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A review on Yellow fever

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ABSTRACT

Yellow fever is a viral infection spread by a certain type of mosquito that is the yellow fever mosquito *Aedes aegypti* and this viral disease is typically short duration. Yellow fever is common in tropical and subtropical areas of South America and South Africa. The actual cause of yellow fever is done by yellow fever virus, that belongs to the family of Flaviviridae. Sign and symptoms of yellow fever generally carried cause a mild infection with fever, headache, back pain, fatigue, chills, muscle pain, loss of appetite, nausea and vomiting. The transmission of yellow fever virus is mainly transmitted through the bite of the yellow fever mosquito *Aedes aegypti*. Diagnosis of yellow fever is generally performed by laboratory testing of serum to detect virus specific IgM and neutralizing antibodies. Prevention of yellow fever includes vaccination, try to stay away from mosquitoes and also avoidance of mosquito bites in areas where yellow fever is endemic. For the treatment of yellow fever there is no specific treatment like vaccine, antidote or antiviral medications etc. During the early stages of yellow fever the diagnosis is difficult but generally diagnosis of yellow fever is done by laboratory testing of Serum to detect virus-specific IgM and neutralizing antibodies.

Keywords: Yellow fever, Hemorrhagic fever, Flavivirus infections, *Aedes aegypti*, viral infection, Viral disease.

INTRODUCTION

Yellow fever is a hemorrhagic condition that may lead to a high fever, bleeding into the skin, and cell death in the kidney and liver. This viral infection spread by a particular type of mosquito. This infection is most common in areas of South America and Africa since 1980s, and also the number of cases of yellow fever has been

increasing. The main cause of yellow fever is Virus and Vector is Female *Aedes Aegypti*. The female *Aedes* must bite a diseased person within first 4 days of the disease. After 10 to 20 days of latent period, the *Aedes* becomes infective, as long as 7 months. Incubation period of yellow fever is - 3 to 6 days [1].

HISTORY

Yellow fever originated in Africa, with transmission of the disease from nonhuman primates to humans. The virus is thought to have originated in East or Central Africa and spread from there to West Africa. The first mention of the disease by the name "yellow fever" occurred in 1744 [2].

Worldwide, about 600 million people live in endemic areas. The WHO estimates 200,000 cases of disease and 30,000 deaths a year occur [3].

In the 1500s, Europeans living in the New World were devastated by the yellow fever. During

one expedition to capture Peru and Mexico in 1741, British forces were reduced by about 74% (27,000 soldiers to 7,000) because of yellow fever. Throughout the 17th and 18th centuries, in the United States, towns on the coast and small villages were especially liable to have outbreaks of yellow fever [4].

Structure of Yellow fever

These yellow fever viruses are at a magnification of 234,000.

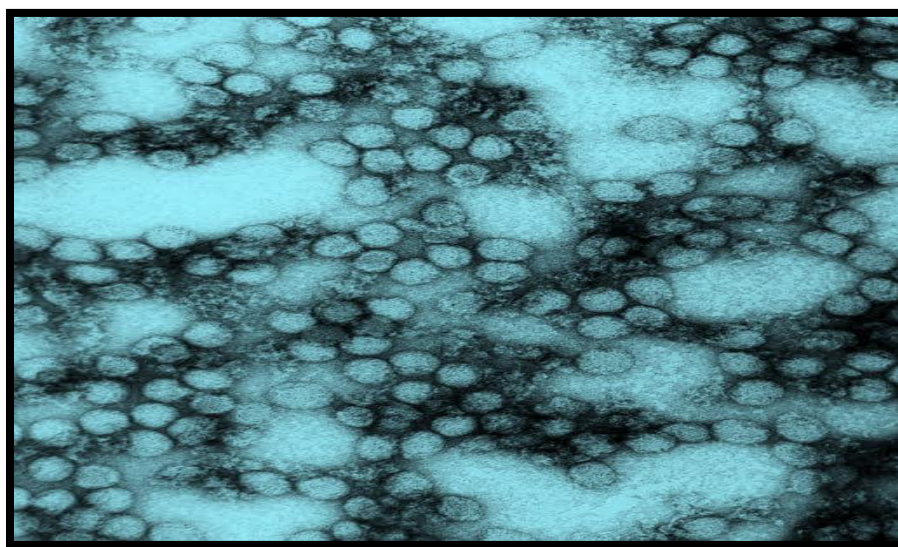


Fig: 1: Structure of Yellow fever virus.

