

The Dilemma in the Management of an Asymptomatic Patient with Confirmed Lassa Fever Viremia (a Case Report): Implication for Policy Action in the Control of Infectious Diseases of Public Health Importance in Nigeria

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Abstract: Background: Lassa fever is a potentially deadly viral haemorrhagic fever especially if the patient is not seen early enough for treatment. This report aims to present the faced regarding the settlement of the cost of treatment in a positive asymptomatic case. **Case report:** The case, a 22-year old student, was accidentally found to be positive to the RT-PCR test for Lassa fever though he was asymptomatic. He was then admitted into the isolation ward for ribavirin treatment. Apart from being a student, he had just lost his mother to Lassa fever disease; he partook in the nursing of his late mother while she was ill. **Conclusion:** The question begging for answer is who should have been responsible for the payment of the bills incurred by this indigent patient considering the public health importance of his admission and treatment?

Introduction

Lassa Fever is an acute, severe and sometimes fatal viral haemorrhagic fever first discovered in a town called Lassa in the present day Borno State, Northeastern Nigeria; the disease was first described earlier in the 1950s [1, 2]. The viral particle, a single-stranded RNA virus, was isolated from three missionary Nurses who died of the unknown disease in Lassa town after taking care of an infected labour case [3, 4]. The disease is endemic to West Africa with cases haven being recorded in countries like Nigeria, Guinea, Nigeria and Liberia [5, 6]. It is estimated that 100,000 to 50,000 persons contract the infection and that at least the disease kills 10,000 people yearly in West Africa [7, 8, and 9]. Imported cases have been recorded in Europe, Asia and North America [9, 10]. Mortality can be as high as 20% in hospitalized patients and 90% for pregnant women, but overall case fatality rate (CFR) of the disease is 1% [11, 12, and 13].

The disease is a zoonotic infection with the multimammate rat, *Mastomys natalensis*, present commonly in sub-Saharan Africa as the reservoir of the infection [14, 15] although there are new findings that seem to implicate other *Mastomys* species like the *M. erythroleucus* as well as the *Rattus rattus* species. The transmission of the virus occurs mainly through contact with human food or water with excreta (urine or faeces) of the animal reservoir [16]. The infection can also be

transmitted from one person to the other, when there are poor infection prevention and control measures, through direct contact with the cases or their body fluid and contaminated materials used by the cases [17]. Transmission can also occur by eating poorly cooked infected rats as food, through aerosols and sexual intercourse [18, 19].

The Incubation period of the disease is 3-21days. Approximately 80% of people who are infected with the virus are asymptomatic [20]. The diagnosis clinically is usually difficult because some of the symptoms and signs are non-specific. The disease may mimic diseases like malaria and typhoid fever by presenting with fever, myalgia, weakness, headache and abdominal symptoms [21]. Severe disease occurs when there is multiple organ involvement, an indicator of poor prognosis [22]. In such a case, there may be bleeding diastasis, neurological complications like deafness which may occur in about 25% of cases [5, 23]. The diagnosis of the disease is confirmed in the laboratory through RT-PCR and other diagnostic test [24]. The drug of choice for the treatment of the disease is parenteral ribavirin, an antiviral medication that is effective if the patient presents early enough for therapy [25]. At present, there are ongoing researches in the production of the vaccine, but none has been licensed for the prevention of the disease. For this reason, the control and prevention of Lassa fever are hinged on destroying the reservoir - the multimammate rat [13, 26, and 27].

Case Presentation

A 22year old male student, a sibling of a confirmed case managed in one of the three designated treatment centres in Nigeria. He was actually in caring for the patient who happened to be his mother. He was confirmed to be positive for the virus during contact tracing and brought to the hospital, though he was asymptomatic. On examination, a young man in no apparent distress, not pale, afebrile, anicteric, not cyanosed, not dehydrated, no pedal oedema. His vital signs were essentially normal (Temperature-36.1°C, Blood Pressure-110/70mmHg, Pulse Rate-78bpm, Respiratory Rate-16cpm), no abnormality detected on the review of systems. An assessment of Confirmed Case of Asymptomatic VHF (Lassa fever) was made.

