CYTOLOGY OF THE PELVIC PERITONEAL FLUID IN NORMAL AND ABNORMAL UTERINE BLEEDING

THESIS

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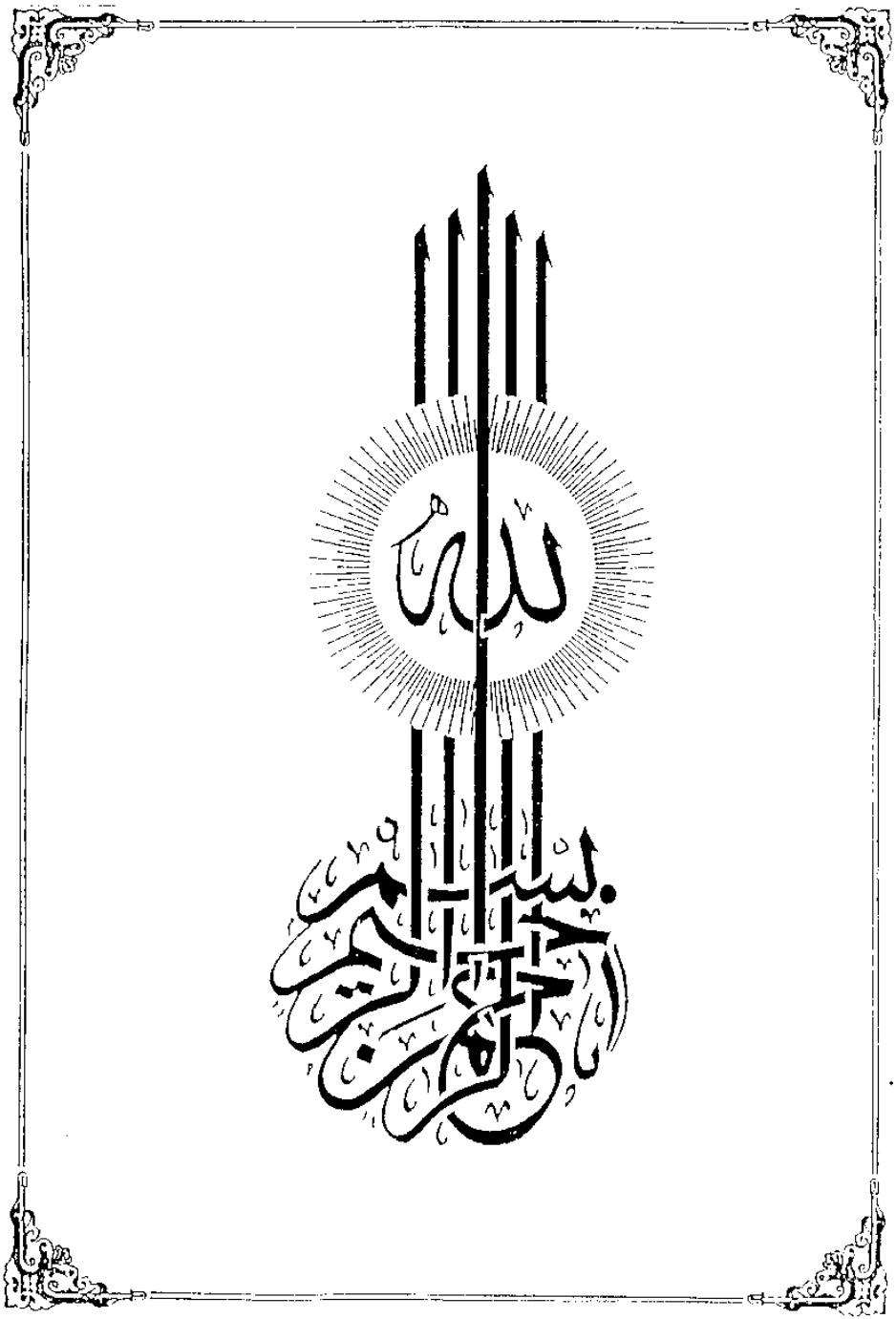

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AIM OF THE WORK

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This study aims at :-

1)Verifying and substantiating the theory suggested by Sampson about the histogenesis of endometriosis from regurgitated endometrial elements via the fallopian tube.

2)Studying the effect of different phases of the menstrual cycle on the cytology of the pelvic peritoneal fluid.

3)Studying the effect of dysfunctional perimenopausal bleeding on the cellular patterns of the pelvic peritoneal fluid.

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INTRODUCTION

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I N T R O D U C T I O N

The peritoneum is the largest serous membrane in the body. Its free surface is smooth and is kept moist by a small amount of peritoneal fluid.

The peritoneum consists of loose connective tissue which is covered by mesothelium. The mesothelium is a term applied to a form of simple squamous epithelium, which lines the serous body cavities. It is mesodermal in origin, and is composed of a single layer of flattened interlocking polygonal cells termed mesothelial cells.

Adjacent mesothelial cells are joined by junctional complexes which allow the passage of macrophages to and from the underlying connective tissue.

The peritoneal fluid is a tissue fluid which lubricates the surface membranes and permits the viscera to slide freely on each other. It is found mainly in the cul-de-sac of Douglas, the right lower quadrant, the area of small bowel mesentry, the left lower quadrant along the superior border of the sigmoid and lateral to the ascending and descending colon. The

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peritoneal fluid is normally a few millilitres. However, there is no sharp line between the normal and abnormal peritoneal fluid volume (Warwick, 1973).

