The Federal Ministry of Health
The National Mycetoma Control Programme

Report on the Epidemiological Study on Mycetoma at El Andalous Village, The White Nile State

Background

Recently, Mycetoma Research Center (MRC), University of Khartoum records revealed a high incidence of Mycetoma in The White Nile State, especially at Um Kar region. In Um Kar area, the MRC records and a previous visit to the state, showed high incidence of Mycetoma in El Andalous (Awiwa) village, 50 Kilometers from EL Dewam Town.

Therefore, The National Mycetoma Control Programme, The Federal Ministry of Health decided to conduct an epidemiological study to determine the burden of Mycetoma, The Knowledge, Attitude & Practices of the community and patients with Mycetoma towards the disease, to identify the risk factors for Mycetoma so as to plan control methods and to study the impact of the disease on the quality of life for the Mycetoma patients as seen at the EL Andalous village, The White Nile State.

In the period between 24 and 26 November 2010, a pilot study was conducted at AL Phardous Village near AL Andalous Village to validate the study questionnaires and instruments.

Study Objectives:

The General Objective

To study the Mycetoma epidemiology at El Alandalos Village, The White Nile State and the area ecology.

. **The Specific objectives:**

- To measure the prevalence of Mycetoma in the study area.
- To measure the prevalence of subclinical infection in the study area by determining the population serological responses to mycetoma causative agents.
- To determine Knowledge, Attitude & Practice (KAP) of the community towards Mycetoma.
- To design proper health education sessions based on the KAP results.
- To determine the impact of Mycetoma on the quality of life of the affected patient.
- To determine the relation between Mycetoma and Schistosomiasis among the population.
- To determine the genetic factors associated with susceptibility / resistance to Mycetoma.
- To identify the ecology of the village to elucidate the epidemiological factors associated with Mycetoma endemicity and the infection mode.
- To isolate and type Mycetoma causative agents from patients and environment and to correlate them together.

- To map the Mycetoma areas in the village using the Geographical Information System (GIS).
- To plan an effective methods for prevention and control.

Additional objectives

- To conduct an out-patient clinic to treat patients with different medical problems and to provide them with free medication.
- To measure the prevalence of non-communicable diseases such as diabetes mellitus, hypertension among the village's children for early detection and treatment.

Material & Methods

Study setting

The study was carried out at El Andalous Village, 50 Km south of EL Dewam Town, The White Nile State.

Study Questionnaires:

Data from the population and mycetoma patients from El Andalous village was collected using four questionnaires. These included:

- Baseline Epidemiological Household.
- Knowledge, Attitude and Practice (KAP) for the household heads, and the Mycetoma Patients.

- Patients' Clinical Data.
- Patients' Quality of Life.

The study duration

The study was conducted in the period between 15th and 18th December 2010.

Training of Medical Students

A two day-training course on Mycetoma, community approach and communication skills and questionnaires filling techniques was conducted at the Faculty of Medicine, University of Bakht Elrida for the medical students to be involved in the study. Fifty medical students were trained and of them 32 were selected randomly to participate in the study. These students now are able to be involved in further community based epidemiological study and for the promotion health work among the local community in the future.

The Cross Sectional, Community Based Survey:

A cross-sectional, community-based survey in which population-based household epidemiological and KAP surveys were carried out between 16th and 18th December 2010 at El Andalous village, The White Nile State.

A total number of household interviewed and included in the study was 398. The Household (HH) is defined "as people living under one roof preparing and eating together the same food". The village was proportionately divided into three

quarters, according to its population density. A full coverage approach was adopted. Information about demographic information, socioeconomic and on members of the household was obtained. The survey was subdivided in twenty micro-surveys under the supervision of a field supervisor. For each micro-survey a team was set up composed of three interviewers. Each micro-survey covered approximately twenty HHs daily. At each HH level, the surveyor ensured from the HH head that no micro-survey team had visited and interviewed them before to avoid duplication. If not done before then the team leader introduced him/her and their colleagues, as well as the objectives of the current survey to the HH head. Questionnaires were filled by interviewing the head of the household. The respondent for the baseline epidemiological interview was the HH head or any adult person (aged 17+) residing in the household and physically and mentally able to do so in the absence of the HH head.

