EVALUATION OF THE DIAGNOSTIC VALUE OF NEEDLE ASPIRATION CYTOLOGY IN OVARIAN LESIONS

Thesis submitted by

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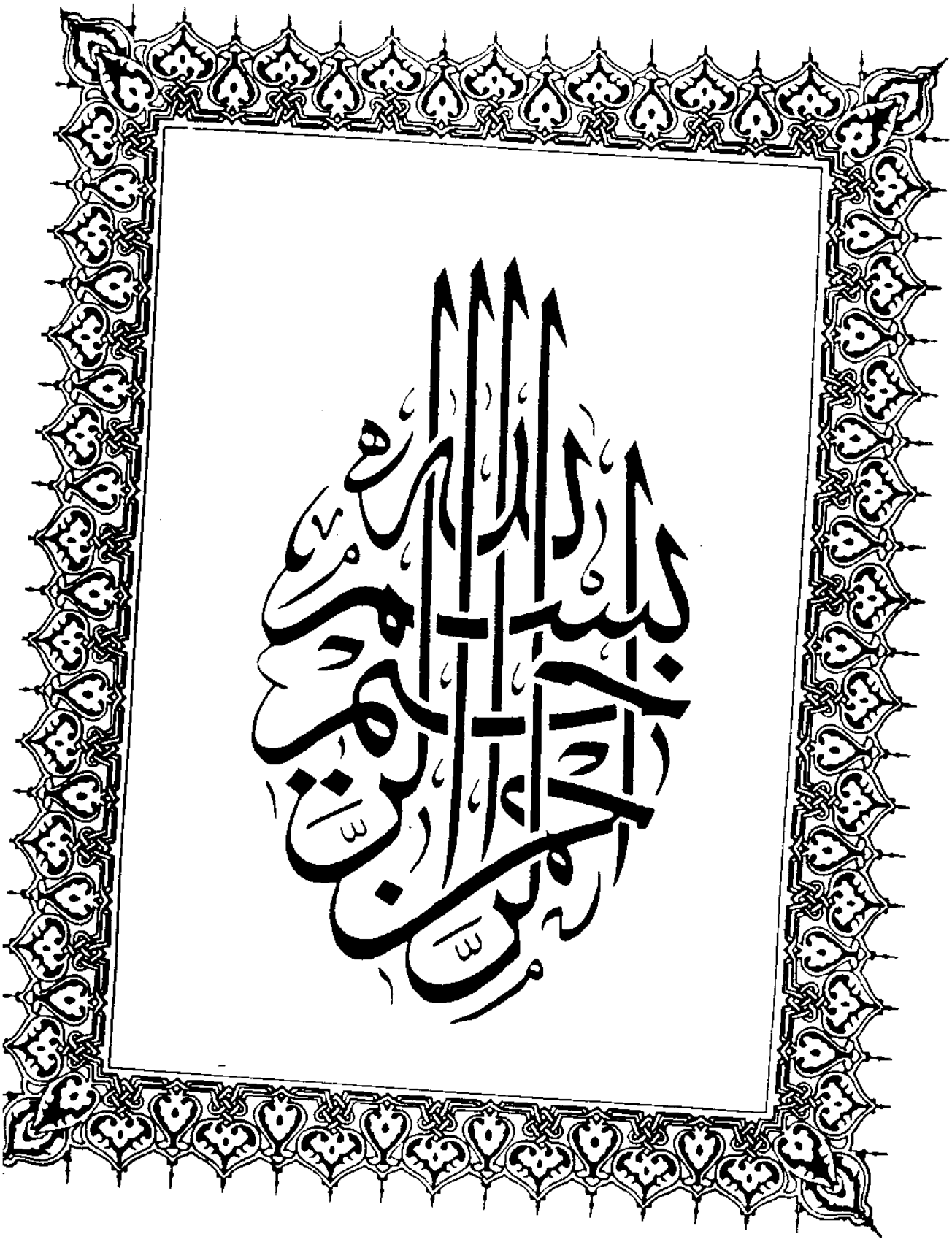

