STUDY OF THE RELATION BETWEEN BILHARZIASIS AND IDIOPATHIC HYDROCOELE

THESIS

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By

OMRAN MOHAMED EL-BESHLAWY

M. B. B. CH. ' D. T. M. H.' D. M

ENDEMIC DISEASES DEPARTMENT

FACULTY OF MEDICINE

AIN SHAMS UNIVERSITY

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Supervisors

Professor Dr. Shoukry Mohamed Shoeb

Professor of Tropical Medicine and
Founder of the Department

Professor Dr. Mourad Sherif

Chairman and Head of Pathology Department

Professor Dr. Abdalla El-Fiky

Professor of Surgery

Professor Dr. Noaman Haseeb

Professor and Head of Tropical
Medicine Department

Dr. Mohamed Fathy Abd-el-Wahab

Assistant Professor of Tropical Medicine

المشرفون

ا.د. شكري محمد شعيب

ا.د. ابراهيم نصار

ا.د. احمد محمود الهادي

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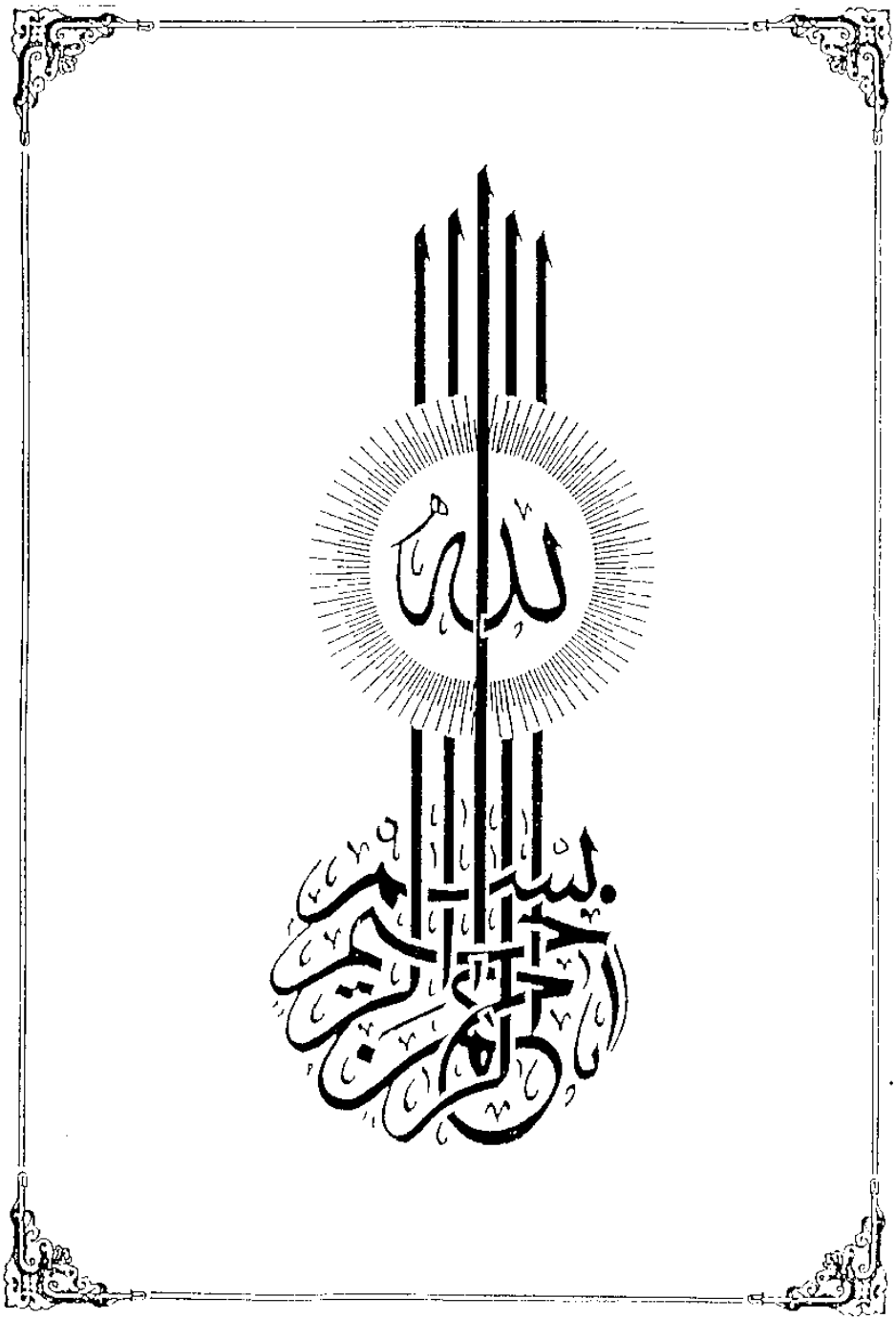

