PATHOLOGICAL STUDY OF THE OVARIAN TUMOURS WITH SPECIAL REFERENCE TO THEIR ENDOCRINAL EFFECTS

THESIS

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(PH. D.) Degree in Pathology

BY

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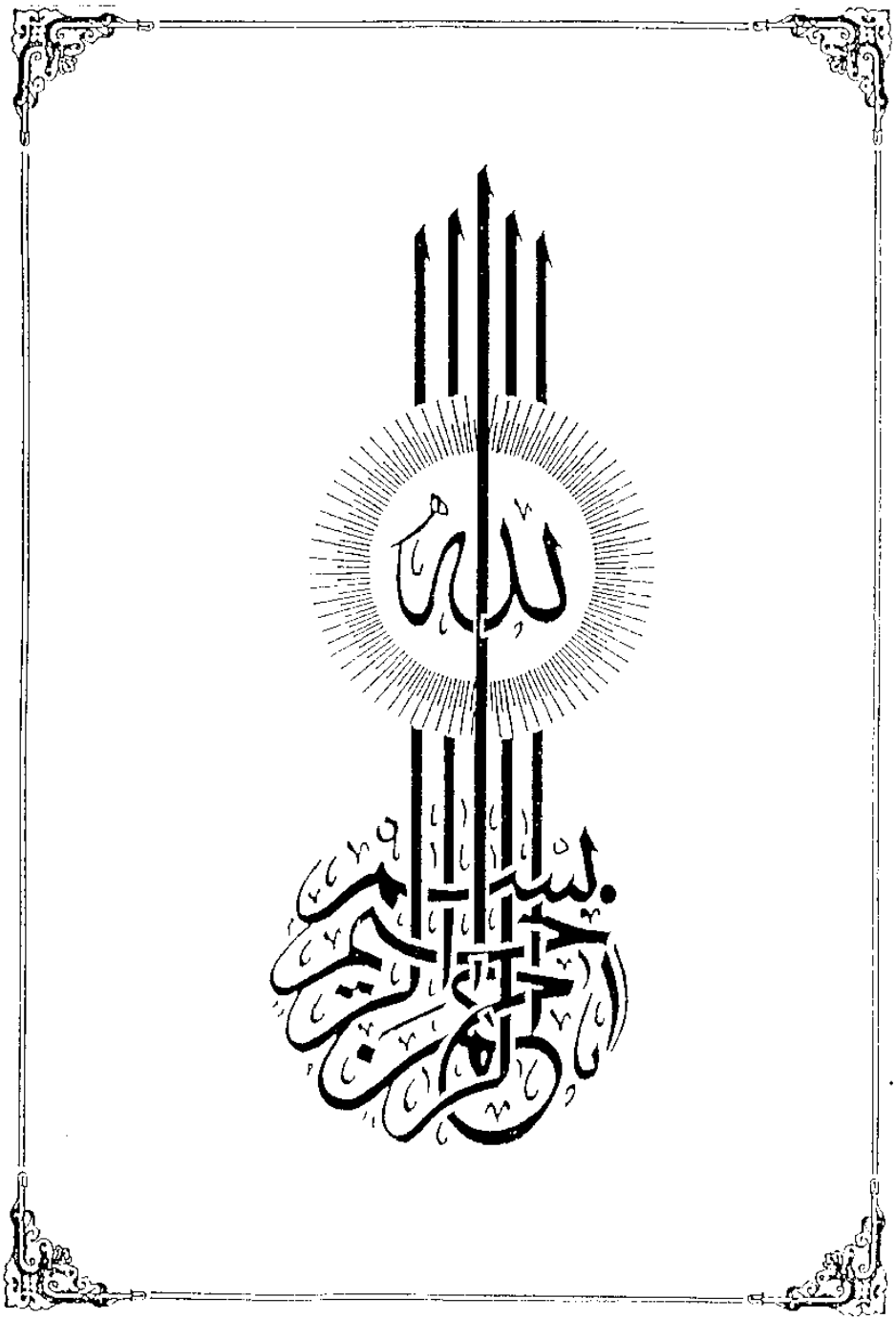
C O N T E N T S



A C K N O W L E D G E M E N T

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SECTION I

INTRODUCTION AND AIM OF WORK

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The ovary is a target of a variety of tumours which represent 10-20% of all female genital tract neoplasms.

