virus: A case report from Pakistan

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Abstract

Recently, in Pakistan, several cases of mysterious dengue-like illness are being reported, which has concerned the authorities and requires prompt action. We present a case of a 52-year-old female patient presenting with a history of continuous fever, documented up to 104F, for 5 days. The symptoms were associated with headache, nausea, retro-orbital headache, arthralgia, and myalgia. Currently, to the best of our knowledge, this is the first reported case in the literature for the endemic mysterious virus and may serve as the groundwork for future studies.

KEYWORDS

dengue, dengue-like virus, mysterious virus, Pakistan

1 | INTRODUCTION

Dengue is a leading water-borne illness affecting around 50 million people annually globally. It belongs to the family of single-stranded RNA, positive sense, flavivirus. It has four established different serological types: DENV1, DENV2, DENV3, and DENV4. Among all the viruses of the same family, dengue reports the highest mortality and morbidity.¹ Mosquito “*Aedes aegypti*” and less commonly “*Aedes albopictus*” are known to be the virus's eminent transmission source, while human remains their primary host.² The prevalence of dengue has grown radically, many cases being understated and not classified appropriately. According to the World Health Organization (WHO), there could be around 390 million cases every year,³ with a 70% burden on Asia alone.⁴ The first outbreak of dengue in Pakistan was reported in

1994. Since then, Pakistan has been facing an outbreak of DENV. As of November 25, 2021, a total of 48,906 cases of dengue including 183 deaths have been reported from the country, with the highest reports from Punjab.⁵ The fleeting increase in the cases may be due to irregular monsoon rains and rising temperatures, making the climate favorable for mosquito breeding.⁶ The classical signs and symptoms for DENV are fever, joint pain, retro-orbital headache, and rash, but in severe cases, it can cause organ failure and hemorrhages as well. More recently, cases of a mysterious virus are being reported from different parts of Karachi, which are allegedly very similar to DENV. Just like the dengue virus, it reduces platelets and white blood counts despite being negative for conventional nonstructural protein (NS1) antigen test and reverse transcription polymerase chain reaction (RT-PCR).⁷ So far, there is no report of hemorrhagic fever due

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to low platelets and the virus is responding well to conventional medicines.⁷

2 | CASE REPORT

A 52-year-old South Asian female, an established case of controlled type II diabetes and duodenal ulcer, presented to the hospital's outpatient department (OPD) with the complaint of high-grade fever, retro-orbital headache, generalized body ache, arthralgia, and nausea on November 9, 2021, Day 1 of symptoms. Prior to this, she was on metformin (biguanides) 850 mg twice daily, fenofibrate (Fenofibrate) 200 mg once daily, X-plended (HMG-CoA reductase inhibitor) mg once daily, and Protium (proton pump inhibitor) 40 mg. The patient had no smoking or alcohol history. She developed fever around 1 PM PST, November 9, 2021, which was sudden, continuous, and progressive in nature. Within the next 3–4 h, it escalated to 104 F and was not relieved by a double dose of Panadol (acetaminophen). In the following hours, the fever remained high grade and varied between 102 and 103 F. The patient was prescribed Panadol (acetaminophen) thrice daily, Fexet-D (antihistamine), and folic acid once daily. Moreover, she was advised dengue NS1 antigen test (enzyme-linked immunoassay, that is, ELISA based), malaria antigen, dengue IgM, and blood test for any other possible infection, all of which were negative.

Owing to the current endemic, a diagnosis for dengue-like illness or mysterious virus illness was made.

Despite medication, the symptoms did not improve significantly, and the headache progressed. On Day 5, the headache became unbearable, and the patient was rushed to the hospital's emergency department. Upon presentation, she was conscious but confused. The initial examination findings are listed in Table 1. One unique finding was a drastic increase in platelet count on Day 5, that is, $339 \times 10^3/\mu\text{l}$, in contrast to $283 \times 10^3/\mu\text{l}$ on Day 4. The only dysregulation was observed in serum electrolytes, wherein HCO₂ was 19 mEq/L, indicating acidosis. Other laboratory investigations including urea, creatinine, troponin I, and ECG were unremarkable. In the hospital, the patient was treated with intravenous Bofalgan 1 g, normal saline 500 ml, Onset 8 mg, and Toradol 30 mg (Anti-analgesics and anti-pyretics). Following treatment, her condition improved, and she was discharged the same day and prescribed Panadol 2 tablets thrice a day, Motilium 1 tablet thrice daily before meals, and increased fluid intake along with general dengue precautions.

3 | DISCUSSION

During the late quarter of 2021, a surge in a mysterious virus has been reported from Pakistan.⁷ It seems to co-share clinical manifestations with DENV, one of the most

Laboratory investigation	Day from onset of symptoms	Result	Normal reference range
Dengue NS 1 Antigen	Day 2	Negative	
Hemoglobin (gm/dl)	Day 4	12.7	11.6 to 15
R.B.C Count ($\times 10^{12}/\text{L}$)	Day 4	4.75	3.9–5.5
W.B.C Count ($10^9/\text{L}$)	Day 4	7.7	4.0–10.0
Platelet Count ($\times 10^9/\text{L}$)	Day 4	283	150–450
Hemoglobin (g/dl)	Day 5	12.9	11.6 to 15
R.B.C Count ($\times 10^{12}/\text{L}$)	Day 5	4.75	3.6–4.8
W.B.C Count ($10^9/\text{L}$)	Day 5	8.27	4.0–11.0
Platelet Count ($\times 10^9/\text{L}$)	Day 5	339	150–450
Urea (mg/dl)	Day 5	21	15–38
Creatinine (mg/dl)	Day 5	0.74	0.6–1.3
Troponin I (ng/ml)	Day 5	<0.012	<0.12
ICT Malaria Antigen	Day 5	Negative	
Na (mEq/L)	Day 5	137	135–145
K+ (mEq/L)	Day 5	4.6	3.5–5
Cl (mEq/L)	Day 5	100	97–107
HCO ₂ (mEq/L)	Day 5	19	24–29

TABLE 1 Results of laboratory investigations

crippling arboviruses. The viral illness presents with a wide range of clinical manifestations and is endemic in tropical and sub-tropical areas.