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C O N T E N T S

PART I

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3. Idiopathic Hydrocele.
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INTRODUCTION AND AIM OF THE WORK

True hydrocele is defined as circumscribed collection of fluid between the 2 layers of the tunica vaginalis around the testis (Tulloch, 1971). It is classified into primary (idiopathic) and secondary hydrocele. A good percentage of cases of true hydroceles are of primary type. In primary hydrocele, there is no obvious cause and the testis and epididymis are normal. Many theories have been put to explain its aetiology. Madden (1907) believed that primary hydrocele in Egypt is due to filariasis which is not manifest clinically. He was also of the opinion that lax scrotum without support together with excess sexual activity can cause venous congestion and thus transudate fluid collects in the tunica vaginalis. Ibrahim (1927) explained the pathogenesis of primary hydrocele in Egypt to be due to obstruction of testicular lymphatics produced by one or more attacks of endemic funiculitis. Illingworth (1966) suggested that primary hydrocele is secondary to low grade infection. Naguib (1964) considered the possibility of infection (viral, bacterial or protozoal) or autoimmune reaction to be the cause of primary hydrocele. Saif El-Din (1973 and 1976) stressed the importance of bilharziasis in the pathogenesis of primary hydrocele in Egypt.

Bilharziasis is the most common disease in Egypt affecting 20 million population (Ayad, 1974) and reducing

the total economic output by 1/3. Nearly every organ can be affected by bilharzial infection including eyes (Attia, 1962), prostate (Khafagy, 1970) and spinal cord (Saif El-Din, 1973).

The AIM of the present work is to study the relation between bilharziasis and primary hydrocele using different diagnostic methods including routine laboratory method for the diagnosis of bilharzial and filarial infection, pathological examination of the tunica vaginalis and immuno diagnosis of bilharziasis with special stress on the circumoval precipitin test and gel diffusion test in the serum and hydrocele fluid of patients having true hydrocele. Also 100 hamsters will be studied, half of them will be infected by schistosome cercaria and the other half as controls, after 3 months, the mice will sacrifised and the development of hydrocele in infected animals and controls will be investigated by pathological examination of the tunica vaginalis and detection of bilharzial antigen by gel diffusion test.

Anatomy of the Testis, Tunica Vaginalis and Epididymis

1. The Tunica Vaginalis: (Last, 1978).

It is a closed sac of peritoneum which almost completely surrounds the testis and epididymis and extends upwards for a short distance into the spermatic cord. It has an outer parietal layer lining the scrotum and an inner visceral layer covering the testis and the sides of the epididymis. There is a bare area on the posterior surface of the epididymis where the visceral layer of the tunica is reflected to become continuous with the parietal layer.

The tunica vaginalis is formed of an inner smooth layer of endothelial cells and an outer fibrous layer which is deficient in the visceral part of the tunica so that the tunica albuginea is only covered by a single layer of flat cells and there is no continuation of the fibrous peritoneum over it. Inbetween the visceral and parietal layers of the tunica there is a potential space containing a thin film of serous fluid.

2. The Testis:

It is oval in shape 4.5 cm. long, 2 cm. thick and 2.5 cm. from before backwards. It has two surfaces, medial and lateral, two borders; anterior and posterior and two ends; upper and lower. It is placed obliquely in the scrotum so that its posterior border in nearer to the middle line

and its lateral surface faces posteriorly as well as laterally. The left testis hangs in the scrotum usually at a slightly lower level than the right. The testis is invested by a covering of dense white fibrous tissue, the tunica albuginea, which is thickened posteriorly to form the mediastinum testis which is traversed by blood vessels and lymphatics as well as by the efferent ducts of the testis passing in to the head of the epididymis.

