

Rabies encephalitis in Mauritania

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Abstract

From 2016 to 2021, two cases of rabies encephalitis were diagnosed and hospitalized at the Kiffa hospital center. Neither of them had started the rabies vaccination after the dog bites before symptoms appeared. In countries where rabies still occurs, health workers should be trained for an efficient management of dog.

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Key Clinical Message

- The case reports remind clinicians in developing countries that rabies is a preventable infectious disease.
- The importance of health education on the risks of dog bite in urban and rural communities cannot be undermined.
- Systematic and mass vaccination of dogs is one of the key intervention measures to eliminate rabies.
- Access to post-exposure prophylaxis in health centers should be promoted.

Introduction

Rabies is an acute encephalomyelitis caused by ribonucleic acid (RNA) virus belonging to the *Lyssavirus* genus, *Rhabdoviridae* family [1]. About 99% of the transmission of the virus to humans are due to the breach of the skin-mucosal barrier by biting, scratching or licking infected animals, most often dogs [2]. Human-to-human contamination is exceptional and is associated with organ or tissue transplants from infected donors [3]. Although rabies is an ancient zoonosis, it continues to be an important public health problem in many developing countries [4]. Today, it is still considered a neglected tropical disease, despite the fact that it causes more than 59,000 human deaths each year in the world, particularly in Asia and Africa [4,5]. Once declared clinically, it is inevitably fatal [6]. In most of Africa, especially in West and Central African countries, rabies notification is not mandatory, and epidemiological data are scarce [7]. In Mauritania, enzootic rabies, which is known to have existed for a very long time, periodically affects animals and humans. Cases of death have been reported on several occasions. The first reported cases occurred in 1963 in Nouakchott (Trarza region). A man died of rabies after a cat bite in the throat, and a woman died of rabies after a dog bite. Since then, sporadic cases of human rabies have been reported in Mauritania in 1967, 1968, 1973-1975 and 1980 [8]. None of these cases have been confirmed with laboratory diagnosis. These historical data need an update. We report two cases of rabies encephalitis occurring after being bitten by stray dogs.

Presentation of Cases

Patient 1

A 65-year-old man residing in a rural town of Tintane, southern Mauritania, consulted at the Kiffa Hospital Center on December 2, 2018, for hiccups and hydrophobia. Recent past history of the patient suggested no significant medical problem, except for a scar from a bite by a stray dog on the palm of the right hand that occurred on October 9, 2018. Immediately after the bite, the patient washed the wound with soapy water and did not seek any medical treatment. Two months later, on December 02, 2018, he started complaining of headache, fever, and hiccups which required consultation at the health center of Tintane. The symptomatic treatment he received did not have any effect on his symptoms. Faced with the appearance of anxiety and agitation, the patient was referred to the Kiffa Hospital Center, a regional tertiary hospital. On admission, the patient was agitated and had hydrophobia, pharyngeal spasms, muscle contracture, and sialorrhea since 24 hours. The values for routine clinical laboratory tests, including hematology and blood chemistry, were within normal range. The diagnosis of rabies encephalitis was made on the basis of the typical clinical presentation. A laboratory confirmation of rabies was not performed due to a lack of technical facilities in the country. A symptomatic treatment based on phenobarbital, diazepam, and paracetamol was administered without success. The patient died a few hours after admission to the hospital. The investigation around the case revealed two additional undeclared human rabies cases in the town where the deceased patient came from, possibly due to bites of the same rabid stray dog.

Patient 2

A 13-year-old boy residing in Aioun city, southern Mauritania, was referred from Aioun hospital center on August 19, 2021, for better management of hyperthermia and psychomotor agitation. Past medical history

indicated that a stray dog bit the patient on the left cheek and chest three weeks earlier (July 31, 2021). On admission, a scar at the site of the bite, restlessness, intermittent spastic hypertonia, psychomotor agitation, persecutory delirium, fever, hydrophobia, and excessive salivation were observed. These symptoms were reported to occur since 36 hours prior to admission. The diagnosis of rabies encephalitis was retained on the basis of clinical presentation. Symptomatic treatment was administered without success. The results of routine clinical laboratory tests were normal. The patient was discharged against medical advice and died two days later. The investigation around the case made it possible to find an undeclared case in Aioun but further detailed information was not obtained.

Case Discussion

Rabies is one of the deadliest infectious diseases with a 100% case fatality rate once the signs are declared [9]. In Mauritania, rabies has been known to exist, but reliable epidemiological data on rabies are absent. Many cases of rabies in developing countries are not diagnosed with laboratory confirmation and are often not even reported to health authorities [10]. The affected subjects usually die without appropriate care at home, without diagnosis being made. Even cases diagnosed in hospitals are rarely reported or may be wrongly attributed to other diseases, such as meningitis. Bite victims often do not receive appropriate prophylactic care due to patients' ignorance, lack of awareness among health workers, lack of necessary biological products, or because of insufficient means to pay the cost of preventive treatment.

In two human cases of rabies observed in our hospital, the recent history of dog bite was the most important clue for the clinical diagnosis. The patients consulted a medical facility only at the appearance of the first signs of the disease when it is usually too late for treatment to be effective. The population largely remains ignorant of the risk of rabies in Mauritania and elsewhere [7]. In the literature, almost all studies conducted in different parts of the world showed that dog is the main vector in Africa, Asia, and Latin America [7,9–11]. The incubation period observed in our two cases was 20 and 55 days, respectively. The incubation was longer in the first patient who was bitten once on the hand. The incubation period in the second patient, a child who was bitten on the cheek and chest, was shorter, probably due to a larger inoculum and the site of injury in richly innervated parts of the body near the brain.

There are a variety of non-specific prodromal symptoms of rabies, including fever, chills, malaise, fatigue, insomnia, anorexia, headache, anxiety, and irritability, that last up to about ten days, similar to those of many other viral diseases [4]. The majority of patients with rabies encephalitis develop hydrophobia, a pathognomonic sign of rabies, as in our patients. Initially, patients experience pain in the throat or difficulty in swallowing. Subsequently, during attempts to swallow, they experience contractions of the diaphragm and accessory muscles on inspiration. There may be associated features including twitching of neck muscle, vomiting, cough, grimacing, and seizures.

There is no effective treatment for rabies. Few patients survived after intensive care [5]. An improved surveillance, anti-rabies vaccination of dogs, and access to post-exposure prophylaxis are required to reduce the risk of rabies and eliminate this disease [12–14]. In our two patients, the post-exposure vaccination was not administered due to ignorance of the risk of rabies and because anti-rabies vaccination is generally not accessible. In addition to vaccination, an urgent administration of first aid immediately after exposure is essential.

Transparency Declaration

The authors have no conflicts of interest to declare.

Author contributions:

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