

Review Article

Oral manifestations in patients with dengue fever

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Abstract

Dengue fever is caused by a RNA virus and is transmitted through the bite of infected female *Aedes aegypti* mosquito. Over the past few years an alarming rise has been seen in the cases of dengue virus owing to multiple reasons. Oral manifestations although are rare in cases of dengue, but when present can be helpful in its initial diagnosis. The most common intra-oral symptom of dengue infection is gingival bleeding which is commonly seen in Dengue Hemorrhagic Fever. The management of dengue fever includes using paracetamol for reducing fever and avoiding non-steroidal anti-inflammatory drugs.

Key words

Dengue; Fever; Manifestations.

Introduction

Dengue Fever (DF) is an acute viral illness which is caused by RNA virus, belonging to family of *Flaviviridae*, in which the main vector is the female *Aedes aegypti* mosquito.¹ Dengue has proven to be among major public health challenges faced by tropic and sub-tropic nations. DF has seen an upsurge worldwide accounting to increased population growth rate, unplanned urbanization, global warming, insufficient mosquito control and lack of basic health facilities.² Dengue infection may present as an asymptomatic illness or in some cases can even lead to dengue hemorrhagic fever (DHF) or dengue shock syndrome (DSS). Among the signs and symptoms of DF, oral mucosal involvement is seen in approximately 30% of patients.³

Dengue fever in Pakistan

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World Health Organization (WHO) has declared DF to be an endemic in South Asian countries. Pakistan is among the countries that are at large risk to be hit by epidemics because of many reasons such as overcrowded cities, lack of safe drinking water, improper sanitary conditions and less awareness about vaccines.⁴ In Pakistan, the first epidemic of DF was reported in year 1994. Dengue virus has multiple serotypes including DEN-1, DEN-2, DEN-3, & DEN-4.⁵ In Pakistan DEN-3 serotype of Dengue virus was predominantly associated with spread of disease. DF is now considered an endemic in Pakistan with its peak incidence observed around monsoon rains period.⁴ According to a survey, in 2003 10 cases with 4 deaths were reported in Pakistan with a massive increase of 14,000 cases being reported in 2011.⁶ Statistically, over 4 thousand cases of DF are reported annually with the numbers increasing to 21,597 with 365 deaths in recent past.⁷ A study conducted showed that from January 2014 to May 2020, Pakistan reported 99,264 confirmed cases of DF in all four provinces of the country. Epidemiological data indicated that the peak incidence of DF is observed around October in Pakistan.⁸

Etiology of dengue fever

There are various etiologies proposed for the spread of dengue infection (**Figure 1**). These include replication of virus mainly in macrophages, direct skin infection caused by DEN serotype virus and immune mediated mechanism induced by host-virus interactions.^{9,10} Following the bite of the infected mosquito, virus gains entry into the host through the skin. Humoral, cellular and innate host responses are implicated in the further progression of the disease.¹¹

Oral manifestations in dengue patients

Many infectious diseases present with oral signs and symptoms, DF being one of them (**Table 1**). According to a research conducted in India, intra-oral manifestations were present in 48% of the patients. These included petechiae in 29% of patients, bleeding of gums in 16%, mouth ulcers in 4.2%, and xerostomia in 4.2% of dengue patients.¹² Extra-oral symptoms were also seen in patients and included cutaneous rashes.¹² The sites mostly common affected were marginal gingiva, soft palate, lips and tongue.¹³ Another study reported that individuals affected with dengue infection presented with lip crust and tongue coating.¹⁴ Erythema of oral mucosa was seen in 6% of the patients while the least common symptom was a hemorrhagic plaque in

Table 1 Oral Signs & Symptoms in Dengue Fever

Sr.	Oral symptoms	Dengue fever
1.	Petechiae	More often
2.	Bleeding of gums	Most often
3.	Oral ulcers	Most often
4.	Dryness of mouth	Most often
5.	Erythema of oral mucosa	Less often
6.	Lip crust & tongue coating	Most often
7.	Forchheimer spots	Rarely
8.	Hemorrhagic bullae	Less often
9.	Purpura	Less often
10.	Ecchymoses	Less often

oral cavity seen in only 2% of the dengue patients.¹⁴

A unique intra-oral manifestation of DF was reported in case study done in Tokyo in which the affected person had sub-mucosal hemorrhage on the hard palate and rose colored spots known as Forchheimer Spots on the soft palate.¹⁵ Chadwick *et al.*, reported vesicles on soft palate in greater than 50% of patients with increased mucosal involvement in 90% subjects.¹⁶ Another study demonstrated the occurrence of hemorrhagic bullae on sublingual mucous membrane and lateral borders of the tongue and floor of mouth along with brown plaque on the buccal mucosa with bleeding on touch.¹⁷ Other symptoms included purpura, ecchymoses nasal bleeding, and inflamed tonsils in DF patients.¹⁸

Management of dengue infection

Non-steroidal anti-inflammatory drugs (NSAIDS) should be avoided. Simple Paracetamol should be given for fever. Sponging is also helpful in reducing fever and intake of oral fluids should be increased to avoid dehydration. Follow up should be done on hematocrit and platelet count until patient recovers completely.¹⁷

Conclusion

Early diagnosis play a key role in the treatment of diseases therefore, oral manifestations may

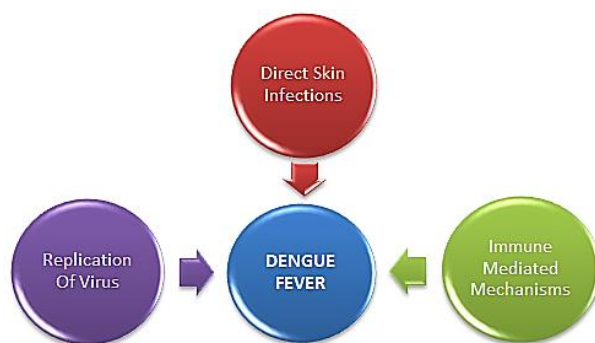


Figure 1 Etiology of dengue fever.

prove to be helpful in the clinical diagnosis of DF. This review article highlights the role of dental practitioners in identifying the signs and symptoms of DF and guiding the patient accordingly to seek medical treatment.

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