ESSAY ON

GERM CELL TUMOURS OF THE OVARY

THESIS

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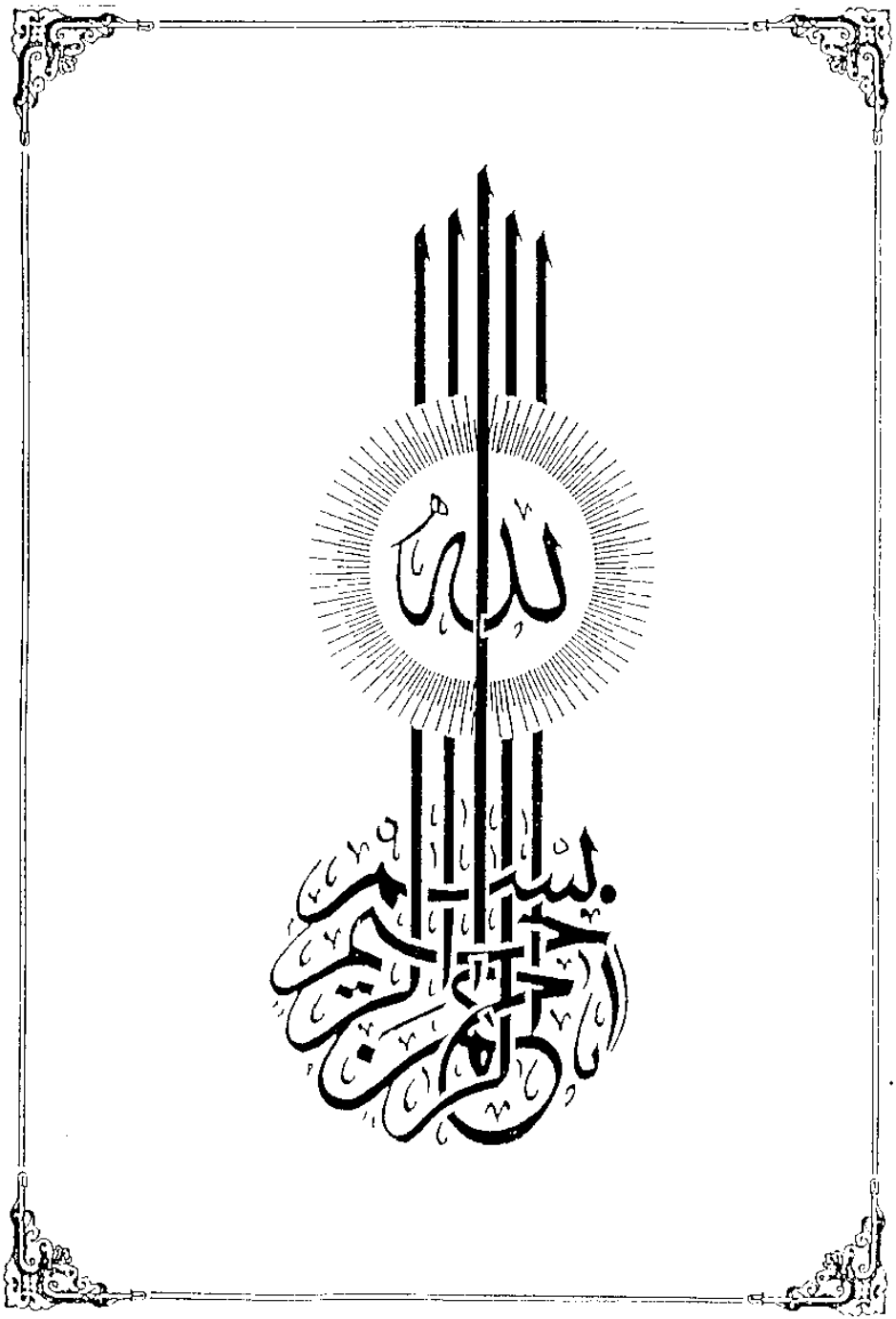

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AIM OF THE WORK

This work will study germ cell tumours of the ovary as regard definition, clasification, theories, pathology, investigations, and prognosis.

The different patterns of presentation are also studied which may help in the management.

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INTRODUCTION

Ovarian neoplasms, which appear to have shown a marked increase in incidence in the past three decades, present a greater variation in structure and histogenetic background than do those of any other organs (Boyd & Febiger., 1977).

Ovarian malignancy is not uncommon disease and in recent years, the annual incidence of primary ovarian malignances has shown a steady rise and is now responsible for about twice as many deaths as either cervical or uterine carcinoma (Halnan et al., 1982).

It is the fourth leading cause of death from cancer among American women, following cancer breast, Colon, and lung (David et al., 1982).

~~It is frequently without symptoms in its early~~ stages and is widely disseminated throughout the peritoneal cavity in 70% of patients when diagnosis is first made (Studd., 1982).

The problems of prophylaxis, early detection and adequate therapy of these ovarian cancers are perhaps the foremost challenges in the field of gynaecology (Page et al., 1976).

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Germ cell tumours comprises less than 15% of all ovarian malignancies. They are more apt to occur in young women, display vastly different natural histories, and often require different therapeutic approaches (Devita et al., 1982).

Apart from the adult cystic teratoma, which may rarely be malignant, all other germ cell tumours are predominantly malignant (Robbins & Cotran., 1979).

Dysgerminoma which comprises less than 2% of all ovarian malignancies and cytologically similar to seminoma of the testis, also is characterised by the high radio sensitivity. Endodermal sinus tumour which is similar morphologically to orchioblastoma of the testis, and is derived from extra-embryonic rather than embryonic tissues and embryonal carcinoma which is typical to that of the testis are associated with elevation of HCG or alpha fetoprotein (Devita et al., 1982).

