

# بسم الله الرحمن الرحيم





# شبكة المعلومات الجامعية

## التوثيق الالكتروني والميكروفيلم



# جامعة عين شمس

التوثيق الإلكتروني والميكرو فيلم

## قسم

نقسم بالله العظيم أن المادة التي تم توثيقها وتسجيلها  
علي هذه الأقراص المدمجة قد أعدت دون أية تغيرات



## يجب أن

تحفظ هذه الأقراص المدمجة بعيدا عن الغبار





# بعض الوثائق الأصلية تالفة





# بالرسالة صفحات لم ترد بالأصل



***Clinical and laboratory investigation of Capillariasis  
philippinensis infection in Beni suief governorate,  
Egypt.***

**Thesis**

Submitted for fulfillment of  
M.SC. degree in parasitology

**By**

**Mona Ibrahim Ali**

(M.B., B.Ch.)

Demonstrator of Parasitology

Faculty of Medicine

Beni Suief University

**SUPERVISORS**

***Prof. Dr. Fadia Mohamed Anwar Amin***

Professor of Parasitology

Faculty of Medicine

Cairo University

***Prof. Dr. Nadia Aly Eissa El-Dib***

Professor of Parasitology

Faculty of Medicine

Cairo University

***Dr. Enas Yahia Abu-Sarea***

Lecturer of Parasitology

Faculty of Medicine

Beni suief University

**Faculty of medicine**

**Cairo University**

**2011**

## **Acknowledgement**

*First and foremost thanks are due to **Allah**, the most beneficent and merciful.*

*I am so grateful to **Prof. Dr. Maysa Mohamed Kamel Sobhy**, head of the Parasitology, Faculty of Medicine, Cairo University, for her help.*

*My deepest appreciation goes to **Prof. Dr. Fadia Mohamed Anwar Amin**, Professor of Parasitology, Faculty of Medicine, Cairo University, for her encouragement, interest, valuable advice and constructive criticism throughout the work.*

*I would like to express my deep thanks to **Prof. Dr. Nadia Aly Eissa El-Dib**, Professor of Parasitology, Faculty of Medicine, Cairo University, for her help, advice, kind supervision and guidance.*

*My thanks also to **Dr. Enas Yahia Abu-Sarea**, Lecturer of Parasitology, Faculty of Medicine, Beni suief University, for her cooperation and help.*

*Due thanks are to **Prof. Dr. Essam Ezzat Ayyad**, Professor of Pathology, Faculty of Medicine, Cairo University, for his kind help in the pathological aspect of the work.*

*I am also grateful to **Prof. Dr. Tamer Mohamed Said Hifnawy**, Assistant professor of Public health and Community Medicine, Faculty of Medicine, Beni suief University, for his valuable effort in the Statistical analysis of this thesis discussion.*

*I would like also to express my thanks to the staff members of Internal, Tropical, Pediatrics, Clinical Pathology and Radiology Medicine Departments of Faculty of Medicine, Beni-Suef University for their help in detection and collection of the clinical data of cases.*

*Finally, I would like to express my warm feelings to my family, my father, my brother Mohamed and to my husband for their help, encouragement and support.*

## **List of abbreviations**

|                          |                                    |
|--------------------------|------------------------------------|
| ALT                      | Alanine transaminase.              |
| AST                      | Aspartate transaminase.            |
| <i>C. aerophila</i>      | <i>Capillaria aerophila</i> .      |
| <i>C. hepatica</i>       | <i>Capillaria hepatica</i> .       |
| <i>C. philippinensis</i> | <i>Capillaria philippinensis</i> . |
| DVT                      | Deep venous thrombosis.            |
| ELISA                    | Enzyme linked immunosorbent assay. |
| Hb                       | Hemoglobin.                        |
| HIV                      | Human immunodeficiency virus.      |
| Lao PDR                  | Lao People's Democratic Republic.  |
| MCV                      | Mean cell volume.                  |
| RBCs                     | Red blood cells.                   |
| RBS                      | Random blood sugar.                |
| WBCs                     | White blood cells.                 |

