CYTOPATHOLOGY OF THE INFLAMMED CERVIX IN EGYPTIAN FEMALES IN CORRELATION WITH COLPOSCOPY

Thesis
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By

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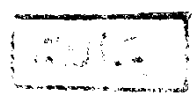

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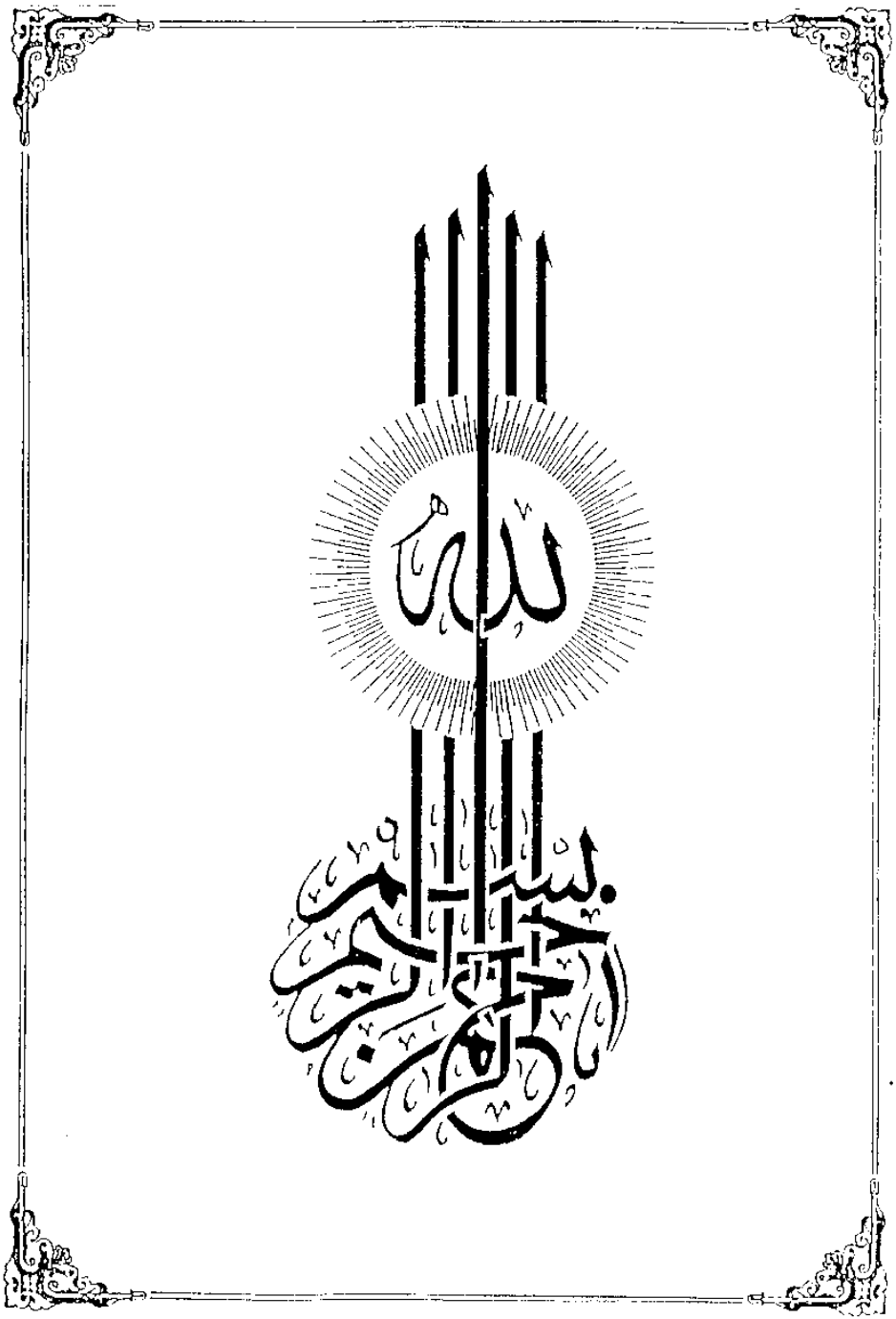

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Introduction
&
Aim of the work

INTRODUCTION AND AIM OF THE WORK

Inflammatory cervical lesions are of interest to the clinician and the biologist. Moreover, as the cervix is a frequent site of sexually transmitted disease, the epidemiologist is also attracted. The interest has been directed primarily at the correlation which exists between the frequency of these diseases and cervical carcinoma (Beral, 1974).