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DEVELOPMENT OF THE OVARY

The developmental changes in the human urogenital system have been described by many investigators. Pritchard et al, (1985) described these changes from the third gestational week to maturity.

During development, the ovary passes through a series of stages which are identified histologically, the first of these is termed the genital ridge stage, the second is the indifferent gonad stage and the third is the sexual differentiation stage (Phillip et al., 1977).

The earliest sign of a gonad is one that appear on the ventral surface of the embryonic kidney at about 4 weeks, the coelomic epithelium is thickened and clumps of cells are seen to bud off into the underlying mesenchyme. This circumscribed area of the coelomic epithelium often called the germinal epithelium. By the fourth to six week, there are many large ameboid cells in this region that have migrated into the body of the embryo from the yotk sac called primordial germ cells. When these cells reach the genital area, some enter the germinal epithelium, and others lie in the mesenchyme, by the end of the fifth week rapid division of

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all these cells results in development of a prominant genital ridge (Pritchard et al., 1985). This elongated mass of undifferentiated cells is the sex gland which will differentiated to become either testis or ovary (Jeffcoate, 1983).

After the embryo reachs 14 to 16 mm (6 - 7 weeks), the conversion of the gonad into an ovary is not so prominant as its conversion into a testis, the ovary seems to remain in the indifferent stage for a longer period of time (Jones & Jones, 1982).

In female, the germinal epithelium continue to proliferate for a longer time, the group of cells thus formed lie at first in the region of the hilum, as connective tissue develops between them, these appear as sex cords, and give rise to the medullary cords which persist for variable times (Forbes, 1942).

The sex cords containing groups of the primordial germ cells which broken up into irregular cell clusters by the proliferating mesenchyme. The primordial germ cells differentiate into oogonia and by the 3rd month they start to undergo a number of mitotic divisions within the cortex of the ovary to form primary oocytes, which become surrounded by a single layer of cells

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derived from the sex cords called the granulosa cells to form the primordial follicles (Richard , 1975).

By the 8th months of gestation, the ovary has become a long, narrow, lobulated structure that is attached to the body wall along the line of the hilum by the mesovarium (Pritchard et al , 1985).

In males, the sex cords become separated from the coelomic epithelium by the proliferation of the mesenchyme, the newly formed mesenchyme now condenses to form dense fibrous layer, the tunica albuginea (Richard., 1975). The sex cords develop into the seminiferous tubules and the tubuli reti, the rete derived from mesonephric elements, establishes connection with the mesonephric tubules that develop into the epididymis, the mesonephric ducts become the vas deference (Pritchard , 1985).

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STRUCTURE OF THE OVARY & LYMPHATIC DRAINAGE

The ovaries are two ovoid bodies placed one in each side of the pelvis just below the tubes, the external surface of the ovary is dull, whitish, opaque appearance, and it is smooth in the young child, in the adult women it is pitted from previous ovulations and in the old women it may be shrunked and corrugated (Jones & Jones., 1982).

In cross section, two portions may be distinguished, the outer cortex which varies in thickness with age and composed of spindle-shaped connective tissue cells and fibers among which these are scattered primordial and graafian follicles that are in various stages of development, the inner medulla or central portion of the ovary which composed of loose connective tissue and large number of arteries, veins and smooth muscle fibers that are continous with those in the suspensory ligament (Pritchard., 1985).

The follicular system

Primordial follicle:

Each follicle is composed of one ovum surrounded by single layer of flattened cells, at birth the

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ovaries contain about 400,000 follicles (Vanter et al., 1975).

Graffian follicles:

At puberty full follicular growth sets in, towards the end of a menstrual period one primordial follicle rapidlly develops, the ovum enlarges and becomes surrounded by thick tough membrane, the zona pellucida, the granulosa proliferates to form many layers of small cells, fluid then appears in these cells first as droplets, which coalesce to form a cavity containing the liquor folliculi, this liquor separates the granulosa into two layers.

1. A thin layer which lines the inner surface of the follicle.
2. Cells which surround the ovum.

The mesenchyme external to the graafian follicle differentiate to form a thin vascular theca interna supported by an outer connective tissue layer (Keeie & Neil., 1966).

Maturation of the graafian follicle involves additional fluid accumulation associated with marked swelling of the follicle and thining of its wall, this

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is followed by rupture of the follicle, this process is known as ovulation (Martin., 1981).

After rupture of the follicle and discharge of the antral fluid and the ovum, a transformation occurs within the follicle, which collapses, and the antrum fills with clotted fluid, the follicular cells enlarge, become filled with lipid this entire gland like structure is known as corpus luteum (Vanter et al., 1975).

Lymphatic drainage of the ovary

Lymphatics from the ovary accompany the ovarian vessels to reach the aortic nodes, they are said to communicate with those of opposite gonad by crossing the fundus uteri, this put an explanation of the tendency for ovarian cancer to be bilateral (Jeffcoate., 1983).

Blood supply of the ovary

(1) Ovarian artery: arises from aorta, then passes retroperitoneally, crossing the ureter, and enter the infundibulopelvic ligament where it divides to send main branches to ovary.

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(2) Uterine artery: arises from the anterior division of internal iliac artery, and ends by anastomosing with the ovarian artery (Jones & Jones, 1982).

Venous drainage:

(1) Pampiniform plexus of veins—in the broad ligament and drains into the ovarian and uterine trunks.

(2) Ovarian veins: the left to the left renal vein, and the right to the inferior vena cava.

(3) Uterine vein.

(Pritchard et al, 1985).

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