سامية محمد مصطفى

شبكة المعلومات الجامعية

بسم الله الرحمن الرحيم

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التوثيق الالكتروني والميكروفيلم

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بالرسالة صفحات لم ترد بالأصل

EFFECT OF ESTRADIOL BENZOATE INJECTION POSTNATALY ON DEVELOPMENT OF THE TESTIS IN ALBINO RAT

Thesis
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CONTENTS

INTRODUCTION AND AIM OF THE WORK

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Estrogen administration to neonatal rats causes impairment of spermatogenesis. This is may be valuable in understanding the mechanisms involved in its effect on the reproductive tract of men whose mothers received estrogen during pregnancy *(Gill et al., 1979; Newbold et al., 1986 and Sharp and Shakkabake, 1993).*

Prolonged use of estrogen alters the hypothalamic-pituitary-gonadal axis, which in turn, causes persistant inhibition of the spermatogenic process *(Arai et al., 1983; Bellido et al., 1990 and Pinilla et al., 1992).*

Estrogen also has a direct action on testis which is related to the failure of germ cells to proceed beyond spermatogonia *(Steinberger and Duckett, 1965)* and impairment of spermatogenesis *(Ohta and Takasugi, 1974; Mclachlan et al., 1975 and Ohta, 1977).*

Estrogen induces cryptorchid testes which become exposed to the high temperature in the abdomen. This high temperature prevents the normal maturation of sperms after recovery or administration of gonadotropin *(Bugnon et al., 1973 and Arai et al., 1983)* and may cause irreversible effects in some tubule *(Steinberger, 1971).*

In adult rat exposed neonatally to estrogen there is retention of testicular fluid due to the impairment of spermatogenesis *(Pylkkanen et al., 1991).* This may be secondary to the deleterious effect on growth and structure of the seminiferous tubules and rete testes, of the neonatal estrogenized rodents ***(Orgebin-Crist et al., 1983; Newbold et al., 1986; Greco et al., 1993)*** and men exposed in utero to estrogen ***(Griffin and Wilson, 1994).***

The aim of this study is to know:

1- Is exposure of pregnant female to estrogen leads to abnormalities in the male offspring reproductive system. As the testicular descent in human occurs before birth while in rats after birth. So, to reach this aim we will treat the male rats in the 1st day after birth.

2- The possible mechanisms by which estrogen leads to these abnormalities.

REVIEW OF LITERATURE

ANATOMY OF THE TESTIS

It is the primary reproductive organ in male which is suspended in the scrotum by the dartos muscle and spermatic cord, the left testis usually being about 1 cm lower than the right. Average testicular dimensions are 5 x 2.5 x 3 cm and its weight varies from 10.5-14gm. It is ellipsoidal in shape, compressed laterally and obliquely set in the scrotum ***(Lawrence et al., 1995).***

The testis is enveloped in the tunica vaginalis testis except where the epididymis and the structures within the spermatic cord are attached to the upper pole and posterior surface ***(Basmajian & Slonecker, 1993).*** The right and left sides are separated by the median scrotal septum ***(Sinnatamby, 1999).*** The testis is enclosed by a capsule formed of three distinct layers which from outside inward are:

1- Tunica vaginalis:

It is the lower end of the peritoneal processus vaginalis which is formed before the descent of the testis. After testicular descent, the proximal part of the processus vaginalis, from the internal inguinal ring until the testis contracts and obliterates leaving a closed distal sac in which the testis is invaginated. The tunica is reflected from the testis to the internal surface of the scrotum so, there is:

- Visceral layer which covers all the testis except its posterior aspect and is formed of a single layer of flat mesothelial cells.
- Parietal layer which reaches below the testis and ascends infront and medial to the spermatic cord ***(Lawrence et al., 1995).***

2- Tunica albuginea:

It is a dense bluish white covering composed of interlacing bundles of collagen fibers. It is covered by the tunica vaginalis except at the head and tail of epididymis and posterior aspect of the testis where vessels and nerves enter. Smooth muscle fibers have been observed in the tunica albuginea of the rabbit, man and rat. In rabbit and rat, isolated preparations of testicular capsule may show spontaneous contractions reacting to both cholinergic and adrenergic agents. Abundant autonomic nerve endings near blood vessels have been described ***(Norberg, 1967).*** Non striated myocytes have been demonstrated in the tunica in various rodents and man ***(Holstein, 1967).***

3- Tunica vasculosa:

It is the 3rd inner most layer of the capsule and contains a plexus of blood vessels and a delicate loose connective tissue extending over the internal aspect of the tunica albuginea and covering the septa and therefore all testicular lobules ***(Lawerence et al., 1995).***

Blood supply of the testis:

A- Arterial supply:

It is supplied by the testicular artery from the abdominal aorta which together with the other components of the spermatic cord enter the scrotum. At the upper end of the posterior aspect of the testis, it is subdivided into 2 branches which pass into the medial and lateral surfaces and pierce the tunica albuginea and end in the tunica

vasculosa. From the latter, terminal branches pass into the substance of the testis at various points over the free surface *(Snell, 1995).*

Kormano and Suoranta (1971) noticed that, the intratesticular arteries show coiling of their course.

The capillaries adjoining the seminiferous tubules penetrate the layers of the interstitial tissue which part of the blood testis barrier. They don't enter the walls of the tubules being separated from the germinal and supporting cells by basement membrane and by a variable amount of interstitial tissue containing Leydig cells. At this level, highly selective exchange phenomena occurs involving endogenous and immune substance *(Neaves, 1977).*

B- Testicular veins:

They emerge from the back of the testis and unite, to form extensive venous plexus termed the pampiniform plexus which ascends in the spermatic cord. This plexus is drained by 3-4 veins which enter the abdomen via the deep inguinal ring and unite into 2 veins which become a single vein which open in the inferior vena cava, on the right side and in the left renal vein on the left side *(Sinnatamby, 1999).*

C- Lymph vessels:

They end in the lateral and pre-aortic lymph nodes on the sides of the abdominal aorta, at the level of the first lumbar vertebra *(Snell, 1995).*