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An orofacial presentation of dengue viral infection: A Case Report

[1.]Dr. Lakshith Biddappa, [2.] Dr. Gowtham Srungavarapu*,
[3.] Dr.Santosh Kumaran, [4.] Dr. Prathith Uthappa
[1.] Reader [2.] PG Student [3.] Professor [4.] Reader
Farooqia dental college & hospital
Mysore – 570021
[4.] Coorg institute of dental sciences,
Virajpet - 571218

Corresponding Author:
Dr. Gowtham Srungavarapu
Farooqia dental college & hospital
Mysore – 570021

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ABSTRACT

Dengue is an acute viral infection with potential fatal complications distributed endemically worldwide. Dengue is a common epidemic in India but not many dental professionals recognize some of the commonly presented oral manifestations related to dengue. We hereby present a case report of a 35 year old female patient who was diagnosed with dengue following the presentation of nonspecific hemorrhagic lesions.

Keywords: Oral manifestations, Dengue, Dental, Maxillofacial surgery

INTRODUCTION

Dengue is an acute viral infection with potential fatal complications. Dengue fever (DF) is an old disease that became distributed worldwide in the tropics during the 18th and 19th centuries when the shipping industry and commerce were expanding. The first clinically recognized dengue epidemics occurred almost simultaneously in Asia, Africa, and North America in the 1780s.It is also termed as "break bone fever" because of the symptoms of myalgia and arthralgia.[1-3]

The World Health Organization (WHO) considers dengue as a major global public health challenge in the tropic and subtropical nations. Approximately 50 million people are infected by dengue annually and approximately 2.5 billion people live in dengue-endemic countries. Climate change, the expansion of dengue vectors to new geographic regions, increasing human movement across borders, global trade, and urban migration collectively has changed the scope and scale of dengue fever from a regional to a global concern[3-5].

Case report:

A 35 year old female patient reported to the department of OMFS, Farooqia dental college with complaint of bleeding from the gums from past 2 days. Patient's medical history included abrupt fever in the past week with headache and myalgia. Patient had an accidental fall 3 days back after syncope sustaining an upper dentoalveolar injury. Patient gave no history of any systemic disease. The general examination showed ecchymosis in the left forehead region measuring approx. 3x4 cm and on the chin and lower lip measuring approx. 5x6 cm (Fig 1, 2 & 3). Mouth opening and TMJ movements were normal and no lymphadenopathy noted. Intraoral examination showed grade I mobility in 11 and 21 with Ellis class I fracture in 11. There was unprovoked and gingival bleeding in the maxillary anterior region which was not controlled with simple pressure (Fig 1). .

Considering the clinical findings a thrombocytopenic disorder was suspected. Since there was an increased hospitalization in the region due to viral pyrexia and the hemorrhagic nature of the lesions, dentoalveolar injury with uncontrolled bleeding secondary to dengue fever was given as a provisional diagnosis. Patient was sent for laboratory investigations to get a complete picture of the hematological status.

Table 1 depicts the laboratory values. In addition to the hemogram which is consistent with the viral pyrexia, the serological test of IgG and IgM was positive for dengue antibodies which is highly suggestive of dengue (Fig 4). With the clinical findings, laboratory testing and the fact that dengue is endemic in the region resulted in the diagnosis of oral manifestation secondary to dengue infection.

The bleeding was controlled after local application of traneximic acid and pressure. In consultation with the physician, patient was advised observation and supportive care.

Discussion:

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. In the last 50 years, incidence has increased 30-fold with increasing geographic expansion to new countries and, in the present decade, from urban to rural settings[2,3]. The dengue virus is a member of the genus *Flavivirus* of the family Flaviviridae. There are 4 serotypes, referred to as DENV 1–4, that are genetically similar but antigenically distinct, defined by the inability of individually elicited antibodies to cross-neutralize[3]. Dengue is spread primarily by the female *Aedes aegypti* mosquito. Other species such as *Ae.albopictus*, *Ae.polynesiensis*, member of *Ae.Scutellaris* complex, and *Ae.niveus* have been found to play a role as secondary vectors.

The proposed etiologies for dengue virus infection are:

Viral replication, primarily in macrophages[6]

Direct skin infection by the virus[7]

Immunological and chemical-mediated mechanism induced by host–viral interaction[6].

Infection confers lifelong immunity to the infecting serotype but only partial and transient (2–3 months) cross-protection against infection by other serotypes[8]. Therefore, a person can be infected with dengue virus up to four times during their lifetime.

Dengue is a disease entity with different clinical presentations and often with unpredictable clinical outcomes. Roughly only 20% of all dengue infections are symptomatic. Illness caused by dengue has an abrupt onset with 3 broadly identifiable phases: febrile, critical, and recovery.

Dengue virus infection produces a spectrum of clinical illness ranging from

Undifferentiated fever

Dengue fever (DF), which is a self-limiting febrile illness associated with headache, myalgia, and thrombocytopenia,

Dengue hemorrhagic fever (DHF) and

Dengue shock syndrome (DSS), which may be fatal[9].

