Lassa Fever

WHAT IS LASSA FEVER?

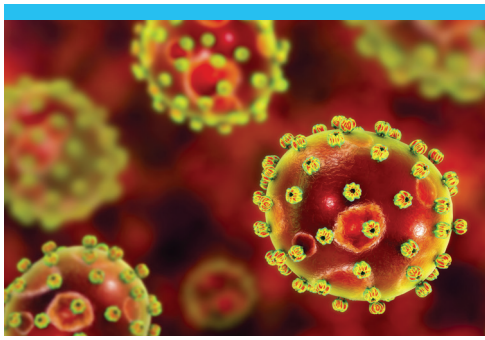
Lassa fever is a type of hemorrhagic fever caused by the Lassa virus and is mainly transmitted by rodents. The virus was first detected in 1969 in the town of Lassa, in Borno State, Nigeria; hence, its name. Lassa is endemic to West Africa, specifically Nigeria, Liberia, Sierra Leone and Guinea.

SYMPTOMS AND COMPLICATIONS

A significant number of individuals infected by the Lassa virus (~80%) do not appear to develop symptoms. When symptoms are present, they are difficult to distinguish from those of malaria and typhoid. Mild symptoms include slight fever, general malaise and headache. Serious symptoms include respiratory distress, hemorrhage, repeated vomiting, facial swelling and shock. Hearing loss, tremors and encephalitis can also occur, with deafness as the most common complication. Although the mortality rate is ~1%, the case fatality rate (CFR) has been reported to be upwards of 70%.[1] Death due to multi-organ failure can occur within two weeks after symptom onset.

TRANSMISSION

Rodents, specifically the "multimammate rat" (*Mastomys natalensis*), act as hosts. Transmission mainly occurs by ingestion or inhalation of the virus, via food or household items contaminated with the urine or feces from an infected host. The virus can also be dispelled through direct physical contact with an infected host. Human-to-human transmission is of major concern and occurs with contact with blood or bodily fluids from infected individuals as well as nosocomial exposure.[2]



80%
of infected people have no symptoms

Case fatality rate upwards of
70%

Severe Symptoms of Lassa Fever

- Respiratory distress
- Hemorrhage
- Repeated vomiting
- Facial swelling
- Shock
- Hearing loss
- Tremors
- Encephalitis

Data current as of March 17, 2020

DIAGNOSIS AND TREATMENT

Diagnosis of Lassa fever is highly dependent on knowledge of the geographical history of the patient and exposure history supplemented with laboratory testing. Virus detection begins with RT-PCR, followed by serological testing using IgM ELISA. The ReLASV Antigen Rapid Test can be used in low-resource endemic areas. Since symptoms present similarly to those of malaria, suspected individuals should also be tested for malaria. Early recognition, isolation and initiation of antiviral ribavirin are essential components of current treatment strategies.

Current treatment strategies include early recognition, isolation and initiation of antiviral ribavirin

CURRENT SITUATION, EPIDEMIOLOGY AND WHAT'S NEXT

Lassa fever affects 100,000-500,000 individuals annually in West Africa, with approximately 5,000 deaths per year.[3] From January 1, 2020 to February 9, 2020, 472 laboratory-confirmed cases were reported in Nigeria, including 70 deaths (CFR 14.8%), in 26 of 36 states.[4] The majority of cases were concentrated in the states of Edo (167) and Ondo (156). Throughout 2019, Nigeria had 810 confirmed cases, with 167 deaths (CFR 20.6%).[5] Of the 33 cases reported in Liberia from January 2017 to January 2018, 15 deaths occurred (CFR 46%).[6] In Sierra Leone, there was at least one case of Lassa fever each in 10 of 13 districts, spanning 2008-2012. In a 2009 study in Guinea in which 977 of 1,424 subjects were tested, there was a positive Lassa virus IgG rate of 13%.

100,000-500,000

people affected in West Africa annually

According to clinicaltrials.gov, there are currently nine clinical trials being conducted. Five of these are located in West Africa, specifically Nigeria, Sierra Leone, Ghana and Mali. Interventions under investigation include, but are not limited to, ribavirin (antiviral), INO-4500 (vaccine) and MV-LASV (vaccine). Emerging treatments are limited but include monoclonal antibodies that target the viral glycoprotein, favipiravir (FUJIFILM Toyama Chemica, Japan), LHF-535 (Kineta) and a few others.

1 Fisher-Hoch, S. et al. BMJ, September 1995, 311(7009): 857-859.
2 Kerneis, S. et al." PLoS Neglected Tropical Diseases, December 2009, 3(11): e548
3 "Lassa Fever," BMJ, July 2012, vol. 358, issue j2986
4 Lassa Fever-Nigeria, WHO, February 20, 2020, https://www.who.int/csr/don/20-february-2020-lassa-fever-nigeria/en/
5 Nigeria Center for Disease Control Situation Report. December 15, 2019. https://ncdc.gov.ng/diseases/sitreps/?cat=5&name=An%20update%20of%20Lassa%20fever%20outbreak%20in%20Nigeria
6 Shaffer, J. et al. PLoS Neglected Tropical Diseases, March 2014, 8(3): e2748

Data current as of March 17, 2020