Causes

Yellow fever is caused by a yellow virus that is spread by the *Aedes aegypti* mosquito and the type species and namesake of the family Flaviviridae. Generally yellow fever is transmitted when an infected mosquito bites any person. With the yellow fever virus Humans and monkeys are most commonly infected. Mosquitoes become infected with the virus when they bite an infected human or monkey. Yellow fever disease cannot be spread from one person to another [5].

It may cause illness, when a mosquito bites a human or a monkey infected with yellow fever, the virus enters the mosquito's bloodstream and circulates before settling in the salivary glands and then the infected mosquito bites another monkey or

human, the virus then enters the host's bloodstream. So stay away from the particular area where are infected by the mosquitoes [6].

Symptoms

You won't experience any signs or symptoms during the first three to six days after you've contracted yellow fever in the incubation period. After this, the infection enters an acute phase and then, in some cases, a toxic phase that can be life-threatening. Generally signs and symptoms for yellow fever are different in acute and toxic phase [7-10].

Acute Phase

When the infection enters the acute phase, then the signs and symptoms are:

- ✓ A high temperature (fever) of 38C (100.4F) or above
- ✓ Headache
- ✓ Muscle aches, particularly in your back and knees
- ✓ Sensitivity to light
- ✓ Nausea, vomiting or both
- ✓ Loss of appetite
- ✓ Dizziness
- ✓ Red eyes, face or tongue

Usually these signs and symptoms are improved and within several days are gone [11-13].

Toxic phase

During the toxic phase, acute signs and symptoms return and more-severe and life-threatening ones also appear. Sometime the toxic phase may be fatal of yellow fever. When the infection enters the toxic phase, then the signs and symptoms are:

- ✓ Yellowing of your skin and the whites of your eyes (jaundice)
- ✓ Abdominal pain and vomiting, sometimes of blood
- ✓ Decreased urination
- ✓ Slow heart rate (bradycardia)
- ✓ Liver and kidney failure
- ✓ Bleeding from your nose, mouth and eyes
- ✓ Brain dysfunction, including delirium, seizures and coma [14-19].

Risk factor

The biggest risk factor for yellow fever is living in or traveling to regions where yellow fever is common.

Generally the risk factor of yellow fever are include:

- ✓ *Mosquito bites.*
- ✓ *Travel to high risk areas.*
- ✓ *In rare cases primate bites.*

Complication

Yellow fever results in death for 20 to 50 percent of those who develop severe disease. Complications during the toxic phase of a yellow fever infection include kidney and liver failure, jaundice, delirium, and coma.

The severe complications include:

- ✓ *High fever.*
- ✓ *Bleeding.*
- ✓ *Jaundice.*
- ✓ *Pain in the upper part of the abdomen.*
- ✓ *Kidney and Liver failure.*
- ✓ *Even Death also.*

Transmission

Yellow fever virus is mainly transmitted through the bite of the yellow fever mosquito *Aedes aegypti*, but other mostly *Aedes* mosquitoes such as the tiger mosquito (*Aedes albopictus*) can also serve as a vector for this virus.

There are two types of yellow fever

Jungle (sylvatic) yellow fever and urban yellow fever, both with a different cycle of infection.