\DHF/DSS is characterized by rapid onset of capillary leakage accompanied by thrombocytopenia, altered hemostasis, which is characterized by hemoconcentration (hematocrit increased > 20%), thrombocytopenia (platelet count, <100,000/cu mm), vascular collapse, abdominal pain, and hemorrhagic manifestations. The 1997 WHO definition further subdivides DHF into four grades (grade I-IV) on the basis of the presence of spontaneous bleeding and the presence and severity of shock (grade IV; DSS). Despite the clinical classification of DF and DHF as distinct entities, they are likely to be a continuum of the same disease process with divergent outcomes with regards to the perturbation of vascular integrity. Due to many reports about difficulty of using the 1997 WHO classification in clinical management, the WHO released new guidelines with a new classification in 2009 based on a single parameter, which is dengue without warning signs, dengue with a warning signs and severe dengue. The 1997 WHO classification is still widely used as the newer classification not compatible with restricted health care facilities in endemic regions, especially during outbreaks[2, 3]. Table 2 depicts WHO 2009 guideline for dengue case classification and severity.

Pontes et al reported subconjunctival hemorrhage, epistaxis, gingival & lip swelling with maculopapular lesions and active spontaneous gingival bleeding as the clinical findings in a 18 year old male dengue patient[10].

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Fernandes et al reported white plaques in a 29 year old female dengue patient. A diagnosis of pseudo membranous candidiasis seconday to dengue was given in the patient[13].

Bhardawaj et al reported ulcerative/bleeding lesions in the gingiva and vesicles at the junction of hard and soft palate in a 19 year old male dengue patient[12].

Although no large scale studies exist on the oral manifestations of dengue fever, oral mucosal involvement is seen in approximately 30% of patients[9]. Oral manifestations are infrequently observed in cases of classical dengue fever, being more commonly associated with dengue hemorrhagic fever, in which gingival bleeding, erythema, lip crusts, and vesicles on the lips and palate are the prominent oral characteristics. Oral candidiasis, osteonecrosis of dentoalveolar structure, and post-extraction bleeding were also reported[8, 9, 10].

Dengue disease has nonspecific and broad range of symptoms. Early symptoms of the disease mimic many prevalent diseases in Indian subcontinent like chikungunya, malaria, typhoid, zika, leptospirosis etc[9]. Diagnosis of the disease based on clinical symptoms alone is highly suspect. Laboratory confirmation of clinical diagnosis is valuable because some patients progress over a short period from mild to severe disease and sometimes to death. Dengue infections may be diagnosed by virus isolation in cell culture, by detection of viral RNA by nucleic acid amplification tests (NAAT), or by detection of viral antigens by ELISA or rapid tests. Table 3 helps in interpretation of the dengue laboratory tests[11].

Clinical management of dengue disease differs according to the severity of the illness. If patient has a simple fever without any warning signs or complications can be managed with symptomatic approach. Those with warning signs or complications should be monitored closely for the progression of the disease. Hematocrit and platelet levels should be monitored periodically. They should be managed with fluid replacement and platelet transfusion depending on the clinical situation[1, 11].

Conclusion

Dengue is a disease entity with varied clinical presentations and often with unpredictable clinical evolution and outcomes. Early diagnosis plays a fundamental role in the treatment of this disease. Hence oral manifestations (hemorrhagic or mucocutaneous) may represent a relevant factor to the clinical evaluation of the patient with signs and symptoms suggestive of dengue fever. The general dental practitioner needs to be aware of the general clinical symptoms and the oral manifestations of this widespread epidemic. Care needs to be taken during invasive surgical procedures like deep scaling, root planing, extraction etc. in patients with recent or current pyrexia.

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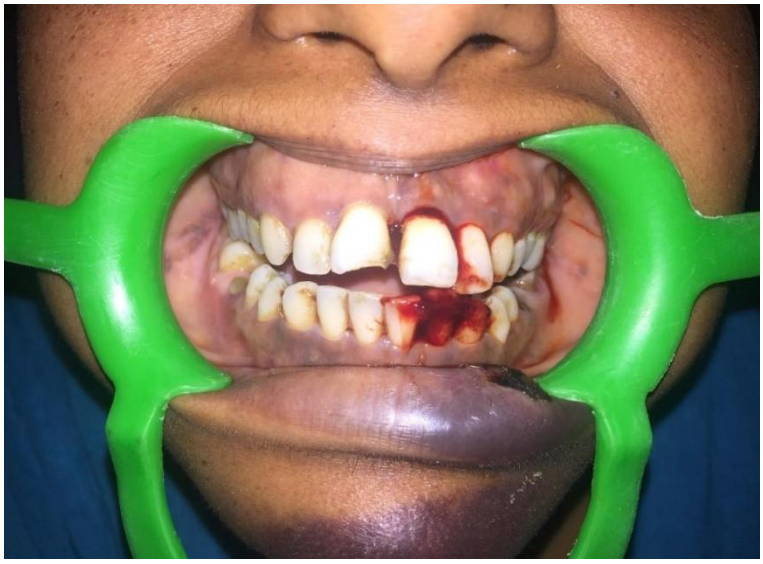

