

Short Communication

Assessment on Bite Exposure Management at Mekelle General Hospital and Veterinary Clinics in Mekelle Town, Tigray, Ethiopia

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Abstract

The assessments were conducted on August, 2020 at Mekele General Hospital and Mekele Veterinary Clinic in Tigray, Ethiopia. Qualitative types of questionnaires were designed to allow the participant to express freely their views and thoughts on the subject matter to assess the exposure bite management system in Mekele town. The questionnaires were administered through a face-to-face interview. Purposive sampling was employed to interview individuals with most information about the topic. Therefore, the emergency officers of the Hospital were interviewed. Veterinarians and their coordinator of the four veterinary clinics were also involved in the study. In addition, discussion also done with the head of Animal Health Laboratory, Animal Health Directorate, Livestock and Fishery Development Sector and director of Rabies Diagnostic Laboratory, Tigray, Ethiopia. Only Fermi Type Vaccine (Nerve tissue vaccine) was available in Mekele General Hospital. The hospital did not have rabies exposure treatment guideline. A total of 16 brain samples (12 dogs, 1 donkey and 3 Bovine) have been tested since the start of a first rabies diagnosis in April 8, 2019 at Mekele Rabies Diagnostic Laboratory, Tigray Health Research Institute. Of which, 12 brain samples were positive and 4 of them were negative. In addition, a total of 4 samples were tested from May-August, 2020, and all were positive.

INTRODUCTION

Rabies is a fatal neurological pathogen that is a persistent problem throughout the developing world (Hampson et al., 2007). Most of the human cases occur in the developing nations of Asia and Africa (Lackay et al., 2008).

According to Ruppel, The first and only recorded rabies epidemic occurred in Addis Ababa In August 1903 (Yimer et al., 2002). Since then the disease remained endemic in the country (Cleveland, 1998). Approaches to diagnosis of the disease include the detection of rabies virus (RABV), RABV RNA, or RABV antigens (Duong et al., 2016). Likewise, Rabies is a vaccine-preventable disease in both humans and animals (O'Brien and Nolan, 2019).

Over the past 2 decades, demographic, economic and socio-political trends in Africa have increasingly favored the persistence and spread of rabies, while limiting the effectiveness of control measures (Cleveland, 1998). Control of the disease mainly relayed on the prevention of the viral infection in companion animals (Dog and cats) by vaccination in the enzootic areas (Singathia et al., 2012).

However, Human rabies of canine origin could be eliminated globally given political will, adequate resources and diligent programme management (FAO/GARC, 2012). Improved rabies surveillance networks are also recognized as a key strategy to tackle underreporting of rabies cases and exposures (Sofeu et al., 2018).

Besides, effective real-time surveillance, combined with proficient, decentralized and validated laboratory diagnostics,

is a prerequisite for successful rabies control and elimination (Franka and Wallace, 2018). Thus, the objective of the present assessment was to evaluate the current status of rabies exposure management in humans and animals in Mekele, Tigray region, Ethiopia

Methodology of the Research

The assessments were conducted on August, 2020 at Mekele General Hospital and Mekele Veterinary Clinic in Mekele, Ethiopia. Qualitative types of questionnaires were designed to allow the participant to express freely their views and thoughts on the subject matter to assess the exposure bite management system in Mekele town. The questionnaires were administered through a face-to-face interview. Purposive sampling was employed to interview individuals with most information about the topic. Therefore, the emergency officers of the Hospital were interviewed. Veterinarians and their coordinator of the four veterinary clinics were also involved in the study. In addition, discussion also done with the head of Animal Health Laboratory, Animal Health Directorate, Livestock and Fishery Development Sector and director of Rabies Diagnostic Laboratory, Tigray Health Research Institute to understand the gaps of the status of the decentralized Mekele Rabies Diagnostic Laboratory. (Figure 1 & 2)

RESULT**Mekele General hospital**

Mekele General Hospital is the only government facility conducting risk assessment and providing post exposure



Figure 1 A face-to-face interview.



Figure 2 Discussion at Animal health, Emergency OPD staff and Fishery Sector.

prophylaxis in Mekele town. Only Fermi Type Vaccine (Nerve tissue vaccine) was available in the hospital. The hospital did not have rabies exposure treatment guideline. The respondents indicated that, the initiation of post-exposure prophylaxis was decided based on the status of a dog. The post exposure prophylaxis vaccination was started immediately when the history indicated that the dog was stray, rabid, disappeared and/or died. However, bite victims and owners were advised to observe the dogs having rabies vaccine certificate for 10 days. Individuals, who had been started the vaccine, did not discontinue the vaccine without professional consultation. As a matter of fact, the public has awareness on the importance of the anti-rabies vaccine.

The emergency staff indicated that, the emergency staffs have no contact with the veterinarians. In addition, the emergency staffs did not have information about Rabies Diagnostic Laboratory in Mekele. They also mentioned that, only one public health professional was trained on rabies exposure management. However, he is not working in the emergency outpatient department currently due to rotation.

The emergency outpatient department staffs of Mekele General Hospital mentioned the following challenges and possible solutions.

Challenges:

- Shortage and interruption of anti-rabies vaccine
- There is staff rotation every year

- No trained personnel on rabies exposure management in emergency outpatient department.
- There is high patient burden more than the catchment areas including Amhara region.