It is known that microscopic examination of material obtained from ovarian tumours is by far the most accurate method in the diagnosis of such neoplasms (Novak and Woodruff, 1979).

According to Murphy and Beamer (1980) for more than ten years analytical techniques and tools have been available for the measurement of hormones induced by ovarian tumorigenesis. They revealed that there are no enough knowledge about what populations of the women are at risk for ovarian tumours.

Gold and Josimovich (1980) stated that the gynecological tumours of the ovary and placenta have little knowledge upon their hormonal level in the blood.

In our work we will study the pathology of different types of the ovarian tumours with special stress upon their hormonal level pre- and post-operative in the blood by using Radio Immuno Assay method and by using special stains to confirm the diagosis as well as the misdiagnosed ovarian tumours.

SECTION II

REVIEW OF LITERATURE

EMBRYOLOGY OF THE OVARIES

The ovary arise as a ridge like thickening (Gonadal or Germinal ridges) which bulge from the surface of the caelomic cavity into the ridges, one on each of the midline between the dorsal mesentry mesonephros. It is now accepted that the primordial germ cells arise in the yolk sac endoderm and migrate into the indifferent gonad. Once settled in the gonad the primordial germ cells begin a series of proliferative cycles which ultimately result in their differentiation as mature male or female gametes (Patten and Carlson, 1974).

According to Hamilton and Mossman (1972) the primordial germ cells are changed to the female type in the late somite stages. Here they come to be situated in the superficial part or future cortex of the ovarian ridge, often in close contact with the covering caelomic or germinal epithelium. The deeper part of the ridge will become the ovarian medulla. The small groups of cells resulting from the fragmentation of the sex cords become grouped to form the primordial ovarian follicles. The remenants of the sex cords fragmentation is called rete ovarii which formed in the medulla.

ANATOMY OF THE OVARIES

The ovary is ovoid in shape, measures 3 cm long, 1.5 cm wide and 1 cm thick. It projects into the pelvic cavity, attached to the posterior leaf of the broad ligament by double folds of peritoneum called the mesovarium which is attached equatorially around the ovary. It lies on the peritoneum of the wall of the pelvis in the angle between the internal and external iliac vessels on the obturator nerve (Last, 1978).

The arterial blood supply of the ovary is the ovarian artery which arise from the aorta at the level of the first lumbar vertebra. It crosses the external iliac vessels about 1 cm infront of the [illegible] to enter the suspensory ligament of the ovary (Basmaj[illegible]

The ovarian vein drains into the inferior cava on the right side and into the left renal vein on the left side (Basmajian, 1979).

The ovarian lymphatics follow the ovarian artery and drain into the para-aortic nodes at the level of the first lumbar vertebra (Basmajian, 1979).

The nerve supply of the ovary are sympathetic nerve fibres arising from the pre-aortic plexus which is distributed along the ovarian arteries. Further contributions of fibres pass to the ovarian arteries from the inferior mesenteric plexus (Basmajian, 1979).

HISTOLOGY OF THE OVARIES

Each ovary consists of a cortex and a medulla. The surface of the cortex is covered with a single layer of epithelium, which is cuboidal in young women, but later in life it becomes flattened over parts of the ovary. The connective tissue of the cortex is called its stroma. It consists of spindle shaped cells, that in most respects resemble fibroblasts, and intercellular substances. Both the cells and fibres run in various directions. The cortical layer immediately beneath the epithelium differs from the rest of the cortex in having a higher proportion of intercellular substance and its cells and bundles of fibres are arranged more or less parallel to the surface, this layer is called tunica albuginea (Ham and Cormack, 1979).

The medulla is small as compared to the cortex and its connective tissue is loosely arranged. It differs from the cortex in containing more elastic fibres, some smooth muscle cells, spiral arteries and convoluted veins, which may be so large. There are small blood vessels that extend from the medulla to the cortex (Ham and Cormack, 1979).

