

Tomato Flu: Insights and Understanding the Present Indian Scenario

Riyaz Ahamed Shaik^{1*}

¹Department of Family Medicine and Community Medicine, College of Medicine, Majmaah University, Majmaah-11952, Saudi Arabia

ABSTRACT

The unidentified virus that causes tomato fever is an infectious illness. The infection's primary signs and symptoms are tomato-shaped blisters that appear all over the body and expand to resemble a tomato, hence the name "Tomato flu." mostly impacts young children under the age of five. A "Hand, Foot, and Mouth illness" is tomato flu. In most situations, the clinical presentation is minimal. The infection is self-limiting and will go away on its own in 7-10 days. In areas where there are outbreaks, the diagnosis is established on the clinical history and physical examination. The etiological agent of this infectious disease, its course of therapy, and its vaccine are still unknown, and this is an important topic of research right now. By repurposing medications and vaccines, which are also synonymously being tried to treat the ailment at the moment, COVID-19 has given us lessons for epidemic preparedness and case management in emergency situations.

Corresponding Author e-mail: r.shaik@mu.edu.sa

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INTRODUCTION

An unexplained viral organism that causes tomato flu is an infectious illness that was originally discovered in Kerala, India, in May 2022. Due to its primary symptom, tomato-shaped blisters all over the body, the condition was given the nickname "Tomato Flu." The illness initially manifests as a reddish tiny blister that grows to mimic the shape of a tomato, thus the names "Tomato flu" and "Tomato fever." Children under the age of five are the main victims. The low frequency of tomato flu in adults may be due to strong protection against the virus. Because of the red, tomato-shaped bullous blisters that appear on the bodies of those who are afflicted, the illness is also known as "tomato flu" or "tomato fever." Fever, exhaustion, red skin blisters, rashes, irritability, and dehydration are some of the symptoms of the flu. Even after the disease's signs and symptoms have diminished, the virus may continue to exist in their system for many weeks.

However, people who interact with children may function as viral carriers and spread the disease. According to Dr. Amar S Fettle, an epidemiologist and the state nodal officer for Kerala, tomato flu is categorized as a "Hand, Foot, and Mouth disease" (HFMD), a common viral illness. Viruses from the enterovirus genus, including polioviruses, coxsackieviruses, echoviruses, and other enteroviruses, are responsible for HFMD. The most common cause of HFMD is coxsackie virus A. Only a moderate version of the illness is caused by coxsackie virus A infection in HFMD. Nearly all patients recover in roughly 7 to 10 days without medical intervention. It is sometimes mistaken for the swine, cow, and sheep-specific foot-and-mouth disease also referred to as hoof-and-mouth disease. But because the two disorders are caused by distinct viruses, they are unconnected. Direct contact with the infectious virus, which is found in the saliva, blister fluid, nose and throat secretions, and feces of persons who are sick, is the only way for infection to spread from one person to another. People's hands, fomites, and contact with infected surfaces are the most common ways in which the virus is spread (Figure 1). Even though the first week of the illness is usually symptom-free for infected persons, it is the period when they are most infectious. Animals cannot contract or spread HFMD, and children under five are the most vulnerable age group.¹

INDIA

Given that India has a large population, early prevention is crucial. The number of COVID-19 cases is rising once more in several Indian states. This occurs at a time when anxiety over an epidemic of monkeypox, a virus spread by close contact with unwell individuals, is rising on a worldwide scale. Whether tomato fever is a viral infection, a complication of Chikungunya or Dengue fever, or both, is yet unknown. A new viral illness dubbed tomato fever has been plaguing Kerala and Tamil Nadu in India

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Fig. 1: Features of Tomato flu.

CAUSATIVE ORGANISM

It is mostly brought on by Coxsackie virus A. According to renowned virologist Dr. Jacob John, Coxsackie A, and Enterovirus are the two viruses that cause HFMD. Additionally, he mentioned that the first one is milder and spreads more slowly. Skin rash on the palms of the hands and soles of the feet, dehydration brought on by mouth sores, and fever are typical signs of HFMD. The precise cause of the epidemic is still being investigated because there is a dearth of comprehensive scientific literature.⁴

PATHOGENESIS

It is yet unknown how tomato fever and HFMD are transmitted. In the impacted locations, extensive testing is required. If HFMD is suspected as the cause, the infant should be confined and will recover in 8-10 days with the right care.⁵