The nature of this association is not clear and though dysplasia may occur with greater frequency in such cervices, the atypical changes may be independent of previous inflammatory epithelial damage (Slavin, 1976).

The possible relation between the types of infections and their relation to neoplasia as carcinoma of the cervix is considered nowadays as a sexually transmitted disease.

In recent years, cervical investigative techniques have advanced greatly. Cytopathology, as well as colposcopy, with subsequent histopathology have provided a better identification for the cervix in health or disease. Better diagnosis of inflammation and neoplasia is achieved through these techniques which are gradually replacing clinical diagnosis per-se.

The aim of our work is to study the different types of inflammatory cervical lesions. A correlative study is done to evaluate the accuracy of cytologic, colposcopic, and histoplathologic findings in detecting different types of inflammation of the uterine cervix.

Review of literature

CHAPTER ONE

Embryology of the cervix

According to Slavin (1976), the Fallopian tubes, body of the uterus, cervix and the upper-fourth of the vagina develop from the mullerian ducts. However, the lower one fourth of the vagina develops from the urogenital sinus which arises from the lower end of the endodermal duct (the gut). The cervix and the upper three-fourth of the vagina are initially lined by columnar epithelium of mullerian origin, while the lower one fourth of the vagina which arises from the urogenital sinus is lined by stratified squamous epithelium. By the fifth intrauterine month, the stratified squamous epithelium moves headwards and replaces the columnar epithelium, so that the whole vagina becomes lined by stratified epithelium, and the squamocolumnar junction moves to lie at a point across the vaginal cervix. In 4% of the women the squamocolumnar junction lies at the fornices.

During late intrauterine life and mainly during adolescence and first pregnancy, the original columnar epithelium which lies on the vaginal cervix is transformed into stratified squamous epithelium, thus a new squamocolumnar junction develops and usually lies at the external os. The area of the vaginal cervix which is covered by this metaplastic epithelium is called the transformation zone (T.Z.). It is believed that

the vaginal acidity which results from ovarian hormones is the main stimulus for this physiological metaplasia.

The adult cervix is covered by three types of epithelium:

1- Original squamous epithelium.

2- Original columnar epithelium.

3- Metaplastic squamous epithelium.

The clinical importance of the transformation zone lies in the fact that the precancerous lesion and squamous cervical carcinoma develop from the epithelium of this zone and then spread to adjacent epithelium. Expansion appears to be principally mechanical and not to involve the transformation of adjacent cells (Richart, 1969).

It is believed that mutation might be induced in the epithelium during the process of squamous metaplasia. This will lead to a new atypical metaplastic epithelium with a neoplastic potential (Coppelson and Reid, 1975).

Anatomy of the cervix

The cervix is the lower part of the uterus, and is divided from the upper part, or corpus, by a fibromuscular junction, usually referred to as the internal os, which marks the junction between the muscular corpus and the fibrous cervix (Danforth, 1947 & 1954, Danforth and Chapman, 1950).

The uterus therefore has a form of sphincter at this point, so that any weakness in this region, either congenital or traumatic, is important as it may lead to incompetence during pregnancy, resulting in a mid trimester abortion.

The cervix projects through the anterior wall of the vagina at the vaginal vault, as a result of which there is an upper supravaginal portion and a lower vaginal portion approximately of the same length. The vaginal mucosa is reflected around the front, sides and back of the cervix forming the vaginal fornices. The cervix is basically cylindrical, 3 cm in length and about 2.5 cm in diameter in the nulligravida . In the multiparous women, the cervix is larger and more bulbous with an external os rather horizontal than circular.

