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A Review On: Tomato Flu Challenging For Child Population

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Abstract: -
This article aims to highlight the current update on the 'tomato flu' outbreak in India. Recently there was an outbreak of a new illness in some parts of India. The This article aims to highlight the current update on the 'tomato flu' outbreak in India. Recently there was an outbreak of a new illness in some parts of India disease was very contagious and it manifested with a rash mainly noticed in children younger than nine years. The rash was very painful and blisters were the size of small tomatoes, hence it was termed 'tomato flu'. Tomato flu, also known as tomato fever, is a viral disease which causes blisters that resemble tomatoes. Kerala reported the first case of the Tomato virus on May 6, 2022. Tomato Flu largely affects children below five years of age, who experience undiagnosed fever. However, whether the causative agent of tomato fever is related to dengue fever or chikungunya. The causative agent was identified to be Coxsackievirus A16, an RNA virus belonging to the family, Picornaviridae. We conclude that the recent Indian epidemic of this disease might be due to a new variant of Coxsackievirus A16 actually causing HFMD.

Keywords:- Blisters, Clinical features, Coxsackievirus A16, Hand foot and mouth disease, Rash, 'Tomato flu', CA-16, HFMD.

I. Introduction:-

Hand, foot and mouth disease (HFMD) is a typically benign viral infection of the childhood and the disease was first described in 1948.Coxsackievirus A 16 (CV-A 16) and human enterovirus 71 (EV-A71) are the major pathogens responsible for HFMD. As the infection was deemed a mild viral infection, associated with self-limiting clinical features that resolved within 5 to 7 days, HFMD did not receive a lot of attention for a long time. Kerala reported the first case of the Tomato virus on May 6, 2022. It reported from at least four states Kerala, Tamil Nadu, Haryana, and Odisha. The 'tomato flu' is caused by Coxsackie virus A 16. It belongs to Enterovirus family. Hand-foot and-mouth-disease (HFMD) is a frequent febrile rash illness of childhood caused by enteroviruses (EV). The initial symptoms of tomato flu resemble those of dengue and chikungunya including high fever, rashes, and intense pain in joints. Rashes and blisters resembling those seen with the monkey pox virus emerge throughout the body which leads to skin irritation.

History: -

The tomato flu was first identified in the Kollam district of Kerala on May 6, 2022, and as of July 26, 2022, more than 82 children younger than 5 years with the infection have been reported by the local government hospitals.The other affected areas of Kerala are Anchal, Aryankavu, and Neduvathur. The infection is caused by Coxsackievirus A 16. Once infected, the virus produces red and painful blisters on the skin, hence referred to as "Tomato Flu" or "Tomato Fever". To investigate this disease, molecular and serological tests were performed in order to rule out dengue fever, chikungunya, zika virus, varicella zoster virus, and herpes, and upon ruling out these illnesses a diagnosis of 'tomato flu' was made . Although the disease is endemic to India, 2 cases were identified in the United Kingdom soon after the family returned.

Symptoms:-Fatigue, Cramps, Nausea
Vomiting, Diarrhoea, Fever, Dehydration, Swelling of joints, Body aches.
Complication: -Non-life threatening till now.