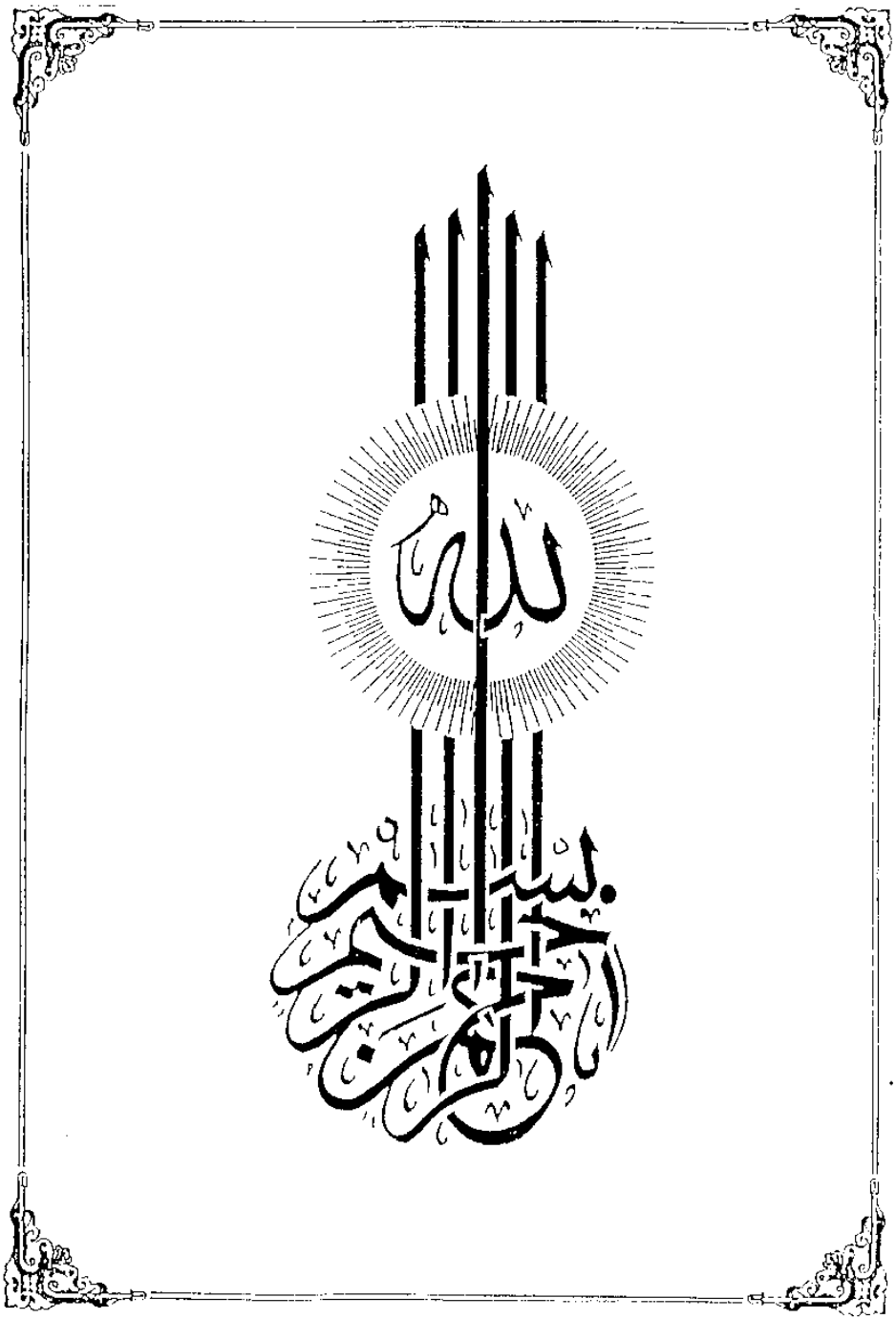

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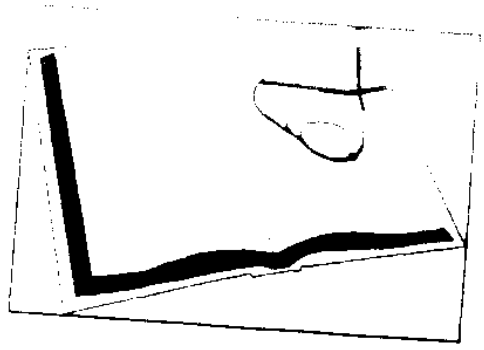