Possible solution:

- A center should be established to distribute anti-rabies vaccine in the region.
- All outpatient department physicians and nurses should be trained on rabies exposure management.

Mekelle Veterinary clinic

Mekele Veterinary Clinic veterinarians responded that rabies suspected animal were presented in the Clinic. Then, the coordinator of the veterinary clinics was informed when a suspected rabid animal presented to their clinic. The owners were advised to quarantine the rabies suspected dog or samples were collected (euthanized, decapitated, collected brain sample) by the coordinator with the collaboration of trained veterinarian in the clinic. Then, the collected samples were transported to Rabies Diagnostic Laboratory, Tigray Health Research Institute for definitive diagnosis. The laboratory results were reported to Mekele General Hospital surveillance focal person through phone. In general, a total of 13 samples have been submitted for rabies confirmation since the start of a first rabies diagnosis in April 8, 2019 at Mekele Rabies Diagnostic Laboratory from Mekele. The coordinator mentioned that, all the reported cases were diagnosed in the established laboratory.

The head of Animal Health Laboratory, Mekele veterinary clinic veterinarians and Mekele town veterinary clinics coordinator mentioned the following challenges and possible solutions to increase the number of samples submitted to the laboratory in the region.

Challenges:

- shortage of euthanasia drugs
- Shortage of dog handling equipment's
- No booster vaccines for Veterinarians
- No vehicles are assigned to transport samples from woredas and Mekele town to the laboratory
- No incentives to veterinarians for working extra time, holydays and weekends
- The duties and responsibilities in rabies confirmatory diagnosis of Mekele Rabies Diagnostic Laboratory and Animal health Laboratory have not been defined.
- The numbers of woredas were increased from 30 to 50. Therefore, there is shortage of manpower.
- There is no incinerator and the dumping area is not accessible.
- Lack of community awareness.
- Lack of personal protective equipment's for veterinarians.
- No quarantine facility in Veterinary Clinics

- Few number of trained animal health workers on animal rabies surveillance (collection and transportation)

Possible Solutions:

- More veterinarians should be trained on animal rabies surveillance.
- Incinerator should be used at Mekele Rabies Diagnostic Laboratory, Tigray Health Research Institute
- The duties and responsibilities in rabies confirmatory diagnosis of Mekele Rabies Diagnostic Laboratory and Animal health Laboratory should be defined.
- The laboratory should be advertised by the regional laboratory
- Booster dose vaccine should be provided to veterinarians
- Community awareness should be created.
- Higher officials should be convinced about the issue.

Mekele Rabies Diagnostic Laboratory, Tigray Health Research Institute visit

A total of 16 brain samples (12 dogs, 1 donkey and 3 Bovine) have been tested since the start of a first rabies diagnosis in April 8, 2019 at Mekele Rabies Diagnostic Laboratory, Tigray Health Research Institute. Of which, 12 brain samples were positive and 4 of them were negative. In addition, a total of 4 samples were tasted from May-August, 2020, and all were positive (Table 1).

DISCUSSION

Laboratory confirmation in clinically suspected animal of rabies is necessary for real-time decision-making on post-exposure prophylactic (PEP) vaccination, can prevent the need for unnecessary treatment as well as for establishing the local disease burden and confirming that the disease is absent from a declared area. In order to expand rabies diagnosis in the country as a first phase, two rabies laboratories at regional level were implemented. This enables to deliver the service at community level, strengthen rabies outbreak response in other parts of the country and hold up cases of rabies from any corner of the country are subjected for the shipment of the brain sample travelling hundreds of kilometers holding the dog brain. From the two scales up regional laboratories, the Mekele Rabies Diagnostic Laboratory, Tigray Health Research Institute, is the only laboratory capable of confirming rabies in the region. This laboratory started the first rabies diagnosis on April 08, 2019 and continuing diagnosis since then. However, according to our evaluation of the scaled up Mekele rabies diagnostic laboratory the retrospective data indicated that approximately one brain

sample was diagnosed each month in the laboratory. Therefore, this assessment was contemplated with evaluating the current status of rabies exposure management in humans and animals in Mekele, Tigray region, Ethiopia.

Joint agreement was reached towards reducing shortage of ant rabies vaccine, facilitating training to public health and veterinary professionals, Animal quarantine facility establishment, memorandum of understanding (MOU) between stakeholders, awareness creation, and preparation of rabies treatment algorithm in local language.

CONCLUSION

The small number of samples submitted for rabies confirmation and the limited available data from previous surveillance activities in Tigray region has been identified as a major obstacle in an effort to expand the service at community level, and strengthen rabies outbreak response in the region. Currently, the continuous follow up and supervision being conducted to the laboratory and veterinary clinic of the region by the Ethiopian public health institute, zoonoses research case team has made a significant improvement.

It is of a paramount importance to assess and map the national picture of rabies within a given time interval to strengthen the national rabies control strategy (Deressa et al., 2010).

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Table 1: Frequency of laboratory diagnosis of rabies suspected animals from May-August, 2020.

Origin	Month	Species	No of sample	No of test positive
Mekele	May	Dog	1	1
Enderta	July	Donkey	2	2
Wukro	August	Dog	1	1
Total			4(100%)	4 (100%)