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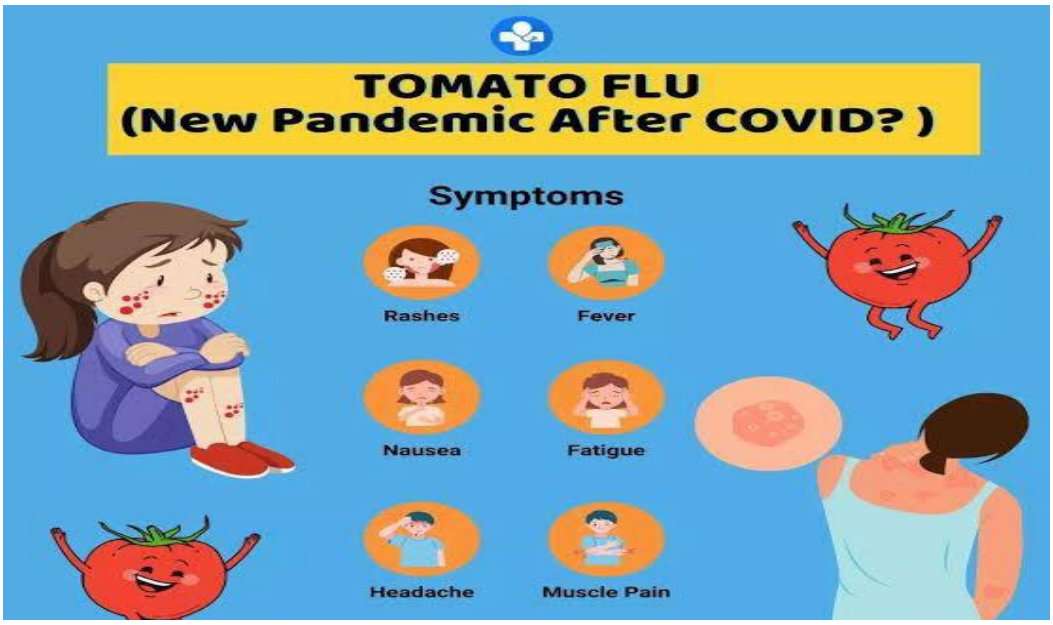

Causes:-This rare contagious disease, Tomato fever, is caused by Coxsackie A 1 6 virus. In this infection, red and painful blisters come up on the patient's body.

Transmission:-
The flu viruses spread mainly by tiny droplets made when people with flu cough, sneeze, or talk. Young children can catch this virus by touching dirty surfaces, using diapers and putting objects directly in their mouths. Given the similarity to hand, foot and mouth illness.

Pathogenesis:-
The infection is caused by Coxsackievirus Al 6. Once infected, the virus produces red and painful blisters on the skin, hence referred to as "Tomato Flu" or "Tomato Fever".