INTRODUCTION AND AIM OF THE WORK

INTRODUCTION

The detection of ovarian malignancy in its early stages is used to be a major diagnostic problem, this is due to the fact, that the ovary is not accessible for clinical examination, and also its symptoms develop late in the course of the disease.

In a continuous effort to reduce the mortality rate from carcinoma of the ovary, researches were directed towards its early detection. Approximately 23% of gynaecological malignancy are of ovarian origin (Disala and Creasman, 1984). Also ovarian malignancy account for 47% of gynaecological malignancies mortality (Popkin, 1979), this is mainly due to the fact that at the time of diagnosis more than 60% of cases have an extragenital metastasis.

Ranny and Ahmed (1979) reported that despite of introduction of better radiotherapy technique and newer cytotoxic agents, the over all five years survival rate in cases with ovarian malignancies has not changed during the last 20 years and remains approximately 30-35%. This poor survival rate is attributed to late diagnosis. So the early diagnosis of ovarian malignancies remain unsolved and a great clinical problem.

Diagnostic cytology, a science that evolved over the last 50 years, began as a simple screening test, is now one of the most valuable diagnostic techniques.

Its widespread application bega n in gynaecology, and by its means, valuable results have been approached.

Wagman and Braon (1971) described the cytology of ovarian structure by means of scrapings made from the ovarian surface during laparotomy.

Kjellegren and Angstrom (1971) found that aspirates from ovarian carcinoma are, as a rule, richer in cells than aspirates from benign epithelial tumours. The accuracy of diagnosis of malignancy was about 92%.

Mintz and De Brux (1974) reported experience with aspiration biopsy of ovarian cystic tumours during laparoscopy.

Koss (1982) mentioned that aspiration biopsy can provide material for cytological diagnosis without excessive discomfort to the patient; consequently it has provided an opportunity for the study of neoplastic and non neoplastic diseases of the ovary, as well as providing information in cases of sterility and ovarian dysfunction.

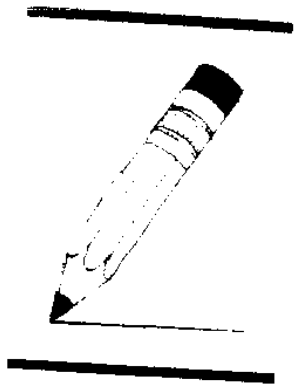
AIM OF THE WORK

Conflicting views and controversal results were reported concerning the accuracy of diagnosing of ovarian lesion by the use of aspiration cytology technique. So, the first objective of the present study is to evaluate the possible complications that may accompany the use of this technique.

The second objective of this study is to evaluate the possibility of differentiating between functional, benign and malignant tumours of the ovary.

The third objective of this study is to evaluate the accuracy of differentiating between different types of ovarian tumours.

The last objective of the present study is to confirm the advantages of the use of aspiration cytology in early detection of heterogenous ovarian swellings.



Review of Literature

REVIEW

* Anatomy, histology and embryology of the ovary
* Classification of ovarian tumours
* Screening for ovarian carcinoma
* Antigens associated with ovarian tumours
* Sonographic associated evaluation of the ovary and its related disorders
* Technique of aspiration cytology
* Cytology of normal ovarian structure, non-neoplastic and neoplastic lesions of the ovary
* Interpretation of cytological specimens.

Surgical anatomy of the ovary

The human ovaries are symmetrical ovoid paired organs, normally measuring 2 x 0.5 x 5 cm in infants and 3 x 2 x 1 cm in adults. They enlarge during pregnacny and shrink somewhat in the post-menopausal period. They are smooth surfaced, but irregularly contoured. This is due to the presence of developing follicles, ovulatory stigmata, and corpora lutea.