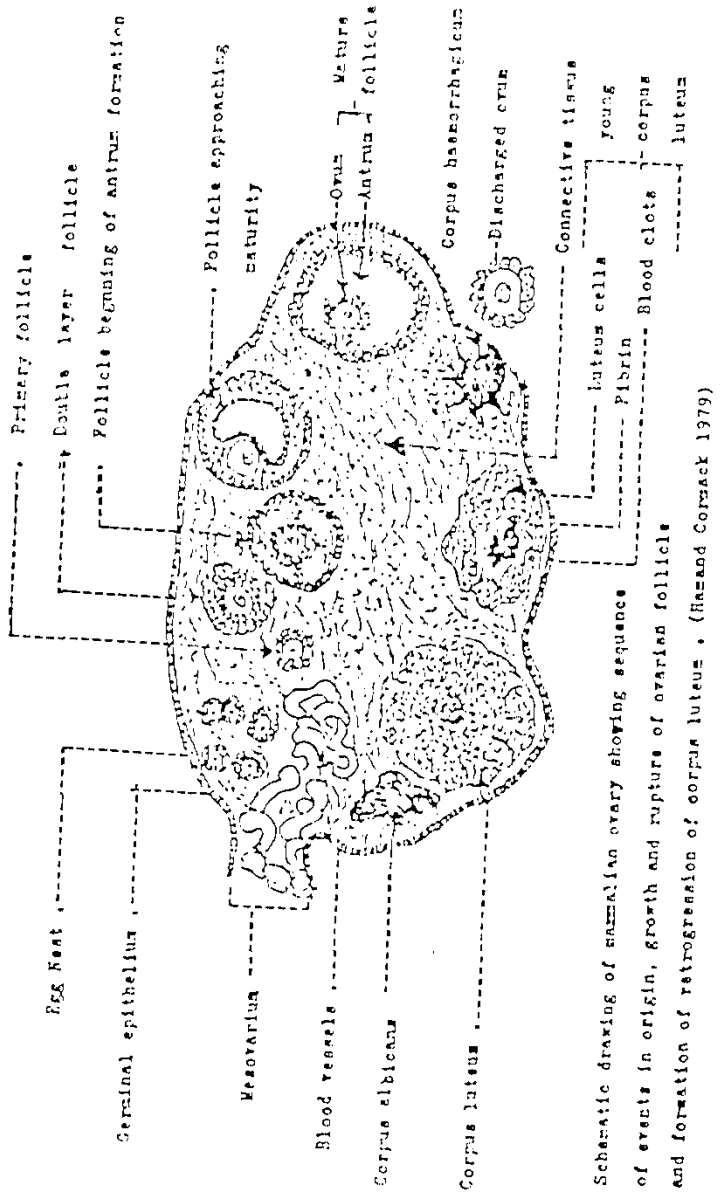
Lesson and Lesson (1976) showed that each ovarian follicle consists of an immature ovum surrounded by epithelial cells. The immature ovum or oogonium is spheroidal

cell with a large vesicular nucleus and a prominent nucleolus. The cytoplasm is opaque and finely granular. A thin basal lamina separates the follicle from the ovarian stroma. The progressive development of follicle that occurs after pubrty, is characterised by growth and differentiation of the ovum, proliferation of follicular cells, the formation of liquor fluid and the development of a connective tissue capsule from the surrounding stroma. As the follicle reaches maturity there is increased secretion of watery liquor more than formed previously and increase of the follicular size with formation of the corona radiata and is termed pre-ovulatory follicle. The follicle covered with thinned cortex, ruptures at the stigma and the follicular fluid oozes out into the peritoneal cavity. The ovum which is surrounded by cells of the corona radiata is torn away and discharged with the liquor. This process is called ovulation. The ovum which is released at ovulation is immature. It passes through a series of nuclear changes which reduce the number of the chromosomes to one-half the somatic number (maturation).

According to Langley (1980) the corpus luteum, after ovulation, blood and serious fluid fill the collapsed follicle and a clot forms. The clot, the corpus hemorrhagicum, is surrounded by the remaining cells of the stratum

granulosum, which invade and gradually reabsorb it. The granulosal cells enlarge and arrange themselves into cords of cells which assist in transforming the collapsed follicle into the corpus luteum (yellow body). If pregnancy does not occur, the corpus luteum reaches its maximum development in about two weeks and degenerates into a white fibrous scar, the corpus albicans (white body). If pregnancy occurs, the corpus luteum continuous to grow and reaches its maximum development in the second month of gestation, after which it recides until child-birth, when it rapidly becomes a corpus albicans.

Diagram I



Schematic drawing of mammalian ovary showing sequence of events in origin, growth and rupture of ovarian follicle and formation of retrogression of corpus luteus . (Hafez and Cormack 1979)