Fig 1: luxated anterior teeth with gingival bleeding

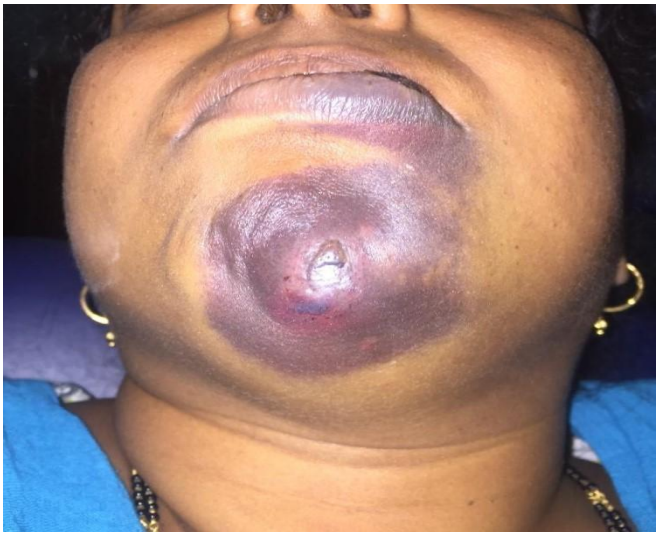

Fig 2: ecchymosis on the lower lip and chin

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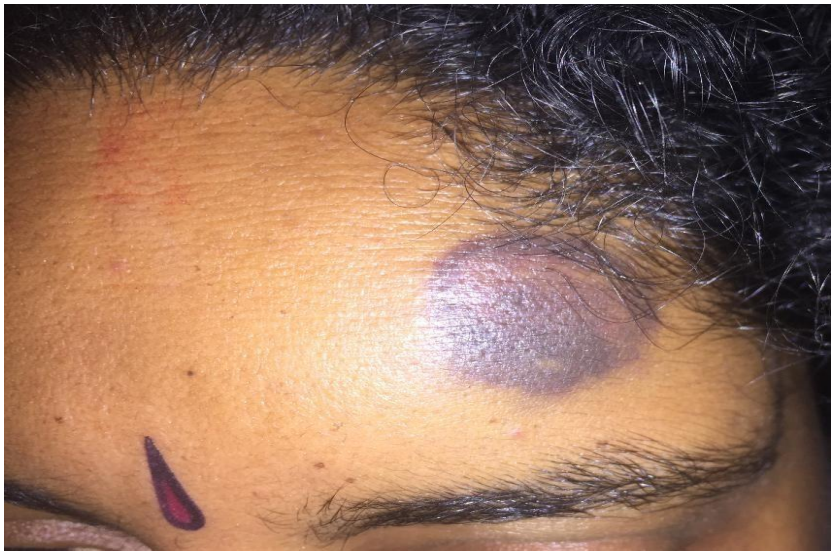

Fig 3: ecchymosis on the forehead

Fig 4: dengue test samples

Investigation	Normal value	Patient result
Red blood cells	3.8 – 5.8 million / cu. mm	4
Hb%	11.5 – 16.5 g/dL	11.3
Total leukocyte count	4000 – 11000 cells/ cu. mm	13,700
Platelet count	150000 – 400000 cells/ cu. mm	100000
E. S. R	0 – 20 mm/ hour	49
BLEEDING TIME	2- 7 minutes	8.15
CLOTTING TIME	3 – 9 minutes	6.00
P.C.V	37 – 47 %	34.1

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M.C.V	76 – 96 fl	85
M.C.H	27 – 32 pg	28.1
M.C.H.C	30 – 35 g/dL	33.1
Dengue NSI antigen		NEGATIVE
Dengue virus IgG		POSITIVE
Dengue virus IgM		WEAKLY POSITIVE

Table 1: laboratory investigations of the patient.

CRITERIA FOR DENGUE ± WARNING SIGNS		CRITERIA FOR SEVERE DENGUE
Probable dengue live in /travel to dengue endemic area. Fever and 2 of the following criteria: • Nausea, vomiting • Rash • Aches and pains • Tourniquet test positive • Leukopenia • Any warning sign Laboratory-confirmed dengue (important when no sign of	Warning signs* • Abdominal pain or tenderness • Persistent vomiting • Clinical fl uid accumulation • Mucosal bleed • Lethargy, restlessness • Liver enlargment >2 cm • Laboratory: increase in HCT concurrent with rapid decrease in platelet count *(requiring strict observation and medical	Severe plasma leakage leading to: • Shock (DSS) • Fluid accumulation with respiratory distress Severe bleeding as evaluated by clinician Severe organ involvement • Liver: AST or ALT >=1000 • CNS: Impaired consciousness • Heart and other organs

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plasma leakage)	intervention)	

Table 2: Dengue case classification and levels of severity.

Highly suggestive	Confirmed
One of the following: 1. IgM +ve in a single serum sample 2. IgG +ve in a single serum sample with a HI titre of 1280 or greater	One of the following: 1. PCR +ve 2. Virus culture +ve 3. IgM seroconversion in paired sera 4. IgG seroconversion in paired sera or fourfold IgG titer increase in paired sera

Table 3: Interpretation of dengue diagnostic tests

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