Evaluation of Normal Testicular Volume among Some Egyptian Fertile Men

Thesis

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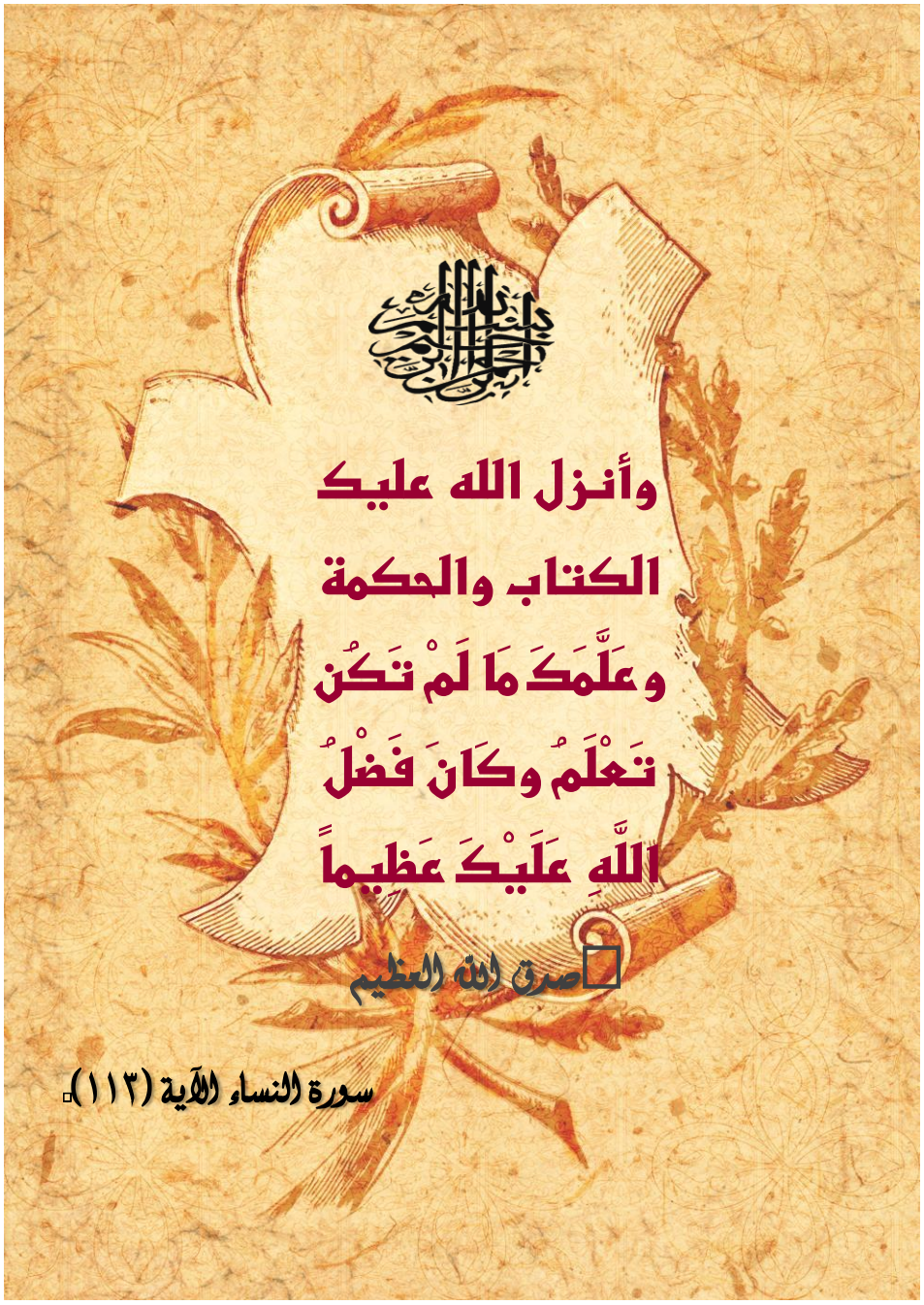
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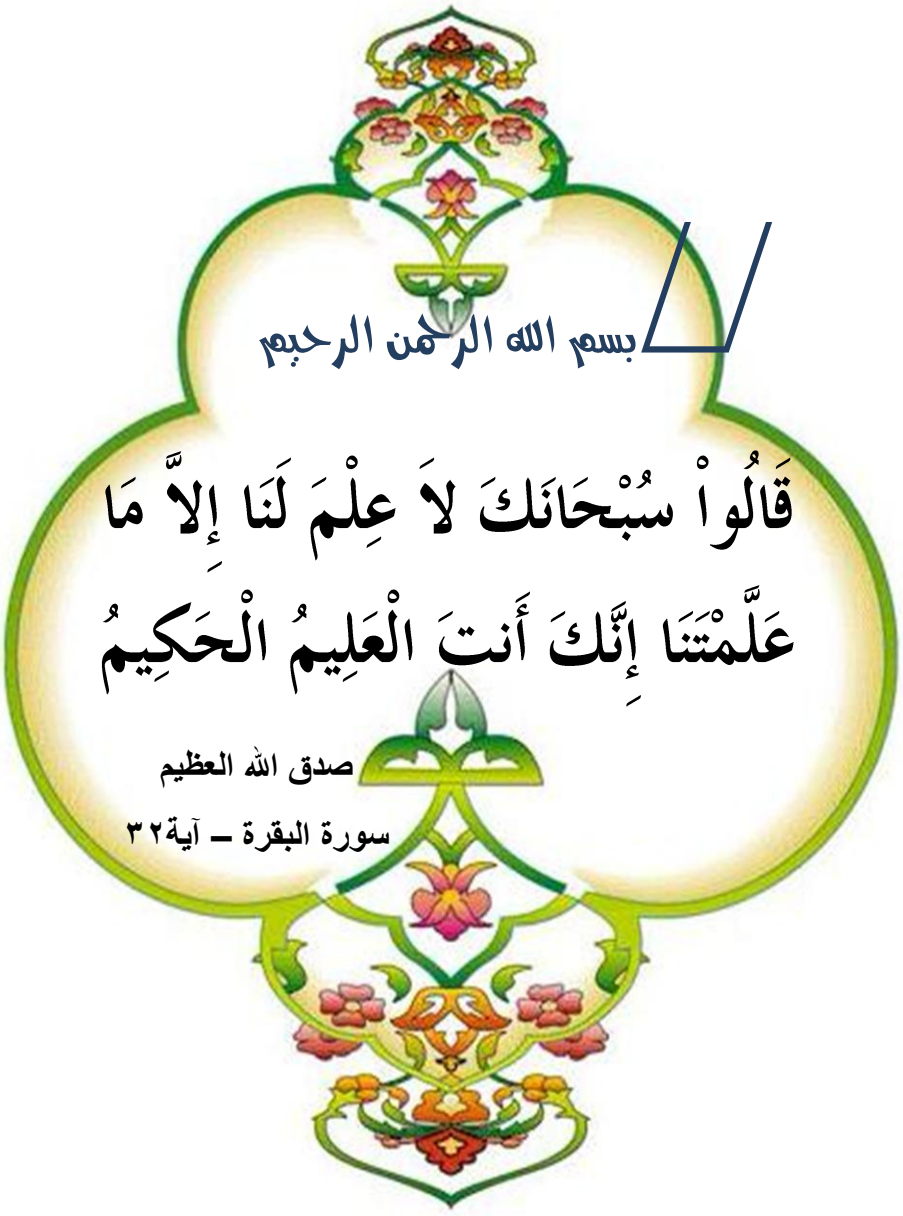
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