The vaginal cervix has both an anterior lip and a posterior lip. The anterior lip is shorter than the posterior lip due to the oblique line of reflection of the vaginal mucosa.

The endocervical canal joins the uterine cavity with the vagina; it is continuous with the uterine cavity above at the level of the internal os, and with the vagina below at the level of the external os. The canal is fusiform in shape and about 3 cm long. It is flattened from front to back and measures 7 mm at its widest point.

When the cervix is in its normal position the anterior lip occupies a position lower in the vagina, as a result of which both lips and the external os are in contact with the posterior vaginal wall.

HISTOPATHOLOGY OF THE ADULT CERVIX

Novack and Woodruff (1979) stated that the uterine cervix is relatively the narrow inferior segment of the uterus. It is differentiated into two segments, namely the portio or ectocervix, that area covered by stratified squamous epithelium, and the endocervix, lined by high columnar mucous secreting elements.

I- The pars vaginalis : protruding into the vagina is lined by stratified squamous non-Keratinizing epithelium similar to that lining the vagina. The stratified epithelium normally does not demonstrate cornification, although if the cervix is prolapsed , it may become Keratinized and skin like.

According to Cartier (1977) the squamous epithelium of the ectocervix measures about 0.5 mm thick. It is separated from the underlying connective tissue by a network of reticulin fibers which consitutes the reticular basement membrane. The deep surface of the epithelium is deformed in places by the stromal papillae derived from the connective tissue, which form glove shaped projections towards the surface of the epithelium without extending beyond its deep third. The epithelium includes 15 to 20 layers of cells, the superficial of which undergoes maturation from the deep layers towards the surface, characterised by increase in the size of the cell and reduction in the volume of the nucleus. One may distin-

guish five successive layers.

1- The internal basal layer (L_1) is formed by a single row of cells of small size and cubical shape situated close one to another, forming a pallissade along the basal membrane. Their cytoplasm is not very abundant and is basophilic. Their nucleus has a finely granular chromatin and a clearly visible nucleolus.

2- The parabasal layer (L_2) is formed by 3 or 4 rows of cells of the same appearance but a little larger. In the deeper layers of cells, just above layer L_1, mitosis may be found.

3- The intermediate layer (L_3) is formed by 5 or 6 rows of cells which are larger and polyhedral, separated by intercellular space. Across this space, the cells are linked together by intercellular bridges, clearly visible under the light microscope, the structure of which is shown by the electron microscope; each cell gives off expansions from the neighbouring cells. The cells of this layer have an abundant clear cytoplasm which contains a large quantity of glycogen. On histological sections, the glycogen may be identified by iodine.

4- The superficial layer (L_4) is formed by 6 or 8 rows of cells which become progressively flatter towards the

surface. Their membrane is thick, their nucleus is small and their cytoplasm is almost entirely filled with glycogen.

5- The desquamation layer(L_5) consists of cells which become detached from the surface of the mucosa. They desquamate alone and keep their nucleus. This is the fundamental difference between the cervico-vaginal mucosa and epidermis. The cells of this layer may be found in the vaginal smears.

II- Endocervical epithelium : Cartier (1977) had also described the columnar epithelium of the endocervix. It consists of a single layer of cylindrical cells with a round basal nucleus and an apical pole laden with mucous. The cytoplasm, because of its richness in mucous, shows either a clear neutral or a slightly basophilic reaction. The mucin can be demonstrated in histological sections by staining with alcian blue.

Apart from the mucous secreting cells, a few ciliated cells may be found. Under the continuous layer of the columnar cells, smaller flattened cells with scarcely visible cytoplasm may be found in places. These are "the reserve cells" from which the mucosa may regenerate and to which has been attributed an important role in the histogenesis of dysplasia.