The presence of peritoneal fluid in normal women was first observed by Novak in 1922 as a clear colourless relatively cellular fluid. Peritoneal fluid specimens obtained from different mammalian species provide basic data to study the cellular response of serous abdominal fluid in health and disease (Davis and McGowan, 1968).

The normal cytology of the pelvic peritoneal fluid is rleated to age, phase of the menstrual cycle, hormonal therapy, pregnancy and the presence of inflammation (McGowan and Davis, 1969 & 1970).

Although Von Rokitansky probably authored the first definite reference to endometriosis in 1860, it was not until Sampson's classic paper in 1921, that interest in the subject became widespread (Ridley, 1968).

The story of endometriosis comprises one of the most fascintating chapters in the history of medicine. Its aetiology or histogenesis has been the subject of one of the medicine's greatest debates which is not yet resolved (Ridley, 1968).

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Sampson (1927), suggested that endometrial tissue could be transplanted from the uterus to the peritoneal cavity by retrograde menstruation.

The phenomenon of retrograde menstruation with reflux of endometrial elements into the peritoneal cavity has been shown to be a very common physiologic event in all menstruating women who have patent fallopian tubes (Portuondo, et al., 1982).

The study of the cytology of the peritoneal fluid seems to be a wide field for research, in which many subjects have not yet been studied, including the influence of dysfunctional uterine bleeding on the cytodifferential count of the pelvic peritoneal fluid.

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REVIEW OF LITERATURE

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REVIEW OF LITERATURE

THE PERITONEAL FLUID

The peritoneal fluid is a tissue fluid which lubricates the surface membranes and permits the viscera to slide freely over each other. Moreover, it may take part in facilitating ovum transport from the ovary to the oviducts (Hartveit and Thunold, 1966).

The cul-de-sac of Douglas, being the lowermost point of the peritoneal cavity, will serve as a reservoir for the accumulation of fluids from tubal secretion, follicular rupture, ovarian exudation and peritoneal exudation (Koninckx, et al., 1980).

Also, the Douglas pouch will be a site of accumulation of all the cellular elements present in the peritoneal cavity. In the absence of peritoneal irritation, the Douglas pouch contains only a small amount of clear peritoneal fluid which varies in the different physiological states (Maillet, et al., 1978).

Origin of the fluid element:

Theoritically, the peritoneal fluid can be formed by oviductal secretion or by peritoneal or ovarian exudation.

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The fallopian tubes make only a limited contribution to the formation of the peritoneal fluid. Lippes, et al. (1972), collected human tubal fluid, and found a daily production of one to two millilitres.

Koninckx, et al. (1980), found normal amounts of peritoneal fluid in women with absent or distally occluded fallopian tubes. They suggested that the peritoneal fluid is not predominantly a tubal secretion product. Moreover, they found that the presence of pelvic varicose veins does not affect the volume of peritoneal fluid. They suggested that the fluid is not predominantly formed as a peritoneal exudate.

Donnez, et al.,(1982), suggested that a hormonally active ovary is essential for the secretion of peritoneal fluid. They observed exudation from the ovary during laparoscopy performed shortly after ovulation. They denied the hypothesis that peritoneal fluid is formed essentially by peritoneal exudation. They suggested that intrafollicular oestrogen regulates the exchange between the ovary and the peritoneal cavity by provoking an increase in the capillary permeability.

On the other hand, Koninckx, et al. (1980), found that the peritoneal fluid volume in women with

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regular menstrual cycle increases simultaneously with follicular development, and is most abundant after the formation of the corpus luteum. In women with suppressed ovarian function, such as those taking the oral contraceptives or taking a daily dose of five mg lynestrenol, and the postmenopausal women, they found only a small amount of the peritoneal fluid. They noted that the presence or absence of an ovulation stigma does not influence the volume of peritoneal fluid. They concluded that the escape of fluid from the ovarian ovulation wound is not a major component to the formation of peritoneal fluid, and that this fluid is formed by exudation from the surface of an active ovary.

Maathius, et al. (1978), said that the ovarian origin of the peritoneal fluid is strongly supported by the presence of higher concentrations of ovarian steroids in the peritoneal fluid more than in the plasma.

The control of ovarian exudation:

Frederici (1967), demonstrated that oestrogenic stimuli increase the capillary permeability in the steroid hormone target organs.

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Schenker and Weinstein (1978), pointed out that excessive oestrogens can cause an increase in the capillary permeability of the ovarian vessels. The ovarian exudation in the follicular phase may be under oestrogenic control, since the peritoneal fluid volume correlates well with the plasma oestrogen concentrations.

However, Fowler, et al.,(1978), showed that the levels of oestrogens in the follicular fluid were much higher than in the plasma, so that it can be concluded that the intra-ovarian oestrogen, rather than the plasma oestrogen concentration, is the regulator of ovarian exudation.

Also, Koninckx, et al. (1980), demonstrated that women taking a combination oral contraceptive pill containing 50 Ug of ethinyl oestradiol have low peritoneal fluid volumes, and they concluded that the ovarian vascular permeability might be regulated by the intra-ovarian oestrogen concentration. However, during the follicular phase, the capillary permeability might also be regulated by other substances like prostaglandins.

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