He was admitted into the Isolation Ward of the hospital. His admission was necessary to prevent the spreading of the epidemic to other people at the community level. Some laboratory investigations were carried which include Electrolytes, Urea, and Creatinine; Full Blood Count and Erythrocyte Sedimentation Rate; Urinalysis; Random Blood Sugar; Malaria Parasite; and Blood Culture. They were generally not indicative of other morbidities nor complications. Treatment was commenced with the sole aim of viral clearance in the patient. For this purpose, intravenous ribavirin therapy was instituted at a dose of 100mg/Kg stat; then, 25mg/Kg per day for the next 3days, subsequently, the dose was reduced to 12.5mg/Kg daily for days. Strict rules of Standard precautions were to be observed in the patient's management. After completing the ribavirin treatment, the sample was collected a post-treatment PCR test for Lassa fever which came out to be negative; the patient was then to be discharged from the hospital.

At discharge, there were issues regarding who was to be responsible for the payment of the bills incurred by the patient while on admission as he was an impecunious patient with no social nor voluntary health insurance coverage. His condition was compounded with the fact that he did not present at the hospital himself, he was brought in by the disease surveillance team as a confirmed Lassa fever primary contact who was asymptomatic with the sole reason to prevent others from contracting the disease from him. Moreover, he was a student who had just lost his mother following complications of Lassa fever disease. He was not on any health insurance scheme and was not financially capable of offsetting his incurred medical bills.

After several deliberations on how his bills could be settled for a possible replacement of the consumables to make such available for the treatment of others who may present with cases of Lassa fever as we were in the peak of the epidemic of Lassa fever in an endemic region. Succor came our way when the State disease surveillance and notification officer (DSNO) decided to stand-in for him

while he goes home to raise the fund to avoid a breach of his fundamental human rights. This report is being put up to arouse the discussion on the pertinent question of who should bear the cost of treatment of the patient in this instance and other patients that may be compelled to receive treatment for the public health importance of their condition.

Discussion

It is a known fact that the cost of managing a case of Lassa fever is quite expensive and not easily affordable by many [28]. The situation is usually worst and devastating for the poor especially in developing countries like Nigeria. There is also a low health insurance scheme coverage in Nigeria leaving out the majority of the non-formal sector. Looking at the index case, he was not in any way 'sick' because he was not symptomatic for Lassa fever disease. His case was an incidental finding discovered during Lassa fever disease surveillance and contact tracing. He was admitted into the hospital for ribavirin treatment to curtail the possible spread of the disease through him to others in his household and community. Considering his poor socio-economic status, he would have refused admission as he was in full knowledge of the possible cost implication of management of a confirmed Lassa fever case which he was unlikely able to afford. His compliance with the decision to be admitted would have been as a result of the fatal outcome of the disease his mother suffered before his admission.

Before the coming of an international non-governmental organization (NGO) known as Alliance for International Medical Action (ALIMA) supporting one of the treatment centres in Nigeria regarding case management, patients paid for services received during treatment for Lassa fever while on admission. Some of these services include feeding, accommodation, blood transfusion, laundry, dialysis, and other supportive treatments. In the period preceding this time, the government was only able to make drugs, personal protective equipment (PPEs) and the confirmatory test available at no cost for patients. Even at that, patients still pay for these services in many of the states in Nigeria [29].

It is good that an NGO such as ALIMA has filled in the gap in one of the treatment centres, but this is a temporary stop-gap measure. It is therefore imperative to critically and objectively look for a possible way forward as the occurrence of this event has availed us the opportunity to do so. Now the question is, who should be responsible for the cost of treatment in this instance, the patient, the hospital or the government? Should we be faced with this kind of situation again in the future, who should be approached for a possible solution? Are there reserved public funds in a developing country like Nigeria for the treatment and management of diseases of public health importance especially when the patients might not be willing or do not have the means to settle their medical bills? If yes, how operational and how accessible are they? It is pertinent to state that if public health interventions are to be effective in addressing some public health emergencies for infectious diseases of public health importance like viral haemorrhagic fevers, there have to be some reserved funds to be readily made accessible for patient's care. Also, the public health department of the three tiers of government in Nigeria should make available as a point of duty funds to handle situations like this. Possible inclusion of this category of patients in the social health insurance would go a long way in helping to control of infectious diseases of public health importance.

Conclusion

A confirmed case of asymptomatic Lassa fever disease in a student who was bereaved from Lassa and now faced with the inability to pay for his cost of care from Lassa fever disease. We, therefore, recommend that government at all levels and other policymakers should as a matter of necessity set aside funds to take care of the medical bills of this category of indigent patients to make the control of epidemic-prone diseases possible. A possible amendment of the social health insurance scheme act to include this category of patients would be of significant impact in the control of diseases of public health importance.

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