CLINICAL FEATURES

The majority of patients only exhibit a few clinical traits. Adults and older children are likely immune since enteroviruses are common. The three major ways that enterovirus spreads are by respiratory droplets, coming into touch with blister fluids, and coming into contact with infected feces. Transmission risk can be decreased by avoiding contact with ill people and upholding personal cleanliness. If adults, especially pregnant women, have never been exposed to these viruses' defending antibodies, they are more vulnerable to infection. The majority of enterovirus infections during pregnancy leave moms with mild sickness or no symptoms. At this time, there is no conclusive proof that maternal enterovirus infection can result in undesirable pregnancy outcomes such as abortion, stillbirth, or congenital defects. Mothers who get the virus right before giving birth, however, could pass it on to the baby. A newborn's risk of infection increases if the mother was suffering from enterovirus illness at the time of delivery. The majority of newborns infected with enteroviruses only experience a mild sickness, but in rare instances, the infection may become serious and spread to the heart or liver, among other crucial organs, and end in death. But scientists are still trying to determine the exact etiological component that is generating this sickness. The symptoms of tomato flu and chikungunya or dengue are similar, however, there is no evidence to support this association at this time. The following are the typical presenting symptoms that have been determined thus far: High-grade fever; several large, spherical, crimson blisters; dehydration; a skin rash and skin irritability; myalgia; and swollen and aching joints. Other unusual symptoms include nausea and vomiting, runny nose, sneezing, frequent coughs, patches of discoloration on different body parts, such as the hands, buttocks, and knees, cramping in the abdomen, and a general feeling of exhaustion. There are no significant illnesses brought on by the tomato flu. Complications from the condition are uncommon.⁶

MANAGEMENT

Tomato flu is a self-limiting viral fever. As a result, it often resolves itself in 7 to 10 days. Clinical diagnosis of the illness is made by a physical exam and history, particularly in areas



Fig. 2: The Indian States affected with Tomato flu

for the past two weeks (Figure 2). Even though this viral type only affects a tiny portion of Kollam, authorities are concerned about the disease's rapid expansion. So far, there have been 82 flu cases reported. Tomato fever incidents have historically been recorded in Kerala in 2007.²

EPIDEMIOLOGY

The illness epidemic began in Kerala's Kollam district, where as of May 13, 2022, 82 cases of tomato flu have been documented; further cases are anticipated. At the time, there were several cases of infection in the Chikungunya-affected communities of Mudakayam, Varzur, and Kanirapally in the districts of Kottayam and Pathanamthitta. The first incidence of tomato flu, which was recorded on May 6, 2022, was a four-year-old from the village of Aryankavu, which is close to the border between Kerala and Tamil Nadu. Since then, 26 cases in Orissa have tested positive for the illness Hand, Foot, and Mouth, which is thought to be tomato flu. More than 58 hospitalizations and fatalities from food poisoning have been recorded in Kerala; the cause has now been determined to be tomato flu. The incidence of this flu among children under the age of five is a frightening aspect of it.³

where outbreaks are occurring. Proper isolation techniques should be followed for this illness, much like with COVID-19. Recognizing the flu's potential and educating the public are just the beginning of the preparations for fighting it, which also include mobilizing the resources and power of local governments to safeguard the health and safety of their constituents. To determine the scope of the disease's spread across the nation, it is crucial to identify every affected person and location. The primary pillars in locating and reporting the cases are neighborhood hospitals, community centers, and certified social health activists (ASHA). The fight against the illness epidemic depends on the public being informed of the issue. Flyers, door-to-door instruction, small-town meetings, and the media may all be used to raise awareness by instructing people on how to recognize flu symptoms and how to treat them. Social media and the news may be utilized to raise awareness. It's crucial to strike a balance between spreading important information and fear. Travel safety precautions should be observed. Each state that is unaffected should have its regular operating procedures ready (SOPs). Public health officials need to be organized in advance. Right now, it's critical to pinpoint the actual cause of this outbreak. It is vital to understand how HFMD and tomato fever are related. Timely measures are crucial if HFMD is determined to be the cause since, according to the CDC, some people who have this condition go on to acquire meningitis. The strategies for both illnesses' prevention, as previously noted, are essentially the same. Since COVID-19 is still active, every new outbreak does have an impact on community mental health, necessitating the need for appropriate education and community-based therapy.⁷

TREATMENT

There are now no particular medications available to treat the tomato flu virus because it is an uncommon viral illness that has only recently emerged. Due to the lack of disease-specific medication, only the symptoms are treated, using the appropriate antipyretics and analgesics, just like with any other flu. Acetaminophen or Ibuprofen can be used to treat fever. Until the skin blisters turn purulent, antibiotics are useless. It is advised to drink a lot of liquids, such as milk, juice, or water, as dehydration is frequently observed. Resting in bed is advised, along with maintaining good hygiene and sanitation. Children who are affected should stay in isolation for five to seven days [8].

OUTBREAK PREPAREDNESS

Parents are advised to see a doctor as soon as possible if their kid exhibits any signs of HFMD. They must also keep an eye out for any changes in their child's routine behavior, such as a reluctance to eat or drink, frequent vomiting, or excessive sleepiness.

- Both kids and adults should routinely and thoroughly wash their hands, especially after changing diapers or using the restroom.
- Contaminated items and surfaces should be scrubbed and disinfected using a weak solution of chlorine-containing bleach.

