سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

سامية محمد مصطفى

شبكة المعلومات الجامعية

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التوثيق الالكتروني والميكروفيلم

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جامعة عين شمس

التوثيق الإلكتروني والميكروفيلم

قسم

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بعض الوثائق الأصلية تالفة

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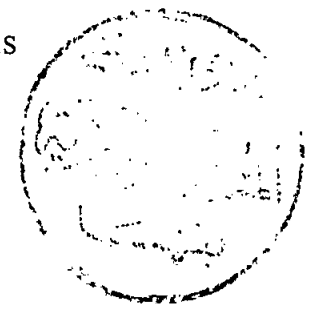
بالرسالة صفحات لم ترد بالأصل

THE UTILITY OF CT OF THE CHEST IN DETECTION OF VASCULAR CHANGES IN BILHARZIAL COR-PULMONALE

Thesis
Submitted in partial fulfillment for
M.D. Degree in chest diseases and tuberculosis



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2002

بسم الله الرحمن الرحيم

(نرفع درجات من نشاء و فوق كل ذي علم عليم)

صدق الله العظيم

سورة يوسف (الآية: ٧٦)

To my parents, my wife, my kids &
All my family.

The Candidate

Dr Waheed Mohamed

ACKNOWLEDGEMENT

First of all thanks to **ALLAH** who gave us the knowledge and activity to complete this work.

In few grateful words I would like to express my deepest gratefulness and greatest thanks to all hands helped this work to breath out and express itself in an acceptable fashion.

Greatest thanks to **Prof. Amr Bdr El-Din** Professor of Chest diseases Benha Faculty of Medicine Zagazige University who suggested this work, to whom I am extremely indebted for his generous advice and guidance. It was a great honor to work under his supervision.

Also greatest thanks to **Prof. Ahmed Abdel-Moniem** Professor of Cardiology Benha Faculty of Medicine Zagazige University, for his encouraging support and guidance during this work.

I am deeply grateful to **Prof. Tamer Ahmed Kamal** Professor of Radiodiagnosis Benha Faculty of Medicine Zagazige University, for his continuous encouragement, fruitful guidance and intensive unlimited support.

Words can never express my thanks and indebtness to **Dr. Sherif Ahmed Eissa**, Assistant professor of Chest diseases, Benha Faculty of Medicine Zagazige University, for his guidance, encouragement and endless assistance throughout this work.

I would like to express my deepest gratitude and cordial appreciation to **Dr. Fatma Mohammed Abdel-Salam**, assistant professor of Gastro-enterology and hepatology, Benha Faculty of Medicine Zagazige University, for her support and encouragement all through the preparation of this work.

I am extremely indebted to **Dr. Allaa El-Phakhrany,** Lecturer of Radiodiagnosis, Benha Faculty of Medicine Zagazige University, for his role in collection of CT data and his advice and guidance.

Also, I would like to express my deepest thanks to all professors, staff members, and all colleagues in Chest, Radiology, Cardiology, and Gastro-enterology Departments, Benha Faculty of Medicine Zagazige University, for their help and cooperation.

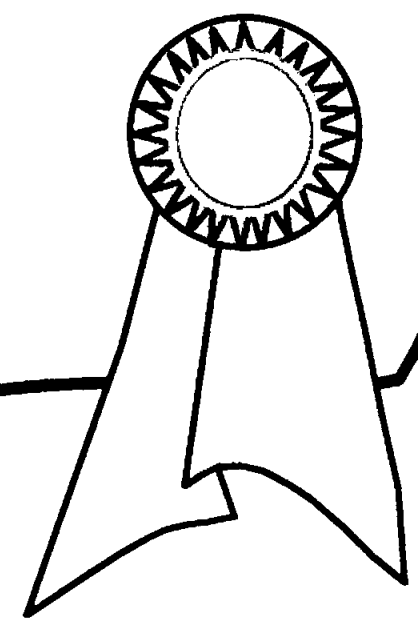
Finally I do not forget to thank all radiology technicians for their role in doing CT carried out through this work.

CONTENTS

LIST OF ABBREVIATIONS

(a-A)	Arterial alveolar gradient.
AIDS	Acquired immuno deficiency syndrome.
CT	Computed tomography.
Dp	Deceleration pressure.
Dt	Deceleration time.
EBT	Electron beam CT.
ECG	Electro cardio graphy.
EF	Ejection fraction.
ET	Ejection time.
FS	Fraction shortening.
FOV	Field of view.
FEV1	Forced expiratory volume 1st second.
FVC	Forced vital capacity.
HI	Higher order interpolation.
HRCT	High resolution computed tomography.
HU	Hounsfield units.
LI	Linear interpolation.
LOCM	Low osmolar contrast material.
MIP	Maximum intensity projection.
MVV	Maximum voluntary ventilation.
P- P	Pressure- pressure difference (gradient).
Paco2	Partial arterial carbon dioxide.
PAP	Pulmonary artery pressure.
PCP	Pulmonary capillary pressure.
PE	Pulmonary embolism.
Pemax	Maximum expiratory pressure.
PEP	Pre ejection period.
Pimax	Maximum inspiratory pressure.
PVR	Pulmonary vascular resistance.
RR	Respiratory rate.
RVEDP	Right ventricular end diastolic pressure.
SSD	Shaded surface display.
SSP	Section sensitivity profile.
T	Time difference (gradient).
TV	Tidal volume.
VA	Alveolar ventilation.
VC	Vital capacity.
V/Q	Ventilation perfusion ratio.
VCFS	Velocity of circumferential fiber shortening.