In the non-parous adult women, each ovary lies in a depression at the side wall of the pelvis in the angle between the internal and external iliac vessels. It is attached to the postero-superior surface of the broad ligament by a double fold of peritoneum which is called the "meso-ovarium". The latter is attached equatorially around the ovary, but does not envolope it by peritneoum.

Each ovary is slung medially to the corner of the uterus by the ligament of the ovary. This is a cord of fibrous tissue and smooth muscle envoloped by the broad ligament. It is continuous with the round ligament. It represents the remnants of the gubernaculum. Laterally, there is a second fold of peritoneum, the suspensory ligament, which contains the ovarian vessels, lymphatics, and nerves. It crosses the external iliac vessels to become continuous with the peritoneum on the psoas muscle

continuous with the peritoneum on the psoas muscle (Zaloudek, 1987).

The principal blood supply to the ovary is the ovarian artery, arising from the abdominal aorta immediately below the renal artery at the level of the second lumbar vertebra. This vessel runs retro-peritoneally to cross the ureter obliquely on the psoas muscle. It intersects the pelvic brim and enters the infudibulopelvic fold at the lateral extremity of the uterine broad ligament. It gives off a branch to the fallopian tube which runs medially between the two layers of the broad ligament below the tube to anastomose with the uterine artery. Large tortuous vessels from the region of this anastomosis enter the ovarian hilus and branch profusely though the medulla. Their tortuosity is thought to be an adaptation for potential pregnancy, at the cortico-medullary junction. They form a plexus from which smaller arterioles penetrate radially between the follicles, into the cortex.

There are venules accompanying the arterioles within the ovary. In the medulla they are also large and tortuous. A venous plexus formed in the meso-ovarium and infundibulo-pelvic fold (the pampiniform plexus) and drain into a pair of ovarian veins. They accompany the ovarian artery and usually fuse before their termination. The right ovarian

vein joins the inferior vena cava; that on the left side enters the left renal vein.

The ovarian lymphatics drain principally to the para-aortic nodes along side the origin of the ovarian vessels, just below the ligament to the external, internal and common iliac group of nodes.

The autonomic nerve supply of the ovary is derived from the renal, aortic and hypogastric plexuses and accompanies the ovarian vessels. However, because the ovary lies against the obturator nerve in the pelvis, ovarian pain is often referred along the cutaneous distribution of this nerve (the inner side of the thigh down to the knee).

The ovary in its normal position can just be palpated through the lateral fornix of the vagina by the tip of the examining finger. It is overlaid by the loops of the sigmoid colon and on the left side and the small bowel on the right side, lifts the ovaries up above the true pelvis. This process is facilitated by softening of ligaments and the uncoiling of the ovarian blood vessels. The ovary is felt softer owing to increased vascularity and oedema. One potential complication of this physiological relocation of the adnexa is an increased risk of torsion of the ovary and the tube (Williams and Warwick, 1989).

Histology

Ham (1987) reported that the ovary consists of a cortex and medulla. The surface of the cortex is covered by a single layer of epithelium which has been probably incorrectly, termed "germinal epithelium". In young women this is cuboidal epithelim, but later in life, it becomes flattened over parts of the ovary, though, it remains cuboidal over the pits.

The cortical connective tissue consists of spindle - shaped cells and intracellular substance. Most of the stroma of the cortex contains high proportion of cells to inter-cellular substance, hence in section it appears heavily nucleated. These cells together with their intracellular fibers are arranged in a characteristic swirly manner.

However, the layer of the cortex immediately beneath the epithelium differs from the bulk of the stroma in that it has a higher proportion of the inter-cellular substance. Its fibres and cells are both arranged parallel to the surface. This layer of cortex immediately beneath the epithelium is called "tunica albuginea". The white appearance that its name suggests, is due to its great content of inter-cellular substance and lack of vascularity. It becomes increasingly a vascular with advancement of age.