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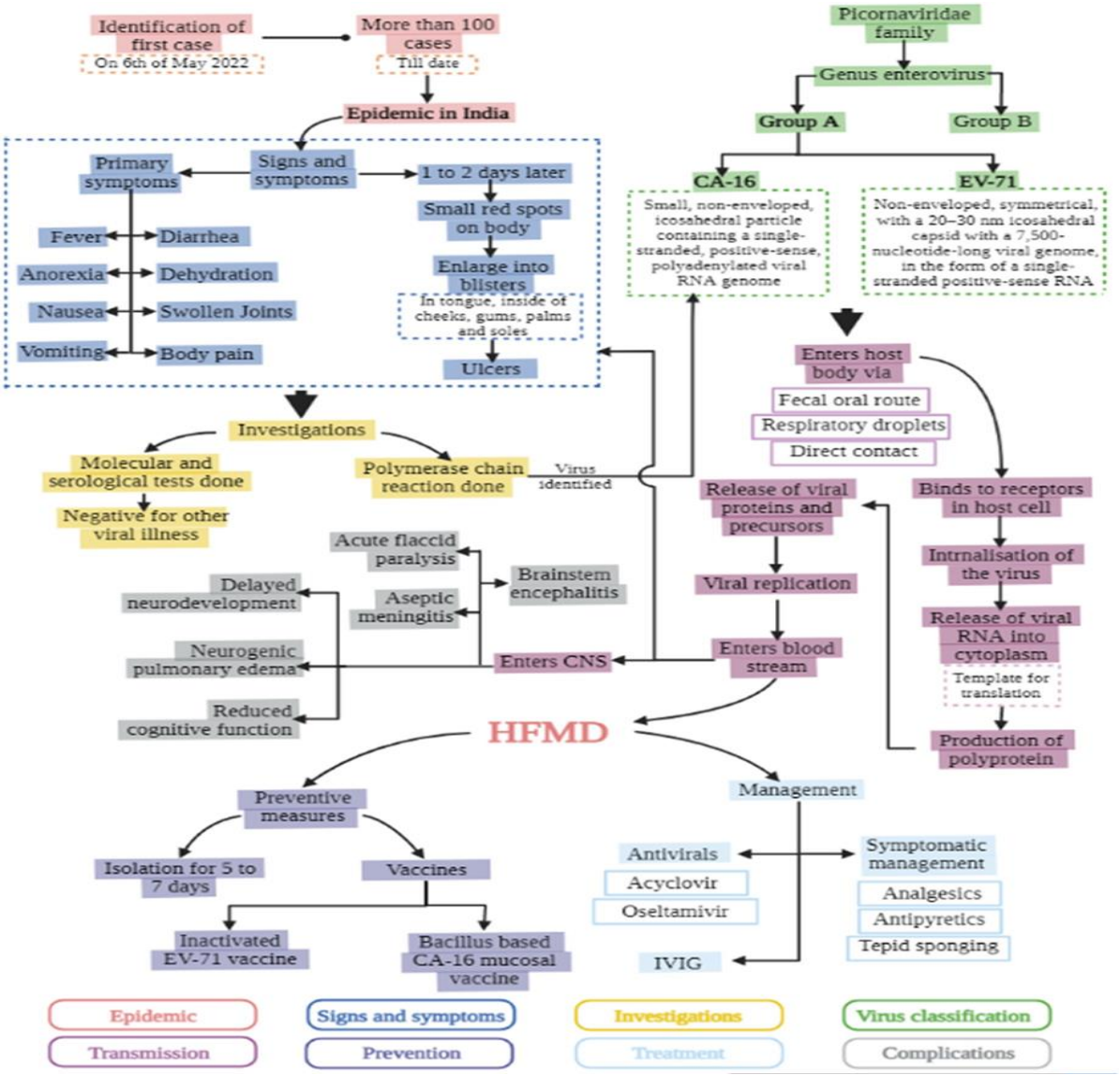

Symptoms:-

- Increased body temperature.
- Fever.
- Rashes.
- Fatigue
- Cramps
- Nausea
- Vomiting
- Diarrhoea
- Fever
- Dehydration
- Swelling of joints
- Body aches
- Severe joint pain, which is also characteristic of chikungunya.
- The red, painful blisters may spread to different parts of the body.

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• Throughout earlier outbreaks of HFMD around the world, different clinical features have been observed in accordance with the virulence of the virus responsible for the outbreak. The primary symptoms observed in the recent outbreak of 'Tomato flu' in India – namely, fever, anorexia (loss of appetite), nausea, vomiting, diarrhea, dehydration, swollen

• joints and body pain – are similar to that of other viral infections. High grade fever is accompanied by rashes and severe joint pain comparable to those in chikungunya and dengue fever.

• One to two days after the onset of fever, small red spots appear on the body which eventually turn into blisters and then to ulcers. Although they may appear throughout the body, the lesions are usually located on the tongue, inside of the cheeks, gums, palms and soles . The emergence of rash does not follow either centripetal or centrifugal pattern of dissemination in the body. These blisters are red, painful and may grow to the size of a tomato. It is plausible that the large blisters are due to infection with a new variant of CV-A16. Further research is required to confirm this conjecture

Etiology:-The causes of tomato flu are attributed to viruses carried by mosquitoes, specifically the kind that causes chikungunya. The exact cause is, however, unknown.