- A case definition will be created to help in the early detection of severe instances as well as the reporting, monitoring, and treatment of such individuals.
- Every level of healthcare institution must establish an HFMD reporting methodology and conduct daily HFMD reporting.
- Construction of new or expanded pediatric critical care units (ICUs).
- Programs for ICU staff development should be established.
- Forming a specialist medical team and offering 24-hour on-call assistance.
- It is important to enhance surveillance and evaluation of severe cases based on clinical indicators.
- To lower mortality, clinical surveillance should be offered for early diagnosis of severe cases and rapid care.
- Consultation rooms for febrile rash cases should be established up in fever outpatient clinics or pediatric wards to prevent cross-transmission among other unwell children. Sterilization of medical equipment is required for each patient [9].

PREVENTIVE MEASURES

When an unknown virus suddenly breaks out, prevention is essential. An outbreak's effects can be readily managed if everyone properly adheres to preventative measures. Compliance with preventive measures is dubious, nevertheless, as Tomato flu frequently strikes children under the age of five. Their guardians must use caution when there are illness outbreaks. The following are some precautions that should be taken in order to avoid tomato flu:

1. Infected individuals must be kept apart for at least 5 to 7 days since the disease can spread quickly from one person to another.
2. Due to the high contagiousness of tomato flu, patients should be instructed not to touch the skin blisters. It frequently affects youngsters, therefore it's crucial to keep them from scratching the contagious blisters.
3. Avoid close contact with those who are ill. Children who have a fever or rash should be warned not to be touched or hugged.
4. Maintaining excellent hygiene and sanitation are effective weapons against illness. These activities should be considered with regard to children.
5. The patients' personal items, including their clothing, utensils, and other items, should be thoroughly and often sanitized.
6. Make sure the kids have enough of water.
7. Regular adherence to a well-balanced diet can assist to maintain a strong immune system.
8. Immediately separate any family members who start to exhibit symptoms and seek medical attention [10].

DRUGS AND VACCINES UNDER TRIAL

As a recently developing infectious disease, tomato flu, medications and vaccines for its treatment have not yet been created or put through clinical testing.¹¹

STEPS TAKEN BY THE GOVERNMENT

The neighboring state of Tamil Nadu has enhanced border monitoring in response to cases of tomato flu being found in Kerala. The Kerala government launched initiatives at each Anganwadi and medical facility to treat the affected people. In Coimbatore, illness tests are being carried out at Anganwadi centers, and mobile teams with medical professionals are allegedly on the ground. To keep an eye out for anyone with a fever and rashes, three teams of tax inspectors, health inspectors, and police have been sent out in shifts. Since Kerala accounts for the bulk of cases, the surrounding areas are closely monitored. All hospitals in the neighboring states' outpatient departments have been told to report any patients exhibiting tomato flu symptoms. Health experts in Kerala have issued a warning that this illness is infectious and has the potential to spread to other areas. The Kerala Health department is keeping a tight eye on the situation and taking precautions. Due to a large number of patients, Anganwadi centers in the affected areas have been shuttered. Authorities have launched village-wide awareness campaigns in the interim. To screen visitors from Kerala, Tamil Nadu has set stringent laws and restrictions. At the Walayar checkpoint on the border between Tamil Nadu and Kerala, a team of revenue, health, and police officials has been stationed to inspect visitors arriving from the neighboring state in an effort to stop the spread. The neighboring state of Karnataka has also increased its monitoring of visitors from the impacted area.¹²

EXPERT OPINIONS RECEIVED

The blister shouldn't be scratched, according to the websites of Narayana Health and Apollo Hospitals, two of India's top healthcare providers. Sanitize the utensils, clothing, and other possessions of ill persons to stop the infection from spreading. Someone who has the flu should be kept isolated to stop it from spreading to other family members. Children must be bathed with warm water and given access to water, milk, and juice as per Narayana Health and Apollo Hospitals. The core of treatment for treating dehydration is fluid consumption. India's afflicted rural areas should receive the appropriate medications and fluids in sufficient quantities. Throughout the healing process, getting enough sleep is crucial. People who are close to someone who has the illness need to keep a safe distance from them. Strict action needs to be done. Health experts advise parents to take their patients to the hospital rather than treating them at home. Similar to earlier epidemics, it is critical to expanding the number of hospital beds, doctors, and medical personnel in the afflicted areas. To screen the kids, regular health camps should be arranged. A contact tracing app may be made by the state government.¹³

CONCLUSION

With COVID-19 and monkeypox already causing havoc throughout the world, tomato fever poses a fresh danger. Therefore, the extent of the destruction is determined by developing strategic methods to deal with flu epidemics early on. Additionally, controlling breakouts sooner will undoubtedly benefit the nation's economy. The community, medical professionals, and government representatives must work together effectively to contain the "Tomato flu" outbreak during COVID 19. Cases of the tomato flu were discovered as the nationwide monkey pox outbreak was becoming more concerning. Although it is spreading quickly, the government's quick response in the form of prevention and treatment has significantly curbed the infection's spread.

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