# Contents

|                                           |           |
|-------------------------------------------|-----------|
| <b>Introduction.....</b>                  | <b>1</b>  |
| <b>Aim of the work.....</b>               | <b>3</b>  |
| <b>Review of literature:</b>              |           |
| Historical Review.....                    | 4         |
| Classification.....                       | 6         |
| Prevalence.....                           | 7         |
| Transmission.....                         | 11        |
| Life cycle.....                           | 13        |
| Morphology.....                           | 17        |
| Pathogenicity.....                        | 22        |
| Clinical picture and complication .....   | 25        |
| Diagnosis.....                            | 28        |
| <b>Materials and methods.....</b>         | <b>34</b> |
| <b>Results.....</b>                       | <b>41</b> |
| <b>Discussion.....</b>                    | <b>69</b> |
| <b>Summary.....</b>                       | <b>79</b> |
| <b>Conclusion and recommendation.....</b> | <b>82</b> |
| <b>References.....</b>                    | <b>84</b> |
| <b>Arabic summary.....</b>                |           |

## **List of tables**

| <b>Title</b>                                                                                     | <b>Page No.</b> |
|--------------------------------------------------------------------------------------------------|-----------------|
| <b>Table (1):</b> Demographic data of the patients.                                              | 43              |
| <b>Table (2):</b> Age of <i>C. philippinensis</i> infected cases in years.                       | 44              |
| <b>Table (3):</b> Type of residential areas of <i>C. philippinensis</i> infected cases.          | 45              |
| <b>Table (4):</b> Clinical manifestations in <i>C. philippinensis</i> infected cases.            | 46              |
| <b>Table (5):</b> Chronic diarrhea in <i>C.philippinensis</i> infected patients.                 | 48              |
| <b>Table (6):</b> Results of blood chemistry of <i>C.philippinensis</i> infected patients.       | 65              |
| <b>Table (7):</b> Statistical analysis of the data of <i>C.philippinensis</i> infected patients. | 67              |

## List of figures

| Title                                                                                                                                                                                                                                                        | Page No. |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| <b>Fig. 1:</b> Proposed life cycle of <i>C.philippinensis</i><br><a href="http://www.dpd.cdc.gov/dpdx/HTML/image_library">http://www.dpd.cdc.gov/dpdx/HTML/image library</a>                                                                                 | 16       |
| <b>Fig. 2:</b> Esophagus and esophageal glands of adult worm (El- Dib <i>et al.</i> , 1999) (× 400).                                                                                                                                                         | 17       |
| <b>Fig. 3:</b> <i>Capillaria philippinensis</i> male.<br><a href="http://www.medicine.cmu.ac.th/dept/parasite/nematode/Capillaria-male.htm">http://www.medicine.cmu.ac.th/dept/parasite/nematode/Capillaria-male.htm</a>                                     | 18       |
| <b>Fig. 4:</b> <i>Capillaria philippinensis</i> male showing spicule and spicular sheath.<br><a href="http://www.medicine.cmu.ac.th/dept/parasite/nematode/Capillaria-male.htm">http://www.medicine.cmu.ac.th/dept/parasite/nematode/Capillaria-male.htm</a> | 18       |
| <b>Fig. 5:</b> Vulva of adult female worm (El- Dib <i>et al.</i> , 1999) (× 400).                                                                                                                                                                            | 19       |
| <b>Fig. 6:</b> <i>Capillaria philippinensis</i> , adult female showing narrow anterior and wider posterior portions. Note stichosome (thick arrow) and eggs in the uterus (thin arrow) (Cross, 1997)                                                         | 20       |
| <b>Fig. 7:</b> Peanut-shaped eggs of <i>C. philippinensis</i> in feces with flattened bipolar plugs. (Bair <i>et al.</i> , 2004) (× 160).                                                                                                                    | 20       |
| <b>Fig. 8:</b> Larva of <i>C.philippinensis</i> (El- Dib <i>et al</i> 1999) (× 1000).                                                                                                                                                                        | 21       |
| <b>Fig. 9:</b> Anterior end of hatching larva with a Spine-like projection (El- Dib <i>et al.</i> , 1999) (× 1000).                                                                                                                                          | 21       |
| <b>Fig. 10:</b> Severe skin lesions (El-Dib, N.A. by personal communication).                                                                                                                                                                                | 27       |
| <b>Fig. 11:</b> Case distribution of intestinal capillariasis in Beni-Suief Governorate. Each dot represents 1 case.                                                                                                                                         | 45       |
| <b>Fig. 12:</b> Massive edema of lower limbs in a case of intestinal capillariasis.                                                                                                                                                                          | 51       |
| <b>Fig. 13:</b> Pitting edema of lower limb in a case of intestinal capillariasis.                                                                                                                                                                           | 51       |
| <b>Fig. 14:</b> <i>C. philippinensis</i> , adult worm showing narrow anterior portion and the esophagus measures about half the length of the body (× 100).                                                                                                  | 53       |
| <b>Fig. 15:</b> Part of the esophagus showing the stichosomal pattern (× 400).                                                                                                                                                                               | 53       |
| <b>Fig. 16:</b> Adult male <i>C.philippinensis</i> . Thick arrow refers to the spicule while thin one refers to the sheath (× 100).                                                                                                                          | 54       |
| <b>Fig. 17:</b> Adult male <i>C.philippinensis</i> . Thick arrow refers to the spicule while thin one refers to the sheath (× 100).                                                                                                                          | 54       |