3. The Epididymis:

It is a very long coiled duct which forms a comma-shaped organ that is attached to the posterior border of the testis and to a mild extent overlaps its lateral surface. It is attached to the testis by the vasa efferentia and is composed of head, body and tail which is continuous with the vas deferens.

The testis and epididymis are covered by both layers of the tunica vaginalis as well as by the three fascio-muscular layers; the internal spermatic fascia. Still in a more outer plane, they are covered by the dartos muscle and the skin of the scrotum.

Blood supply, nerve supply and lymph drainage:

The vascular, nervous supply and lymph drainage of the tunica vaginalis drive its origin from that of the testis and intrascrotal structures.

Arterial supply:

The tesficular arteries which are two long slender vessels arising from the front of the aorta at the level of the third lumbar vertebra below the renal arteries. Each passes obliquely downwards and laterally behind the peritoneum, and resting on the psoas major muscle.

The right artery lies in front of the inferior vena cava and behind the third part of the duodenum, the right colic artery, the iliocolic artery and terminal part of ileum. The left artery passes behind the inferior mesenteric vein, the upper left colic artery and the lower part of the descending colon. Each artery passes in front of the ureter and the lower part of the external iliac artery on its way to enter the deep inguinal ring and joins the spermatic cord tc traverse the inguinal canal and enters the scrotum. At the upper posterior part of the testis, it divides into two branches which pass to the medial and lateral surfaces and pierce the tunica albuginea to supply the testis.

Venous drainage:

The testicular veins emerge from the back of the testis and receive tributaries from the epididymis and tunica vaginalis. They unite together to form the pampiniform plexus which passes upwards along the spermatic cord,

in front of the vas deferens. Before it enters the inguinal canal, these plexus of veins unite to form about four veins which pass along the inguinal canal and enter the abdomen through the deep inguinal ring and reunite forming two veins which run behind the peritoneum and in front of the psoas major and ureter, lying one on each side of the testicular artery. These two veins unite to form one testicular vein which on the left side opens into the left renal vein at a right angle while on the right side, the right testicular vein joins obliquely the inferior vena cava a little below the level of the right renal vein.

Lymph drainage:

Lymphatics from the testis, epididymis and tunica vaginalis form four to eight collecting vessels that pass upwards with the veins of the spermatic cord through the inguinal canal and in the retroperitoneal tissues over the psoas major muscle. At the level where the testicular vessels cross the ureter, these lymphatics, part from each other and spray themselves in fountain like manner into the lumbar glands which lie in front and on either sides of the aorta. In the upper part of their abdominal course, these lymphatics anastomose with each other and in this way any vessel may empty its contents into more than one gland.

Nerve supply:

Sympathetic fibres derived from the tenth thoracic segment of the spinal cord, pass to the testis along the testicular vessels through the renal and aortic plexuses.

Anatomy of the Scrotum

The scrotum is a cutaneous pouch containing the testes and the lower parts of the spermatic cords. It is divided on its surface into a right and left portions by a ridge, or raphe, which is continued forwards to the under surface of the penis, and backwards along the middle line of the perineum to the anus. From inside, the median septum divides the scrotum into right and left compartments. The scrotum consists of the skin and dartos muscle together with the external spermatic, cremasteric and internal spermatic fasciae. The inner surface of the internal spermatic fascia is in contact with the parietal layer of the tunica vaginalis.

Arterial Supply:

- Scrotal branches from the external pudendal arteries.
- Scrotal branches from the internal pudendal arteries.
- Cremasteric branch from the inferior epigastric artery.
- Scrotal branches from the perineal arteries.

Venous Drainage:

The veins follow the coarse of the corresponding arteries.

Nerve Supply:

- Two scrotal branches of the perineal nerves.

- Genital branch of genitofemoral nerve.
- Ilio-inguinal nerve.
- The perineal branch of the posterior cutaneous nerve of the thigh.

Lymph Drainage:

The lymphatics end in the inguinal lymph nodes.