

Research Article

Current Issues on Measles: The Nigeria Perspective

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Abstract: The main cause of this severe chronic illness is the measles virus. Measles affects people of all ages, despite the fact that it is typically thought to be a childhood disease, and the majority of people only acquire it once in their lives. The disease is brought on by the measles virus, a single-stranded, negative-sense, enveloped RNA virus that belongs to the family Paramyxoviridae and genus Morbillivirus. Prior to the beginning of the COVID-19 pandemic, the number of cases of the measles had been dropping internationally for the previous 20 years. Nigeria is one of the major African countries where the illness has been reported by health experts, indicating that there are more instances than usual. The case fatality rate (CFR) in Nigeria's north-central region was the highest at 4.38%, while the CFR in the south-west was the lowest at 0.17%. The first sign of measles is typically a high fever that begins 10 to 12 days after exposure to the virus and lasts for 4 to 7 days. The hallmark symptoms include the four-day fever (the 4 Ds), cough, coryza (head cold, fever, sneezing), conjunctivitis (red eyes), and maculopapular rash. The case fatality rate (CFR) in Nigeria's north-central region was the highest at 4.38%, while the CFR in the south-west was the lowest at 0.17%. Measles often begins with a high fever that lasts for 4 to 7 days after exposure to the virus. Typical symptoms include the four-day fever (the 4 D's), cough, coryza (head cold, fever, sneezing), conjunctivitis (red eyes), and a maculopapular rash.

Keywords: measles, virus, disease, cold, fever, immunity.

Introduction

The measles virus causes the illness, a severe chronic condition [1]. Up until the measles vaccine was discovered and widely used in 1963, when the disease was expected to be responsible for 2.6 million annual deaths [2], significant outbreaks were thought to occur every two to three years. Despite the availability of a safe and effective vaccine, measles killed over 140,000 people in 2018, the majority of them were young children under the age of five. The severe measles virus spreads swiftly through the coughs and sneezes of those who are ill [2]. Furthermore, nasal or oral secretions might be directly contacted to disseminate the infection [2]. Due to the disease's high contagious rate, those without immunity are 90% more likely to become ill if they live with an infected individual [3]. Estimates for measles reproduction numbers are also higher than the average range of 12 to 18, according to Guerra et al. [1]. According to Atkinson [3], people are infectious for four days before and four days after the rash appears. Contrary to the widely held belief that measles primarily

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affects children, Chen [4] claims that anyone can become ill from it. The measles virus causes the sickness, which is a severe chronic disorder [1]. Up until the development of the measles vaccine in 1963 and its widespread usage, large-scale outbreaks were thought to happen every two to three years [2]. According to estimates, the illness claimed the lives of 2.6 million people yearly. Despite the availability of a safe and effective vaccine, measles killed over 140,000 people in 2018, the majority of them were young children under the age of five. The severe measles virus spreads swiftly through the coughs and sneezes of those who are ill [2]. Furthermore, nasal or oral secretions might be directly contacted to disseminate the infection [2]. Due to the disease's high contagious rate, those without immunity are 90% more likely to become ill if they live with an infected individual [3]. According to Guerra et al. [1], estimates for measles reproduction numbers are greater than the average range of 12 to 18. According to Atkinson [3], people are infectious for four days before and four days after the rash appears. Contrary to widespread assumption, Chen [4] asserts that anyone can contract the measles. Most of the young children that die from the sickness are under five years old. Prior to the COVID-19 outbreak, measles cases had been dropping globally for the past 20 years [6]. According to Tanne's figures [7], with 869 770 cases and 207 500 deaths, 2019, had the highest rate of measles infections since 1996. Measles outbreaks have been reported in Angola, Burundi, Cameroon, the Central African Republic, Chad, the Democratic Republic of the Congo, South Africa, South Sudan, Togo, Liberia, Mali, Mozambique, Niger, Nigeria, Somalia, Guinea, and Togo, according to the Centers for Disease Control and Prevention (CDC). This means that the sickness is spreading faster than usual. Measles is a common sickness in Somalia and Ethiopia, where there are more cases annually. The illness typically kills children under the age of five who catch it. Prior to the COVID-19 outbreak, measles cases had been dropping globally for the past 20 years [6]. According to Tanne's figures [7], with 869 770 cases and 207 500 deaths, 2019, had the highest rate of measles infections since 1996. According to the CDC, measles outbreaks have been documented in the Central African Republic, Chad, Democratic Republic of the Congo, South Africa, South Sudan, Togo, Liberia, Mali, Mozambique, Niger, Nigeria, Somalia, Guinea, and Togo. This could mean that the sickness is spreading faster than usual. Measles is a common sickness in Somalia and Ethiopia, where there are more cases annually.

The purpose of this study is to examine the current measles outbreaks in Nigeria.

Symptoms

According to the WHO [2], the first sign of measles is typically a high fever that starts 10 to 12 days after virus exposure and lasts for 4 to 7 days. Typical symptoms include coughing, coryza (head cold, fever, sneezing), conjunctivitis (red eyes), and a four-day fever (the 4 D's) [11]. In addition, a maculopapular rash is a typical sign. Measles fever typically lasts one week and can reach temperatures of 40 °C (104 °F) [12]. According to Biesbroeck [11], Koplik's patches inside the mouth are an unpredictable and thus infrequent measles symptom. Koplik spots, which are little white spots that form on the inside of the cheeks adjacent to the molars, are common. It is possible to find these places, which aids in stopping the spread of disease before a person reaches their peak infectiousness [14]. They resemble "salt grains" on a reddish background

[13]. The primary sign of measles is a broad red maculopapular rash that appears a few days after the commencement of a fever. Itching typically starts in the head and neck within a few hours and spreads to the rest of the body. After beginning behind the ears, it spreads. The measles rash occurs two to four days after the initial symptoms appear and can last for up to eight days. Others claim that the rash "stains," turning from scarlet to dark brown before ultimately disappearing [15]. Within three weeks, the measles frequently goes away [12].

