Case study

LASSA FEVER IN MAKURDI, NIGERIA: OUTCOMES DURING THE 2017/18 OUTBREAK

Abstract:-

Lassa Fever is a Viral Haemorrhagic Fever with yearly outbreaks in various parts of Nigeria over the past decade. The 2017/18 outbreak has been the worst recorded in the country and we wish to report a case series of the patients managed in Makurdi during the outbreak. All the patients had a history of fever with various symptoms suggestive of Viral Haemorrhagic Fevers and received intravenous ribavirin. One out of the four patients managed did not survive giving a case fatality rate of 25%.

Key Words:-Lassa virus, Lassa Fever, Makurdi, Outcomes

INTRODUCTION

Lassa fever is a viral haemorrhagic disease of global health concern. The disease is endemic in West Africa and responsible for recurrent epidemics in parts of West Africa including Nigeria as well as sporadic distribution in Europe, Asia and America[1,2].

Lassa fever is zoonotic in nature. The multi-mammate rat, *Mastomys natalensis* has been known to be a natural host of the virus and rodent-human transmission frequently occurs among populations where the rats breed and humans are exposed to their secretions, droppings or eat the rats[3]. Human-human transmission also occurs especially in health care settings where proper barrier nursing and infection control practices are not maintained[4,5].

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In Nigeria, there have been several outbreaks since 1969 when the virus was first identified and named after the town (Lassa in Bornu state) where it was found[6]. Since 1993, there have been almost yearly outbreaks mostly during the harmattan season (November to March) especially in Edo state and environs and most of the cases were managed at the Irrua Specialist Teaching Hospital, Edo state which is the major diagnostic and treatment centre for Lassa Fever in the country[6]. The 2017/18 outbreak has been the worst so far as there were 431 laboratory-confirmed cases in patients from 21 states with an estimated case fatality rate of 25%[7].

We report a case-series of four patients managed for Lassa Fever at the Benue State University Teaching Hospital, Makurdi during the 2017/18 outbreak highlighting the challenges and outcome. This is to raise awareness about the disease, improve surveillance and encourage all stakeholders in the health sector to put in concerted efforts in preventing the disease and offer expertise care to anyone infected with the virus.

CASE 1: Mrs AJ was a 30year old $G_4P_3^{+0}$ trader who resided in Makurdi. She presented to the Accident and Emergency unit of the hospital on account of recurrent fever for 8 days and also headaches, epistaxis and jaundice for 4days. She lived in a building with plenty of rats. She admitted to being pregnant though could not remember the date of her Last Menstrual Period and was referred to the Obstetrics and Gynaecology unit (O&G unit) who made an assessment of Viral Hepatitis in a multigravida at 20 weeks. Her body temperature at presentation was 36.2^{o}C. The Infectious Diseases Unit was subsequently invited and after their review made a diagnosis of possible Lassa Fever in pregnancy and requested that blood samples be sent to the research laboratory in Irrua for Lassa Virus Polymerase Chain Reaction (PCR) which turned out to be positive (on the 4th day of admission). FBC revealed marked neutrophil leukocytosis. Urinalysis revealed

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microscopic haematuria. She was afebrile throughout the period she was on admission. IV ribavirin was commenced after the confirmatory test but her condition kept deteriorating and she died on the 6th day of admission.

CASE 2: Mr GS, a 27year old commercial driver who lives in Zakibiam, about 180 km from Makurdi. He presented with fever and petechial rashes of 6 days duration. He had a significant history of consumption of rats. Examination findings at presentation revealed a temperature of 38.4^{o}C, subconjuctival haemorrhage and exudative pharyngitis. Blood samples sent to Irrua for Lassa PCR turned out to be negative and Urinalysis revealed microscopic haematuria. He was commenced on IV ribavirin after blood samples for Lassa virus PCR were collected and his clinical condition improved steadily till discharge.

CASE 3: Mr AD, a 34year old male farmer who lives in Aliade about 60 Km from Makurdi. He presented with a 2week history of recurrent fever and 4 day history of frequent passage of loose stools. He was very fond of eating rats. He had taken antimalarials and antibiotics with poor relief of the symptoms but it was the diarrhoea that necessitated his presentation to the hospital. Examination findings at presentation were unremarkable except for a temperature of 39.9^{o}C. Urinalysis revealed microscopic haematuria. He was suspected to have Lassa Fever and IV ribavirin was commenced on the day of presentation with marked resolution of the fever. However, samples for Lassa virus PCR which were collected after patient commenced therapy turned out negative.

CASE 4: Miss KF, a 24year old nurse who also lives in Aliade. She presented with a 10day history of recurrent fever and 3day history of yellowness of the eyes. She had a habit of eating rats and also took antimalarials and antibiotics with poor

resolution of the symptoms but presented due to the jaundice. She had not made contact with anyone with similar symptoms and viral screening for Hepatitis B and C viruses were negative. Examination findings at presentation were a temperature of 39.7°C and hepatomegaly. Urinalysis revealed microscopic haematuria and bilirubinuria. She was subsequently managed for Lassa Fever with IV ribavirin although the Lassa virus PCR results came out negative.