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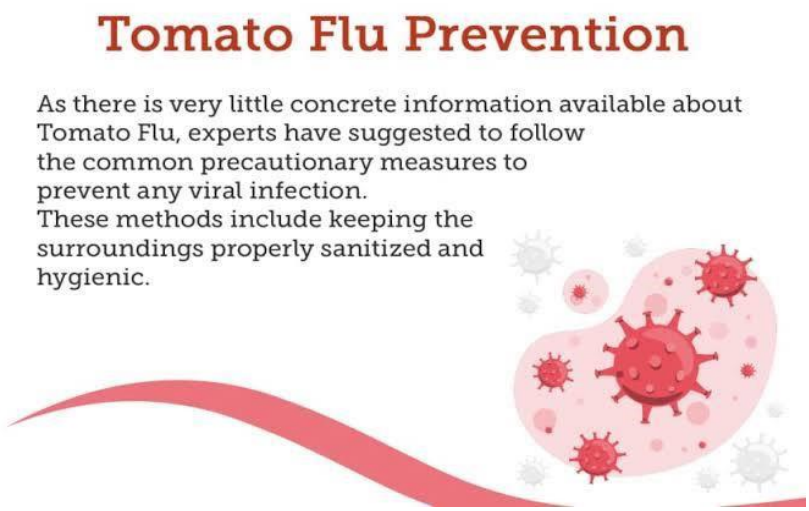
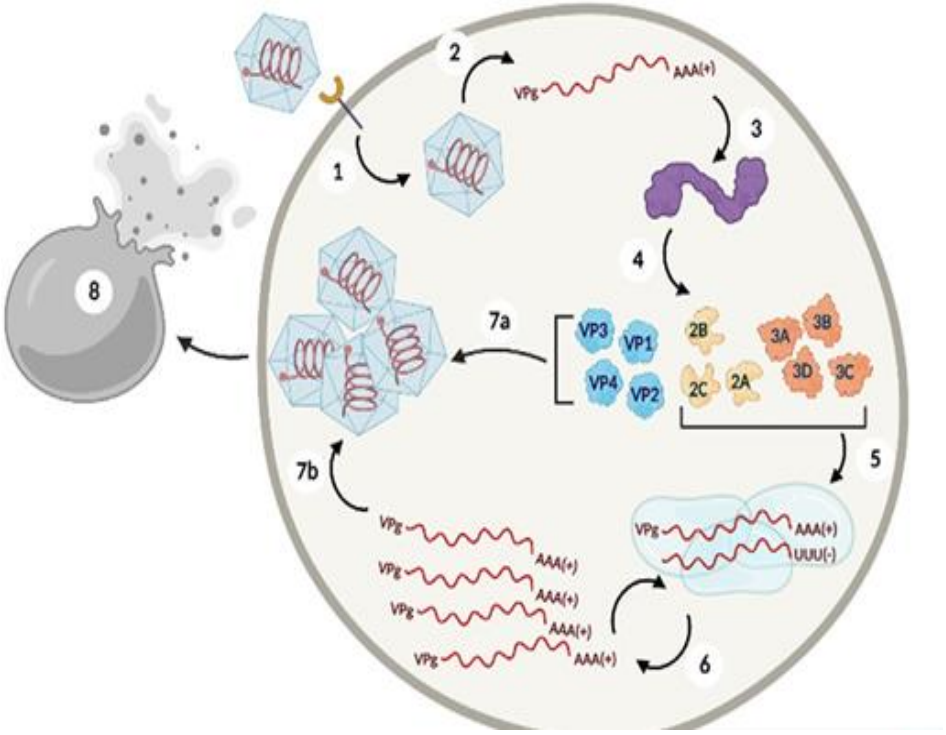


The first case of HFMD was described in Birmingham in 1959. While HFMD is endemic in many countries, outbreaks of EV-A71 associated HFMD has been seen every 2-3 years in Asia. Pacific countries with varying clinical pictures, namely China, Japan, Singapore, Malaysia, Australia, Cambodia, Taiwan, Thailand, South Korea, and Vietnam. Human-to-human transmission of HFMD is possible through fecal-oral route, direct contact, and respiratory droplets. A study done in Guangdong, China suggested that fecal-oral transmission predominated, one possible reason being that the virus could survive on environmental surfaces. 'Tomato flu' has also been reported to be contagious and transmitted through close contact. Handwashing has been shown to decrease the incidence of HFMD in various studies, supporting these findings.