The entire questionnaire was written in Arabic. It was a structured close - ended one and a direct interview technique was used. Participants were interviewed and in case of more than one family living at the same HH (extended family) the same questionnaire was used.

For the KAP survey the households were divided proportionately at a ratio of one: one, male to female. The respondent was the head of the HH, or senior female HH member.

According to a ratio of one in four HH, approximately, 5 mls of fresh blood were taken from each person residing in the HH after informed written consent. The

blood was taken to study the genetic background of the population for the susceptibility and resistance to Mycetoma and for antibodies to M. mycetomatis infection.

Active patients and suspected cases of Mycetoma or patients with other medical problems seen in the HH were referred to the village health care where Mycetoma National Control Programme had established free of charge clinic.

The Mycetoma Clinic:

All active patients and suspected patients for mycetoma were seen, all of them were carefully interviewed and examined for evidence of mycetoma. They were classified into active patients, suspected or cured patients. For the active and the suspected patients, Fine Needle Aspiration for Cytology from the masses was obtained by a Consultant Cytologist under local anaesthesia in most of them to confirm the diagnosis.

Active and suspected patients were interviewed and data was obtained by four questionnaires. These included:

- KAP Questionnaire
- Clinical Presentation Questionnaire
- Epidemiological Questionnaire
- Quality of Life Questionnaire

25 active patients with clinical evidence of Mycetoma were interviewed using the four questionnaires. Five mls of blood were taken from each patient after informed written consent for genetic and serological studies.

They were seen by a Consultant Surgeon at EL Dewam Teaching Hospital for further management.

The Laboratory Work:

Three small laboratories were set at the village health centre. One to deal with blood samples collection, processing and storage, one to deal with general patients with other medical problems and for the cytological examination. All the necessary equipments, regents and consumables needed were obtained from the Mycetoma Research Centre, Khartoum, Rotterdam Erasmus Medical Centre, Rotterdam, The Netherlands and Department of Epidemics, The Federal Ministry of Health.

Histopathology & Cytology Investigations:

For all active patients and suspected Mycetoma patients, FNA was done by a Consultant Cytologist. The smears were stained by Diff quick stain. The stained smears were examined at the Department of Histopathology & Cytology at Soba University Hospital. Active and suspected patients were referred to EL Dewam Teaching Hospital for wide local excisions and histo-pathological diagnosis. One technologist was involved in this part of the study.

Blood Collection & Blood Samples Processing:

The blood collection was done by the blood collection team which consisted of two technologists assisted by some members of the micro-survey teams to fasten the collection process. Blood samples were also collected at the Mycetoma Clinic from active and suspected patients. From every selected individual, active or suspected patient one sample of blood was collected after a written informed consent. Each sample was then divided into two containers, one with EDTA and the other was plain container to obtain serum.

The samples were labeled carefully then stored at -4 ^{0}C. The samples were shipped in ice bags to EL Dewam and from there to the Mycetoma Research Centre and stored in - 40 ^{0}C for genetic and serological investigations.

The General Investigation Laboratory:

This was manned by the El Andalous technologist. All the investigations were done free of charge for the mycetoma and the general medical patients. The investigations included urine and stools general examinations, full blood count, blood glucose and blood film for malaria.

Geographical information System (GIS)

GPS coordinates were taken by 2 devices. One of them covered five patients' households and the second one was with the field coordinator which targeted 35

patients' household. Thus total was 40 Mycetoma patients households. Unfortunately the whole village was not fully covered due to the shortage of GPS devices, lack of time and shortage of personnel.

Therefore, the focal person of the GIS task in the study will to go back to the village for 2-3 days to incorporate all the relevant data after covering the whole village.