DISCUSSION

Lassa fever has been a cause of significant morbidity and mortality especially in West Africa as it accounts for an estimated 200,000 to 500,000 cases and 5000 deaths yearly in some West African countries, particularly in Nigeria, Sierra Leone, Liberia and Republic of Guinea[8]. In Nigeria, the prevalence of antibodies to the virus in Nigeria is 21%[9] as compared to 8-22% in Sierra Leone[10] and 4-55% in Guinea[11]. In the last 50 years, more than 28 states in Nigeria and the Federal Capital Territory have experienced one or more outbreaks of Lassa fever[6].

The first documented case reports of Lassa Fever outbreak in Makurdi was during the outbreak in 2013 by Achinge *et al*[12]. The diagnosis was made at the Benue State University Teaching Hospital, Makurdi when a physician presented with fever and bleeding diathesis after managing a patient with similar features. Eventually both patients died and massive sensitization about the disease was done in various health facilities and communities across the state.

In Nigeria, the Irrua Specialist Teaching Hospital, Irrua which was built in 1993 has over the years managed most of the cases in Nigeria and is currently a reference centre for the diagnosis and management of Lassa Fever. However, there have been numerous suspected or confirmed cases of the disease which occur at other states and such patients also need urgent and expertise care because delay in

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treatment often has fatal consequences. Hence, the need for case notification and documentation, compare treatment outcomes and ultimately harmonize Lassa Fever management across all treatment centres in the country.

The case reports above reveal a lot of about the patients with Lassa Fever who lived within the same geographical area. It is noteworthy that the only mortality recorded was the case of Lassa Fever in pregnancy giving a Case Fatality ratio of 25% which was the same ratio obtained at Irrua during the 2017/18 outbreak[7].

All the patients had a history of contact with and/or consumption of rats. The consumption of rats has been an age long practice in most parts of Benue state as it is a local delicacy. However, with the recurrent outbreaks of Lassa Fever, there has been a lot of sensitization campaigns discouraging such practices although some individuals still indulge in such practices. Rodent control and discouraging consumption of rodents should be taken very seriously in the prevention of the disease as transmission via rats has been shown here to be of great significance. Although there was no case of human-to-human transmission in this case series, all health workers should be trained and retrained periodically on Infection Prevention and Control as a measure to curb the spread of infections, including Lassa Fever in health care settings. As there is currently no vaccine for Lassa Fever, these measures should be used optimally for disease prevention.

Secondly, all the patients had a history of fever and were febrile at presentation with temperatures ranging between 38.4^{o}C – 39.9^{o}C, except the pregnant patient who had hypothermia (36.2^{o}C). The absence of fever in her was most likely as a result of severe sepsis and her pregnant status which further compromised her immune status with subsequent inability to mount enough immune response to generate a fever.

It is noteworthy that all the patients presented after about a week of having fever mostly because they felt they had malaria and were taking antimalarials at home. Therefore, patients with recurrent febrile ailments should be encouraged to present early to the hospital especially in Lassa fever endemic areas. This is to ensure prompt evaluation as delay in diagnosis and commencement of ribavirin has been responsible for most of the mortalities from Lassa Fever.

In addition to the fever, each patient had different symptoms such as bleeding diathesis, jaundice, diarrhea and headache affecting various systems of the body indicating that Lassa Fever is a multi-systemic disease. Hence, all health workers, especially in endemic areas should be trained and re-trained periodically on the management of the disease in all age groups including pregnant women for best outcomes. Currently, there is a handbook by the Nigerian Center for Disease Control and Prevention (NCDC) on Lassa Fever which contains essential information for all cadres of health workers for ease of use. It is advised that copies should be made available to every health facility especially in areas that are prone to outbreaks.

Thirdly, all the patients had microscopic haematuria. Hence, urine testing for haematuria in suspected Lassa Fever cases should be emphasized as this could be an invaluable tool for Lassa Fever diagnosis in health facilities where confirmatory PCR test cannot be done. There have also been previous reports of microscopic and gross haematuria in patients with Lassa fever and clinicians should endeavour to do urinalysis for all febrile patients especially during Lassa Fever epidemics. Interestingly 3 of the patients tested negative to the Lassa virus PCR and there is need for further investigations to determine factors that may be responsible such as different strains of the virus or timing of sampling.

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CONCLUSION

The recent (2017/18) Lassa Fever epidemic in Nigeria, which has been recorded to be the worst, had some cases in Makurdi and rodent-to-human transmission was mostly responsible. All efforts at rodent control, improving surveillance and education of all health workers cadres as well as the general public about the disease should be intensify for improved outcomes. Furthermore, early presentation and commencement of ribavirin should be encouraged to enhance outcomes.

CONSENT: All the patients gave their consent for the case reports.

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