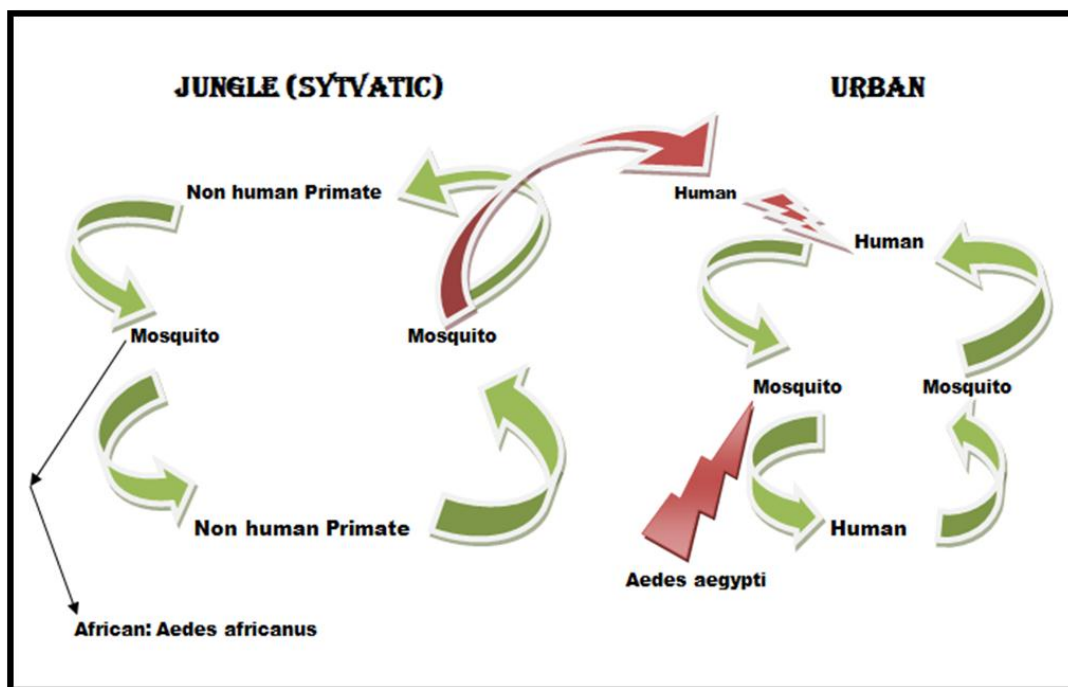


Fig: 2: Transmission cycle of yellow fever virus.

Jungle Yellow Fever

The hosts of jungle yellow fever are usually monkeys (this is a monkey disease). In tropical rain forests, infected wild mosquitoes spread it to monkeys. The monkeys then infect any mosquito that bites them. People can only contract it if a mosquito feeds on an infected monkey and then feeds on a person. So, this is a rare disease, usually only occurring in people who work in the rain forest.

Urban Yellow Fever

Urban yellow fever is the disease that affects humans. *Aedes aegypti* is the mosquito that usually transmits. This disease from person to person. For it to be spread to other people or introduced to an area, someone who was just infected by yellow fever has to live in or visit somewhere with the *Aedes aegypti* mosquito. The mosquito then has to feed off that person and bite another one to infect the second person.

Generally, yellow fever is transmitted only in certain areas of Africa and South America. In South America (especially Brazil), infections occur sporadically, and usually among forestry and agricultural workers. In Africa, infections occur

primarily in the tropical areas of western and central Africa, but also in urban locations as well as jungle regions.

Diagnosis

Especially during the early stages, yellow fever is difficult to diagnose. In more acute case may be confused with severe malaria, viral hepatitis, leptospirosis, infection with other flaviviruses (such as dengue hemorrhagic fever), hemorrhagic fevers, and poisoning.

Laboratory diagnosis of yellow fever is commonly performed by testing of serum to detect virus-specific IgM and neutralizing antibodies. Sometimes in blood samples taken early in the illness the virus can be found.

Prevention

To prevent infection from Yellow Fever virus is the most effective way to prevent mosquito bites. Use insect repellent, wear long-sleeved shirt and pants, treat clothing, and get vaccinated before traveling.

Vaccine

Vaccination The best way to prevent yellow fever is to get a vaccination. Vaccine for yellow fever is used since the 1930s. The 17D vaccine was first tested in 1936 in New York and in 1937 in Brazil.

The vaccine will give 95% of people who get vaccinated protection against yellow fever within one week. One vaccination usually gives lifetime protection against the disease. Sometimes travelers to and from specific places have to have a certificate of yellow fever vaccination. Serious side effects caused by the yellow fever vaccine are very rare.

A single dose of the yellow fever vaccine provides protection for at least 10 years. Side effects are usually mild, lasting five to 10 days, and may include headaches, low-grade fevers, muscle pain, fatigue and soreness at the site of injection. More-significant reactions such as developing a syndrome similar to actual yellow fever, inflammation of the brain (encephalitis) or death can occur, most often in infants and older adults. The vaccine is considered safest for those between the ages of 9 months and 60 years.

Mosquito protection

By protecting yourself against mosquitoes, you can help protect yourself against yellow fever.