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Diagnosis:- Isolation, rest, plenty of fluids, and a hot water sponge for the relief of irritation and rashes. Additional signs and symptoms of 'Tomato flu' include flulike symptoms such as coughing, sneezing, rhinorrhea (runny nose) and discoloration of the hands, knees and buttocks. Molecular and serological tests are done on children with such signs and symptoms in order to rule out dengue, chikungunya, zika virus, varicella-zoster virus and herpes, following which the diagnosis of 'Tomato flu' can be confirmed. In areas of outbreaks, the disease may be diagnosed clinically by history and physical examination as well

Treatment and prevention:-

Currently there are no specific antiviral treatments for HFMD. However, multiple prospective antiviral drugs have been explored with some of them showing remarkable results clinically. These include acyclovir and oseltamivir. Patients are advised to rest, stay hydrated and drink clean, filtered water. Ibuprofen or acetaminophen can be used to provide relief from body pain and fever.

Proper hygiene and sanitation of the surroundings is necessary to avoid spreading the disease. Furthermore, given the contagious nature of the disease, it is important to isolate confirmed or suspected cases for a period of 5 to 7 days from the day of onset of symptoms to limit transmission of disease. Patients are advised not to scratch the blisters as they may get infected and purulent. The signs and symptoms usually resolve within seven to ten days.

II. Conclusion:-

The recent Indian epidemic of 'tomato flu' with large red blisters in the hand, foot and buttocks was later identified to have been caused by a variant of CV-A16. Hence, the term 'tomato flu' is no longer used, and it is identified as yet another outbreak of HFMD. To conclude, timely precautionary measures such as maintaining proper hygiene and sanitation, and five to seven days of isolation following contraction of the disease are important to control the disease and avoid further outbreaks. Although there are no established antivirals for HFMD, acyclovir and oseltamivir have shown effective results by reducing the severity of symptoms. Likewise, the use of immunoglobulins in HFMD has shown to increase clinical cure time and minimize fatality. There are 3 licensed vaccines against HFMD, but only effective against EV-A71. Hence, production of a multivalent vaccine against several etiologies of HFMD, including CV-A16 may be the best preventive method.

Reference:-

[1]. https://www.thelancet.com/journals/ fulltext https://journals.lww.com/pidj/Fulltext/ 2022/11000/
[2]. Kerala Tomato Flu A Manifestation of Hand_Foot.29.aspx
[3]. Carmona RCC, Machado BC, Reis FC, Jorge AMV, Cilli A, Dias AMN, et al. Hand, foot, and mouth disease outbreak by Coxsackievirus A6 during COVID-19 pandemic in 2021, São Paulo, Brazil. J Clin Virol 2022;154:105245.
[4]. Chen G, Huang C, Luo D, Yang J, Shi Y, Li D, et al. Clinical characteristics and treatment overview in hand-foot-and-mouth disease using real-world evidence based on Hospital information system. Evid Based Complement Alternat Med 2022:9156186. 2022.
[5]. Chen Z, Jiang C, Cheng X, Ma L, Xin Y, Liu T, et al. Secondary hypogonadism following hand, foot, and mouth disease in an adult: a case report and review of literature. BMC Infect Dis 2022;22(1):56
[6]. Sanjay RE, Josmi J, Sasidharanpillai S, Shahin S, Michael CJ, Sabeena S, et al. Molecular epidemiology of enteroviruses associated with hand, foot, and mouth disease in South India from 2015 to 2017. Arch Virol 2022;167(11):2229–38.
[7]. Reports of "tomato flu" outbreak in India are not due to new virus, say doctors. BMJ 2022;378:o2101.
[8]. Bahreyni A, Liu H, Mohamud Y, Xue YC, Zhang J, Luo H. A new miRNA-Modified coxsackievirus B3 inhibits triple negative breast cancer growth with improved safety profile in immunocompetent mice. Cancer Lett 2022;548:215849