INTRODUCTION



INTRODUCTION

Schistosomiasis no doubt represents a serious national health problem in Egypt. The problem of porto-pulmonary schistosomiasis in Egypt is of special importance because of its interesting pathophysiological features and for its reflection on the physical fitness of the patients; and thereby on the national economy **(El-Mallawany et al, 1989).**

More than 200 million people have been estimated to have schistosomiasis worldwide **(Hopkins, 1992; Lucey and Maguire, 1993; and Nash et al, 1982).** Because over one billion persons live in schistosome endemic areas, and because at least 40% to 60% of these people excrete schistosome eggs, the prevalence of people infected with schistosomiasis may be much higher **(Laughlin, 1984).**

Schistosome endemicity can occur only with repeated human contact with infected water sources where specific snail species are present to act as intermediate hosts **(WHO, 1985).** When disease occurs, however, it can present significant morbidity and mortality. It has been estimated that in 1990, as many people died of schistosomiasis as died of the acquired immunodeficiency syndrome (AIDS) worldwide **(Hopkins, 1992).**

Three major species infect human beings: Schistosoma japonicum in Asia, schistosoma mansoni in Africa, The Middle East, parts of the Caribbean (including PuertoRico), and the Atlantic coast of South America, and schistosoma haematobium in Africa, the Middle East, and India **(Laughlin, 1984).**

Limited data suggests that cardiopulmonary schistosomiasis is seen most often in schistosoma mansoni infections. Hepatic fibrosis and portal hypertension appear to be a prerequisite to the development of schistosomal cor-pulmonale caused by this species. The premortem diagnosis of cardiopulmonary schistosomiasis depends on the detection of viable schistosomal ova in stool or urine along with evidence of characteristic hepatic fibrosis and pulmonary hypertension. Although treatment with praziquantel can effectively eradicate all schistosomal infections with minimal toxicity, cardiopulmonary manifestations are not likely to be reversible given the chronic fibrotic tissue changes that are present **(William and Micheal, 1997).**

The first report of lung involvement in a patient with schistosomiasis was published in 1885 **(Belleli, 1984).** Since then, pulmonary manifestations of schistosomiasis have been described with all the major schistosome species at each phase of infection; with initial larval migration, at the onset of egg secretion (oviposition), and as a consequence of chronic egg deposition **(William and Micheal, 1997).**

The earliest pulmonary manifestations of schistosomal infection coincide

with the arrival of schistosomulae in the lungs within 1 week of infection. During the period when the parasite passes through the pulmonary microcirculation, there may be an acute pneumonitis with low-grade fever, cough, and chest wheezes or crackles, lymphadenopathy, and hepatosplenomegaly on examination **(Diaz-Rivera et al, 1956)**. A hypersensitivity reaction to the sudden release of antigens contained in the ovum is thought to result in an immune complex-mediated serum sickness-like illness that is non specific, but can include high fever, arthralgia/ myalgia, headache, abdominal pain, vomiting, diarrhea, anorexia, malaise, weight loss, and urticaria **(Hiatt et al, 1980).** A peripheral blood eosinophilia is often present **(Hiatt et al, 1979).** Transient bibasilar mottling or focal infiltrates can develop on chest roentgenogram **(Ritchken and Gelfand, 1954; Gelfand, 1966; and Laughlin, 1984)),** which led to early references to (verminous pneumonia); **(Sami, 1951; and Saez, 1985).** This acute pneumonitis is not always mentioned in the more current clinical descriptions of schistosomiasis and is often attributed to other illnesses such as asthma or bronchitis. This acute pneumonitis may not be a distinct clinical phase but rather part of a continuum of the host immune response that can either resolve or evolve into overt acute schistosomiasis **(William and Micheal, 1997).**

The clinical expression of pulmonary egg deposition in chronic shistosomiasis can be grouped into three categories; a symptomatic cases with or without granuloma formation, cases with pulmonary hypertension, and those with cor-pulmonale; increased right-sided heart pressures, pulmonary arterial and right atrial dilatation, and right ventricular hypertrophy. It is presumed, but not proven, that given enough time, all patients with evidence of pulmonary hypertension will go on to develop cor-pulmonale. Why some patients have significant numbers of ova in the lung but without signs of pulmonary hypertension is not known **(Andrade and Andrade, 1970).**

The role of bronchoscopy in the diagnosis of cardiopulmonary schistosomiasis has not been studied. The intravascular and perivascular location of pulmonary ova makes it unlikely that bronchoalveolar lavage would contribute any helpful data. The utility of transbronchial needle aspiration is also unknown, but it is likely to be low because the amount of tissue obtained is too small to reliably sample a schistosomal granuloma. There have been case reports in which open lung biopsy has established schistosomal infection as the etiology of pulmonary hypertension, but there has been no formal evaluation of this diagnostic approach **(Richert, and Krakaur, 1959; and wessel et al, 1965).** Sputum analysis for ova is useless because of very low sensitivity **(Grillo, 1971).**

Ultrasonography is the preferred technique for assessment of hepatosplenic and genitourinary schistosomiasis. The sensitivity of ultrasound

rivals that of a wedge biopsy of the liver, and can also be used to decument enlargement of the portal vein, collateralization of vessels, splenomegaly, ascites and renal disease **(Homeida et al, 1988).** Despite reports of useful diagnostic information for hepatosplenic disease from abdominal CT scans, no data are available on the role of CT in the work-up of cardiopulmonary schistosomiasis **(Araki et al, 1985, and Jorulf and Lindstedt, 1985; Al-Hindawi et al, 1990).** The increasing availability of high resolution CT scans may allow this technique to play a role in imaging schistosomal pathology in the thorax, an area of the body for which ultrasound is poorly suited **(William and Micheal, 1997).**

Pulmonary function testing of patients with pulmonary schistosomiasis may show mild airway obstruction, decreased lung volumes, and impaired gas diffusion, but these findings are nonspecific **(Frayser and De-Alonso, 1967, and Abdallah et al, 1969).**