|                                                                                                                                            |    |
|--------------------------------------------------------------------------------------------------------------------------------------------|----|
| <b>Fig. 18:</b> Posterior end of an adult male <i>C.philippinensis</i> showing the spicule and the transparent spicular sheath (× 400).    | 55 |
| <b>Fig. 19:</b> Posterior end of an adult male <i>C.philippinensis</i> showing the spicule and the transparent spicular sheath (× 400).    | 55 |
| <b>Fig. 20:</b> Adult female <i>C.philippinensis</i> showing eggs in the uterus (the arrow) (× 100).                                       | 57 |
| <b>Fig. 21:</b> Vulva of an adult female <i>C.philippinensis</i> (× 400).                                                                  | 57 |
| <b>Fig. 22:</b> Thick shelled, Peanut-shaped eggs of <i>C. philippinensis</i> with shell striations in the uterus of adult female (× 400). | 58 |
| <b>Fig. 23:</b> Peanut-shaped eggs of <i>C. philippinensis</i> with larvae inside the uterus of adult female (× 400).                      | 58 |
| <b>Fig. 24:</b> Eggs of <i>C.philippinensis</i> (× 100).                                                                                   | 59 |
| <b>Fig. 25:</b> Egg of <i>C.philippinensis</i> (× 100).                                                                                    | 59 |
| <b>Fig. 26:</b> Peanut-shaped egg of <i>C. philippinensis</i> with flattened bipolar mucoid plugs and shell striations (× 400).            | 60 |
| <b>Fig. 27:</b> Egg of <i>C.philippinensis</i> with two cell stages indicating starting division (× 400).                                  | 60 |
| <b>Fig. 28:</b> <i>C. philippinensis</i> larva (× 100).                                                                                    | 61 |
| <b>Fig. 29:</b> <i>C. philippinensis</i> larva (× 400).                                                                                    | 61 |
| <b>Fig. 30:</b> Charcot Leyden crystal (× 400).                                                                                            | 62 |
| <b>Fig. 31:</b> Charcot Leyden crystals (× 400).                                                                                           | 62 |
| <b>Fig. 32:</b> Abdominal US showing liver pathology in <i>C. philippinensis</i> infected patient.                                         | 68 |
| <b>Fig. 33:</b> Abdominal US showing ascites in <i>C. philippinensis</i> infected patient.                                                 | 68 |

## **List of graphs**

| <b>Title</b>                                                                                                               | <b>Page No.</b> |
|----------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Graph (1):</b> Age of <i>C. philippinensis</i> infected cases in years.                                                 | 44              |
| <b>Graph (2):</b> Clinical manifestations in <i>C. philippinensis</i> infected cases.                                      | 47              |
| <b>Graph (3):</b> Duration of chronic diarrhea in <i>C. philippinensis</i> infected cases.                                 | 49              |
| <b>Graph (4):</b> Number of motions / day in <i>C. philippinensis</i> infected cases.                                      | 49              |
| <b>Graph (5):</b> Serum electrolytes, albumin level, anemia and eosinophilia in <i>C.philippinensis</i> infected patients. | 66              |

## **Abstract**

***Capillaria philippinensis*** is a zoonotic intestinal parasite that emerged in the 1960s in the Philippines and it becomes an emerging infection in Egypt. It is frequently fatal if not diagnosed and treated correctly. In the present study detection of this parasite was done in Beni-Suief University hospital by using clinical and laboratory investigations. The study was conducted from January 2010 to May 2011 and we report eight female cases of intestinal capillariasis.

(**Key words:** Intestinal capillariasis, Chronic diarrhea, Prevalence of ***C.philippinensis***, Diagnosis of ***C.philippinensis***).