To reduce exposure to mosquitoes:

- ✓ Avoid unnecessary outdoor activity when mosquitoes are most active.
- ✓ Stay in air-conditioned or well-screened housing and also stay from
- ✓ Wear long-sleeved shirts and long pants when you go into mosquito-infested areas.
- ✓ Where mosquitoes go through their early stages of growth, and on adult mosquitoes in places the Insecticides should be used.
- ✓ Possible breeding places for mosquitoes should be destroyed.

Treatment

For the treating of yellow fever no antiviral medications or antidote have proved but the symptoms can be treated. Paracetamol or ibuprofen like that kinds of painkiller can help lower your temperature and relieve aches or pains in the meantime and also drink plenty of fluids to avoid dehydration.

Moderately severe forms are treated symptomatically by Vitamin C, Vicasol, Vitamin P, and Cardiovascular preparations

If patient has more serious symptoms, that patient should be hospitalized for supportive care and close observation. Yellow fever patients should be protected from further mosquito exposure for up to 5 days after the onset of fever.

If you're planning on traveling to these areas, you can protect yourself by getting a yellow fever vaccine at least several weeks before traveling. With the yellow fever virus anyone can be infected, but older adults are at greater risk of getting seriously ill.

CONCLUSION

Yellow fever is a viral hemorrhagic disease that is transmitted by mosquitoes. The disease is endemic in most African and South American countries and there should be a vaccination against yellow fever and control vector of the disease. Occasionally travelers who visit yellow fever endemic countries may bring the disease to countries free from yellow fever. To prevent importation of the disease, many countries require proof of vaccination against yellow fever before they will issue a visa, particularly if travelers come from, or have visited the yellow fever endemic area.

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REFERENCES

- [1]. Wills, C., Yellow Fever, Black Goddess. Reading, MA: Addison-Wesley Pub 1996.
- [2]. Shiomi, R., Yellow Fever. Alexandria, VA: Alexander Street Press 2003.
- [3]. Augustin, G., 1909. History of Yellow Fever. New Orleans: Pub. For the author by Searcy & Pfaff, ltd.
- [4]. Reactions Weekly, Yellow fever vaccine: Fatal yellow fever infection: case report. & NA 862, 2001, 11.
- [5]. Goldani, L., 2020. Yellow Fever Outbreak in Brazil, 2017.
- [6]. Cdc.gov. 2020. Yellow Fever. [online] Available at: <https://www.cdc.gov/yellowfever/index.html>
- [7]. En.wikipedia.org. Yellow Fever 2020. Available at: https://en.wikipedia.org/wiki/Yellow_fever
- [8]. Health line. Yellow Fever: Causes, Symptoms & Diagnosis 2020. Available at: <https://www.healthline.com/health/yellow-fever>
- [9]. Yellow Fever. WebMD. Available at: <https://www.webmd.com/a-to-z-guides/yellow-fever-symptoms-treatment#1>
- [10]. Mayo Clinic. 2020. Yellow Fever - Symptoms and Causes. Available at: <https://www.mayoclinic.org/diseases-conditions/yellow-fever/symptoms-causes/syc-20353045>
- [11]. Medicalnewstoday.com. Yellow Fever: Symptoms, Causes, and Prevention 2020. Available at: <https://www.medicalnewstoday.com/articles/174372#1>
- [12]. Medicine Net. Yellow Fever Symptoms, Vaccine, Treatment & History 2020. Available at: https://www.medicinenet.com/yellow_fever/article.htm
- [13]. Who.int. Yellow Fever 2020. Available at: <https://www.who.int/news-room/fact-sheets/detail/yellow-fever>
- [14]. Encyclopedia Britannica. Yellow Fever | Cause, Symptoms, & Treatment 2020. Available at: <https://www.britannica.com/science/yellow-fever>
- [15]. Kotar SL, et al. Yellow Fever: A World Wide History. 2017
- [16]. Sean W, et al. Yellow fever cases in Asia: Primed for an epidemic. *Int J Infect Dis.* 48(8), 2016, 98-103.
- [17]. Monath TP, Vasconcelos PFC. Yellow fever. *J Clin Virol.* 64, 2015, 160-73. <https://doi.org/10.1016/j.jcv.2014.08.030>.
- [18]. Monath TP. Yellow fever. UpTo Date 2018. Available from: <https://www.uptodate.com/contents/yellow-fever#H15>.
- [19]. Barnett ED. Yellow fever: epidemiology and prevention. *Clin Infect Dis.* 44(6), 2007, 850-6. <https://doi.org/10.1086/511869>