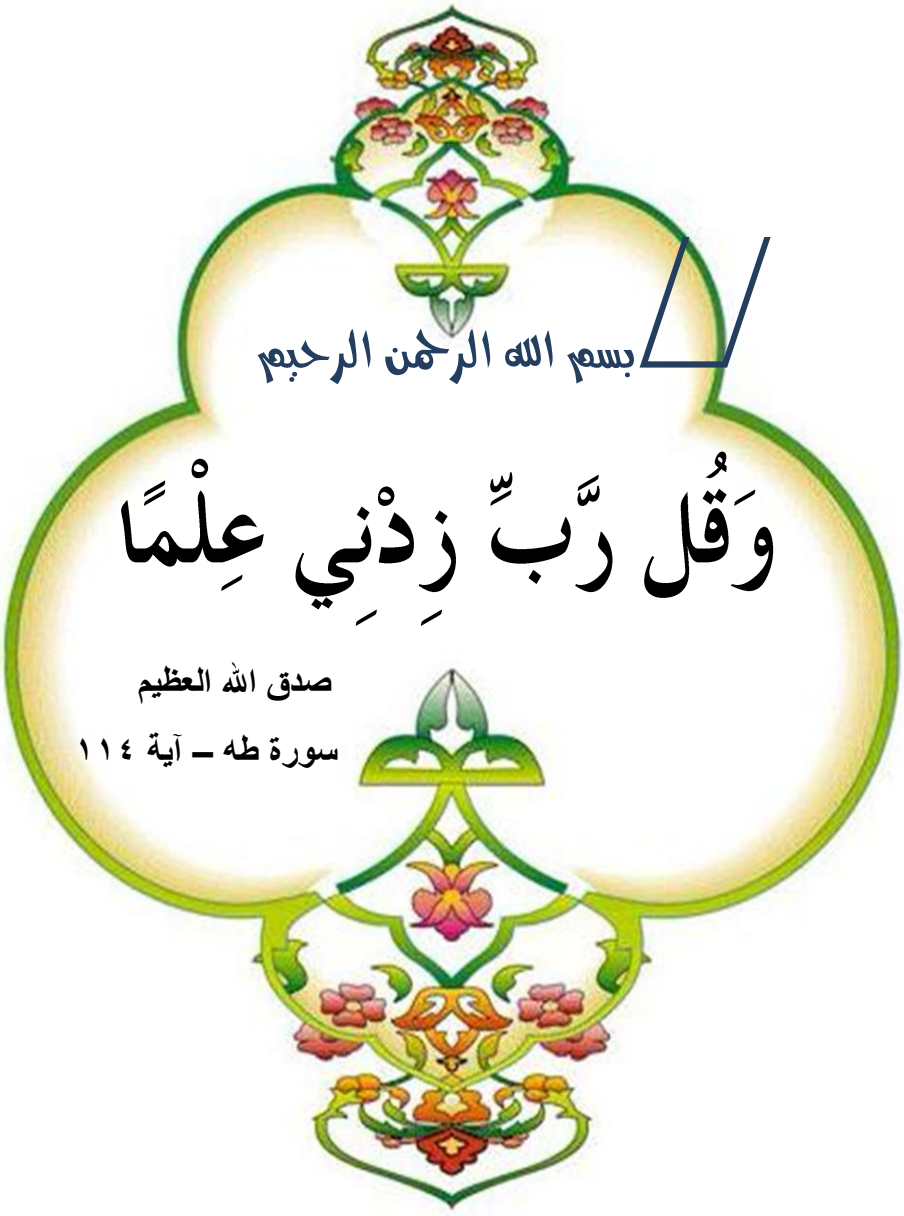
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بِسْمِ اللّهِ الرّحمَنِ الرّحيمِ

