Eritrea Experience on Improving Rabies Diagnostic Capacity

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Presentation Outlines

- Background
- Epidemiology of rabies in Eritrea
- Methods of diagnosis for rabies
- Expert visits /Capacity building Programme
- Recommendations

Human and Livestock Population

- Human Population
  - ✓ 3,650,000
- Livestock Populations
  - ✓ Cattle 1.8 million
  - ✓ Sheep 2.5 million / Goats 4 million
  - ✓ Camels 400,000
  - ✓ Dogs 60,000 / 1:60

Epidemiology of rabies in Eritrea

- The 1st confirmed rabies case was in 1920's
- Rabies epidemics /An outbreak of disease in animal and human population
- Establishment of Anti-rabies section in the veterinary institute
- 1928 Phenolized vaccine (Fermi-Puntoni Sysytem) /Widespread deployment of vaccine

Methods of Diagnosis for rabies

- Before 1995 Rabies diagnosis in Eritrea relied on:
- Seller's staining of brain impression smears to detect Negri bodies
- Inoculation of suspect brain material into experimental mice.
- In 1995 FAT was introduced at CVL and diagnosis was more reliable by this method

Methods of Diagnosis

- Fluorescent Antibody Test (FAT) had been used as a routine test in the Central Veterinary Laboratory (CVL) from 1996 – 2001 using the centocor FITC conjugate.

- Mouse inoculation test had been also used for negative results.

Technical Experts Visit

- Technical back from WOAH/Assignment of consultants
- National Strategic Plan/ Laboratory Diagnosis for Rabies
- Two experts from the South African Lab came to Eritrea in mid December
- Briefed the Minister of Agriculture on the purpose of the mission

Technical Experts .....

- Build the capacity towards rabies diagnosis in NAPHL
- Identify gaps in the testing and Quality Management System (QMS) and then provide recommendations
- Procure reagents and consumables to enhance testing for rabies samples
- Personnel mobility to the Agricultural Research Council of Onderstepoort Veterinary Institute (ARC-OVR) for further training
- Exchange of samples for inter-laboratory comparisons

Visit to the Laboratory

- A tour of the bacteriology and virology laboratories and during the process assessed the facilities available
- Equipment (SOPs on how to use equipment were available)
- Non-functional equipments were labelled as such
- The form given to the lab personnel to be filled

Visit to the laboratory

- 6 samples from the sample register book were selected
- The National Animal and Plant Health laboratory has a standard operating procedure for FAT
- All personnel are vaccinated against the rabies virus
- The samples were tested according the WOAH requirements (chapter on rabies in the WOAH manual/ Manual of diagnostic tests)

Laboratory

- The expert from the ARC-OVR tested the 3 samples and the rest were tested by the lab staff
- Non-functioning microscope / now its maintained
- The slides were read at the NHL and two of the samples were positive for rabies

Recommendations

- Calibration and servicing of equipment should have to be done by recognized service provider
- Microscope / in collaboration with the NHL (Annually)

Recommendations

- The laboratory should have to develop a procedure for declaring competence of personnel done and continuous assessment
  - inter-analysit comparisons, proficiency tests and inter-laboratory exchange of samples)
  - According to the experts assessment the laboratory is well equipped to test animal samples for rabies.
  - Scissors and forceps to be used for a single sample to minimize contamination
  - The experts have a plan to train one expert and to declare competent on the method

Calibration and Service of Flourescent Microscope

- The microscope is repaired
- Lack of technicians who manage the microscope
- NHL

Capacity building / Training

- General training on rabies and symptoms of lyssavirus infection, diagnostics and personnel protection
- General training on quality assurance in a laboratory setting (ISO, WHO and WOAH Standards)
- Training on sample collection (in humans and animals)
- Sample conditioning and Packaging

Capacity building

- Training on Direct Fluorescent Antibody (DFA)
- Training Direct Rapid Immunochemical Test (dRIT)
- Demonstration of PCR

Activities Lined Until end of 2023

- Bench training of two technicians from the NAPHL from 4-8 September, 2023
- Exchange of samples–inter laboratory proficiency
- Data base of sample submissions at the laboratory
- Return visit of experts for December

Vaccination of Shepherd Dogs

Shepherd dogs…..

THANK YOU