For a confirmatory diagnosis, WHO has stipulated that the presence of fever with at least two of the following other symptoms (anorexia and nausea, headache, rash, arthralgia or bone pains, leukopenia) is an indication for dengue fever.⁸ For further establishing the cause, physicians shall order an NS1 test or RT-PCR. The NS-1 test has different sensitivity and specificity depending on whether it is the rapid kits or ELISA. In a study by Gaikwad et al., for ELISA, the sensitivity and specificity were found to be 89.9% and 100%, while for the rapid kit, it turned out to be 81.5% and 66.7%, respectively.⁹ Other minor tests include complete blood count (CBC), liver function tests (LFTs), and serological tests that may be helpful in certain cases. Although the clinical management varies depending upon the phases and symptoms, fluid and oral resuscitation along with symptomatic management dominate as the first choice of treatment in the majority of cases.¹⁰

In this case, the presence of arthralgia, generalized body pain, retro-orbital headache, and a high-grade fever indicate dengue virus fever. However, negative NS1 pointed out the probability of the patient having the mysterious dengue-like virus, currently endemic in Pakistan.⁷ The exact cause behind this is unknown but several hypotheses have been assumed which include the possibility of false negatives, as seen previously during a study in Brazil.¹⁰ However, owing to an extraordinary high surge of cases, chances of a false negative in such a massive population seem unlikely.¹¹ Moreover, we tested our patient on Day 2 of high-grade fever, which is the recommended time frame for the NS1 test¹² deeming this speculation, improbable. The illness may be caused by a new serological strain of the dengue virus that evolved due to genetic modifications. A senior pathologist from the city suggests the possibility of it belonging to the same family (flavivirus) and hence presenting with similar complaints.¹¹ Other arboviral infections (Chikungunya) evince a similar clinical presentation in the early stage of diseases, thereby pointing to the fact that the country may be under endemic to any other arboviral infection.¹³

We ordered several investigations for our patient, as described in Table 1. Notable is the presence of metabolic acidosis and tachycardia, which, as previously cited, indicates circulatory depression and myocardial failure in dengue illness.¹⁴ However, in our case, ECG and other electrolytes workups were normal. This opens door to more clinical grounds for future work and to cross-check whether the new strain, despite displaying similar symptoms as dengue, may be manifesting as less severe disease. This theory can also be cemented by the fact that Pakistan

reports no fatality under this virus.⁷ However, in India, a mysterious dengue-like virus, observed this year, claimed over fifty lives.¹⁵ There is a possibility that both strains are the same virus.

Pakistan is already under great havoc attributable to the COVID-19 pandemic. Moreover, as of November 11, Pakistan has reported a total of 236,773 suspected dengue cases with 197 associated deaths.^{16,17} Any further endemic, owing to this new viral fever will further enhance the healthcare burden, thus exhausting the currently available resources.

To avoid any further downfall, it is imperative that physicians report the mysterious viral cases with complete clinical presentation, investigations, and management. Currently, to the best of our knowledge, this is the first reported case in literature for the endemic mysterious virus. Despite hundreds of patients, a proper reporting system is absent, thereby delaying the identification of the new viral strain. An adequate reporting system will not only keep a total number in check but will also aid healthcare workers across the country to devise a homogenous diagnostic plan. Moreover, transmission routes, whether oral, airborne, mosquito-borne, or respiratory, can be established at the earliest this way. Determining the source of dissemination will benefit in reducing the massive incidence. Until it is unestablished, whether this is a new virus or a new strain for pre-existing viral fevers, preventive actions and management plans should be done for dengue to avoid any possible complications.⁷

4 | LIMITATIONS

This case report has several shortcomings, mentioning of whom may help in reaching a submissive conclusion in later reports. Firstly, the patient did not have all the laboratory reports, usually deranged in dengue illness. The diagnosis was made on clinical grounds. Thirdly, many similar viral illnesses like chikungunya were not ruled out via testing. Despite this, we feel the case report can help establish a ground for physicians to bear in mind, the testing and clinical management they should opt for viral fevers, like that of dengue.

5 | CONCLUSION

This case presentation focuses on highlighting plausible reasons for the mysterious virus, currently endemic in Pakistan. Understanding the precise pathophysiology of the assumed new viral strain may help in early diagnosis and management plan, thereby saving the country from another potential healthcare desolation.

AUTHOR CONTRIBUTIONS

SW, SHA, TGS, LTQ, SK, NN, and MMH were involved in gathering the information and analyzing the history and reports. All authors contributed equally to writing and editing of the manuscript.

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None.

CONFLICT OF INTEREST

None.

DATA AVAILABILITY STATEMENT

None.

ETHICAL APPROVAL

This case report is exempt from the Dow University of Health Science IRB review.

CONSENT

Written consent was obtained from the patient for publishing the work as per journal policy.

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