Investigation for Diabetes and hypertension among the village Children:

Two paeditrics registrars were involved in this study. They visited all the HH in a ratio of one in three HH. They interviwed the HH head, examined all the childtren below the age of 17 years including their heights and weights. Urine was examined for blood, proteins to screen them for renal problems in the children.

General Medical Out-patients Clinic:

A general Medical Out-patients Clinic was conducted throughout the study duration at El Andalous health centre. The patients were seen by three medical officers from El Dewam Hospital and a Dermatologist from Bakht Elrida University.

The patients seen in the clinic were referred from their houses by the micro-survey team during the household survey. Patients were seen and treated and

few of them were referred to EL Dewam. All services were provided freely for all patients.

The Study Pharmacy

A pharmacy was set at the village health centre where free medicines were dispensed. All the medicines were obtained as kind donations from some pharmaceutical companies. The medicines included antibiotics, intravenous infusions, anti-malarial, analgesic, praziquantel, supportive & symptomatic treatment for both adult & pediatrics group of patients. The medicines were dispensed free of charge. Some of the medicines for the most common health problems in the village were left in the health centre.

Health education session

At the last day of the study, one health education session was conducted at the health care center attended by the village leaders and some of villagers. Information on the environmental health in the households and the village, mycetoma was provided by the study team. The removal of the thorns that which are widely spread in the village was highlighted as a priority to minimize the risk of wounds. The importance of animals isolation from where people live was highlighted.

Unfortunately women were not available at that session as it was late in the day but there is a plan to revisit the village after the data analysis and to find out the

possible risk factors and then to held another health session by the medical students of University of Bakht Elrida. This session will cover the school children, community leaders and women in the whole community.

Concluding Remarks

The study was successful as most of the objectives were executed.

However there were some shortcomings and that included:

- Many patients were not available at the time of study as they left to execute their daily activities outside the village
- Many of population refused to give blood due some local believes
- The GIS part of the study was done properly

Acknowledgments

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The Study Team

The field study multidisciplinary teams included the following:

National Mycetoma Control Programme and Mycetoma Research Center (MRC) team:

1. Professor Ahmed Hassan Fahal, National Mycetoma Control Programme Director and MRC Director.
2. Mr. Osama Ahmed Hassan, National Mycetoma Control Programme Coordinator
3. Mr. Khalid Abdallah, National Mycetoma Control Programme
4. Mr. Mohammed Noor Alsayid, National Mycetoma Control Programme
5. Dr. Nihal Altahir, National Mycetoma Control Programme
6. Dr. Ehab Abdulaziz Mohamed Elagab, National Mycetoma Control Programme
7. Dr. Omar El Tahir, National Mycetoma Control Programme.
8. Dr. Samah Ahmed Awad, Mycetoma Research Center.

Laboratory team:

9. Dr. Badreldin Mirgani Yousif, Consultant Histopathologist, Soba University Hospital.
10. Miss Sarah Abdallah Ahmed, Lecturer of Medical Microbiology, Faculty of Medical Laboratory Sciences, University of Khartoum.
11. Mr. Hisham Abd Elhamid, Laboratory technologist, Histopathology Department, Federal Ministry of Health, National Health Laboratory.

12. Miss Hana'a Hassan, Laboratory technologist, Mycetoma Research Center- University of Khartoum.

13. Miss Samia Dafa Allah Noreen Laboratory technologist, .

14. Miss Ala'a Alwasela, Laboratory technologist, El dewam Teaching Hospital, El dewam.

15. Three Medical Laboratory students, Faculty of Medical Laboratory Sciences, University of Khartoum.

University of Bakht Elrida Team

16. Dr. Abd Elrahman Khidir- Head of the Dermatology & Gonorrheal Diseases Department

17. Medical students (32 medical students)

Pediatrics team- Soba hospital

18. Dr. EL Rashid Ahmed

19. Dr. Mohammed Ibrahim

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20. Prof Ed Zijlstra, Dept of Internal Medicine, Erasmus Medical Centre
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21. Drivers (2)