Causative Agent

The measles virus, a single-stranded, negative-sense, enveloped RNA virus that belongs to the genus *Morbillivirus* and family *Paramyxoviridae* [16], is the culprit behind the sickness. Coughing and sneezing spread the virus because to its high contagiousness, which can be acquired either directly through contact with secretions or indirectly through close human contact. Due to the high contagiousness of the illness, Banerjee et al. [17] predict that 90% of non-immune individuals in close contact with a measles patient (such as family members) will also get the sickness. Mountain gorillas are probably susceptible to the sickness, despite the fact that humans are the only known natural hosts and animal reservoirs for the virus [18].

Transmission

The potentially hazardous measles virus can be discovered in the mucus in an infected person's nose and throat. If you cough or sneeze, it can spread to other persons [19]. The virus can spread through contact with contaminated surfaces or the air for up to two hours. A person with the infection can transfer it during the four days prior to and the four days following the rash [2].

Epidemics caused by the measles outbreak could result in a significant number of fatalities, particularly in young, malnourished children. Even in countries where the measles has been mostly eradicated, cases brought in from abroad continue to be a substantial source of infection [2].

Risk Factors

This implies that immunosuppression brought on by HIV/AIDS is one of the risk factors for measles infection [20]. Immunosuppression after organ transplantation [21], the presence or use of corticosteroids or alkylating agents [4], travel to or contact with tourists from regions where measles is endemic [4], and the loss of hereditary passive antibodies prior to the introduction of routine vaccination [22] are risk factors for measles infection.

Diagnosis

The first measles clinical symptoms, such as coughing, coryza, and conjunctivitis, often appear four days after exposure to the virus [23]. Locate Koplik's locations and diagnostic information. Scarlet fever, dengue fever, parvovirus, and Kawasaki disease can all cause comparable symptoms [24]. Yet, it is indisputable that getting a lab confirmation is a good idea.

Reverse Transcription – Polymerase Chain Reaction

In order to confirm the existence of positive measles IgM antibodies, reverse transcription polymerase chain reaction assays can be used to identify measles virus RNA in urine, throat, or nasal tissues [24]. This method is very helpful for confirming murky IgM antibody results. IgA specific to the measles is still found in saliva even if a person is unable to donate blood. According to Dimech and Mulders [25], salivary testing involve collecting a saliva sample and analysing it for measles antibodies. This method is less than ideal since saliva contains a variety of fluids and proteins, making it difficult to collect samples and detect measles antibodies [26]. As spit contains 800 times fewer antibodies than blood samples, saliva analysis is quite challenging. Positive contacts with measles patients help confirm the diagnosis [25].

Prevention

Pregnant women who have received the measles vaccine pass antibodies to their unborn children while they are still in the womb, even if the mother obtained her immunity through illness rather than immunisation [22]. Leuridan et al. [22] report that these antibodies steadily decrease over the first nine months of life. These antibodies frequently help babies develop some measles immunity. The antibodies will typically provide the infants with some amount of protection. Infants under one year of age are especially vulnerable to the illness because they lack maternal antibodies [22]. Infants in developed countries are advised to receive the three-part MMR vaccine, which typically includes immunisation against measles, around age one (measles, mumps, and rubella).

Babies younger than this age are normally not given the vaccine because their immune systems are still maturing and won't respond well to the vaccine [22]. In order to increase protection, children between the ages of four and five are routinely given a second dose of the immunisation, according to Russell et al. [27]. Almost a billion people have received the measles vaccine. Due to excellent immunisation rates, measles is increasingly becoming a very uncommon disease. The most frequent adverse effects to vaccines are fever and pain at the injection site [28].

According to the World Health Organization [2], 6.1 million of the anticipated 19.2 million infants who did not receive at least one dose of the measles vaccine through routine immunisation in 2018 were born in India, Nigeria, and Pakistan.

Treatment

There is currently no known antiviral therapy specifically for measles, according to the WHO [2] and CDC [8]. The major goals of the drugs are to treat superinfections, relieve pain, and maintain optimum hydration [2]. Vitamin A is also administered to select populations, most notably young children and those who are chronically malnourished, in order to boost antibody responses against the measles and lower the risk of significant sequelae [29].

In addition to drugs like ibuprofen or paracetamol to lower temperature and pain, supportive care may be given. Moreover, when coughing, rapid-acting drugs may be utilised to open up the airways [3]. According to certain studies [31], aspirin consumption may be related to Reye syndrome in children. Despite the fact that it is

recommended during treatment to lower the chance of blindness, the Washington State Department of Health asserts that vitamin A neither prevents nor heals the illness [33]. A detailed analysis of the research evaluating its use, however, showed that two doses of vitamin A (200 000 IU) can reduce the number of fatalities from measles in young children [29]. Insufficient study has been done [34] to evaluate whether zinc supplementation is useful in treating measles in children. There aren't enough research, according to Chen et al. [35], demonstrating that Chinese medicinal herbs are successful in treating measles.

Conclusion

In conclusion, measles remains one of the diseases which the ministry of health in all nations should pay to, and make preparations for, to protect those vulnerable to the disease especially the infants and immunocompromised persons. More efforts should also be made towards finding a specific treatment against the disease

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