[...رَبِّ أَوزِعنِي أَن أَشكُرَ نِعمَتَكَ
الَّتِي أَنْعَمْتَ عَلَيَّ و عَلى والِدَيَّ
و أَنْ أَعْمَلَ صَالِحاً تَرْضَاهُ و أَدْخِلْنِي
بِرَحْمَتِكَ فِي عِبَادِكَ الصَّالِحِينَ]

صدق الله العظيم

النمل.. اية رقم ١٩

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Ahmed Amin

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Introduction

Testis is the male gonad. Either of the paired egg-shaped glands is normally situated in the scrotum on either side of a septum that divides the scrotum into left and right lobules ***(Jequier, 2000).***

At birth, the testis measures approximately 1.5 cm in length and 1 cm in width. Before the age of age 12 years, testicular volume is about 1–2 cm^3. Clinically, a male individual is considered to have reached puberty once the testis achieves a volume of 4 cm^3 ***(Dogra et al., 2003).***

The normal adult testis is 4-5 cm in length, 3 cm in - width, and 2.5 cm in depth and has volume of 18 - 30 ml, and weight varies from 10-14 gm ***(Brooks, 2002).***

Because seminiferous tubules comprise 70% to 80% of the testicular mass, the testicular volume is believed to reflect spermatogenesis ***(Setchell and Brooks, 1988).***

Accurate testicular volume measurement is important for assessing testicular function. A relationship has been shown between the testicular volume and the semen profiles in infertile men, and testicular volume measurement has been useful in estimating spermatogenesis ***(Arai et al., 1998).***

The various measurement tools currently used include calipers, orchidometers, and scrotal ultrasonography (US).

Although testicular volume has been estimated conventionally using an orchidometer such as the Prader or punched-out orchidometer ***(Takihara et al., 1987).***

Ultrasound is generally recognized as most accurate on the basis of a comparison with the actual testicular volume. One study showed that the most accurate US formula compared to the actual testicular volumesis the net of length (L) × width (W) × height (H) × 0.71***(Paltiel et al., 2002).***

Most of the studies available in literature measured the testicular volume in infertile men with rarity of evaluation in normal fertile men.

Aim of the Work

To assess normal testicular volume in some Egyptian fertile men by measuring the mean by caliper then comparing between caliper and scrotal ultrasonography.

Chapter (1):
Anatomy of Male Genital System

The scrotum:

The scrotum is a cutaneous pouch divided in its surface into two lateral compartments. Each compartment contains the testis, its associated ducts and the lower part of the spermatic cord with its coverings. It is derived from the labioscrotal folds, which under the influence of testosterone, swell and fuse to form twin scrotal sacs. The point of fusion is the median raphe, which extends from the anus along the perineum to the ventral surface of the penis.Usually the two parts of the scrotum are not fully symmetrical, the left side hangs lower than the right, due to a greater length of left spermatic cord ***(Liguori et al., 2012).***

The scrotal wall consists of (Figure 1):

1. Skin: It is very thin, pigmented, hair bearing, devoid of fat but rich in sebaceous and sweat glands. The scrotal skin varies from loose and shiny to highly folded with transverse rugae depending on the tone of its underlying dartos smooth muscle ***(Brooks, 2002).***
2. Dartos muscle: It is a thin layer of non striated involuntary smooth muscle fibers, continues around the base of the scrotum with the superficial fascia of the groin and perineum. It sends fibers inward to the sagittal septum of the scrotum, which connects the raphe to the inferior surface of the root

of the penis and divides the scrotum into two cavities for the two testes. The dartos muscle is closely united to the skin while it is connected with the subjacent parts by delicate areolar tissue, so that it is able to move with great independence ***(Harold, 2006).***

3. Superficial (Colle's) fascia: It is devoid of fat and attached behind to the posterior edge of the perineal membrane, at both sides to the ischiopubic rami and the bodies of the pubic bone but in front it is continuous with the Scarpa's fascia ***(Sinnatamby, 1999).***
4. External spermatic fascia: It is a thin fibrous stratum continuous superiorly with the aponeurosis of the external oblique muscle and prolongs downward from the crura of the superficial inguinal ring that is firmly attached to it ***(Liguori et al., 2012).***
5. Cremasteric muscle and fascia: It arises from the internal oblique muscle and is attached laterally to the inguinal ligament and iliopsoas fascia and medially to the pubic tubercle ***(Hinman, 1995).***
6. Internal spermatic fascia: It is a thin layer which is derived from the fascia transversalis. The inner surface of the internal spermatic fascia is loosely attached to the parietal layer of tunica vaginalis ***(Brooks, 2002).***