IMMUNOGLOBULIN A IN THE CERVICAL MUCUS OF TRICHOMONAS VAGINALIS INFECTED WOMEN IN EGYPT

THESIS

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By

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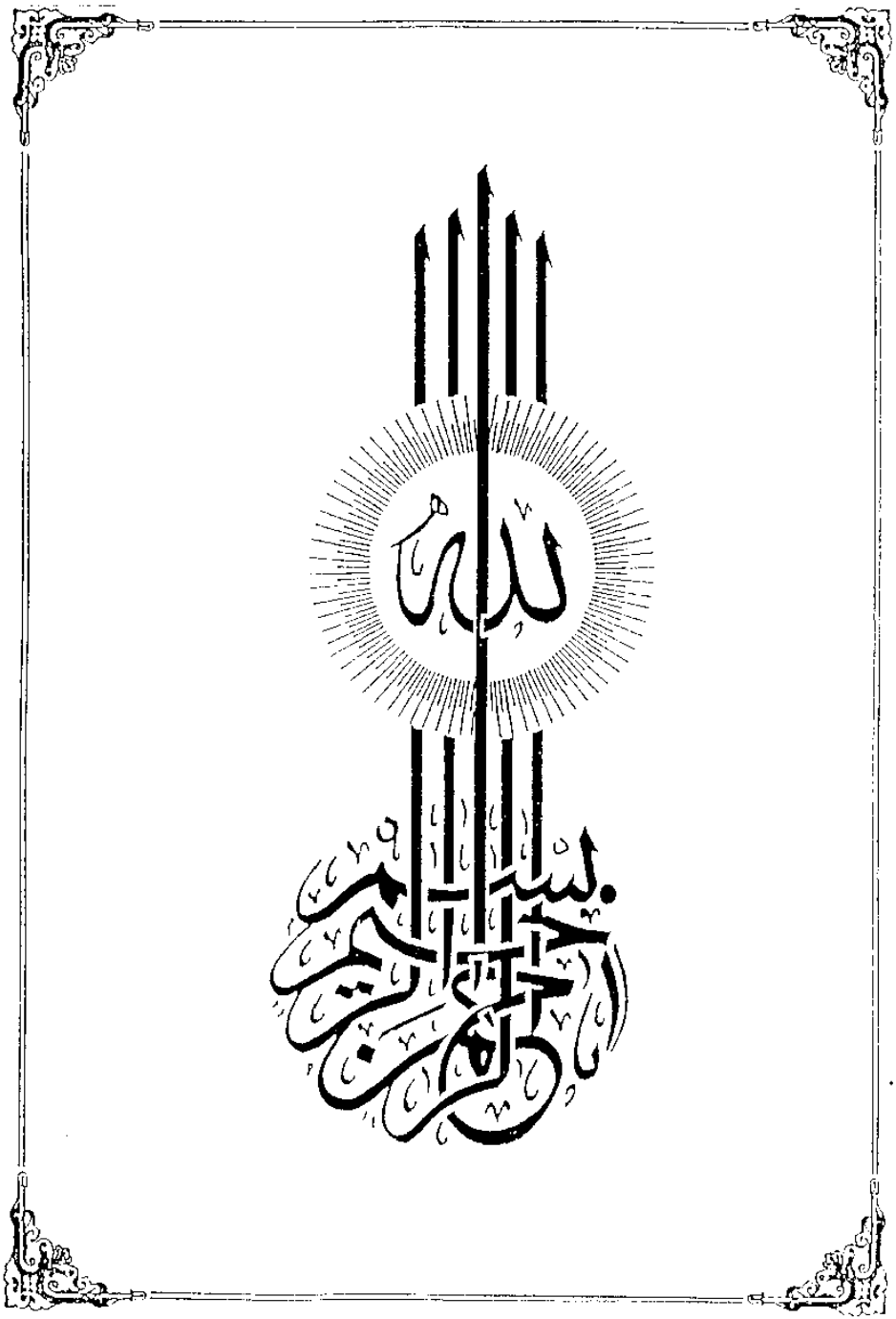

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INTRODUCTION

Trichomonas vaginalis was discovered for the first time by Donnè(1836);when he visualized motile microorganisms in the vaginal discharge of women presenting with leukorrhea and genital irritation. He described it as a rounded organism, larger than a red blood cell, with a long row of fine cilia on its side, and posteriorly the body ended indeterminately. Later on it was described as the largest flagellated parasite occuring in man.

In females, the parasite usually affected the vagina, cervix, urethra, urinary bladder, Skene's glands and occasionally Bartholin's glands. But the organisms do not as a rule ascend into the uterine cavity or reach the Fallopian tubes (Catterall, 1972; Jeffcoate, 1982), and parasitaemia does not occur (Ackers, 1975). Naguib et al. (1966) believed that the parasite was a harmless commensal and not associated with symptoms.

In males, T.Vaginalis was found to affect the urethra, prostate, seminal vesicle, epididymes, bladder and kidneys causing urethritis, prostatitis and vesiculitis (Catterall, 1972). Symptomless male carriers have been recorded (Jeffcoate, 1982).

Trichomoniasis was considered as a venereal disease (Trusell, 1947; Catterall and Nicol, 1960; Morag, 1976; Anthony and Stephen, 1980; and Holbrook, 1982) as the main method of transmission is by sexual intercourse. Some authors detected the parasite in new borns, young girls and women of the same family. This raised the possibility of extrasexual transmission by contaminated articles, such as contaminated domestic towels, bed linen and improperly sterilized surgical instruments such as specula (Jeffcoate, 1982).

In the female reproductive tract, local antibody production was first investigated by Pierce (1947) who showed that vaginal secretions contained a higher titre of antibodies to Trichomonas than serum. The formation of immunoglobulins in the lamina propria of the endocervix in response to specific acute local infection was studied by Chipperfield and Evans (1972), and plasma cells containing IgA, IgG and IgM were identified. Infection by Neisseria gonorrhea, Trichomonas vaginalis and Candida albicans was associated with an increase in IgA producing plasma cells, but in trichomoniasis IgM containing plasma cells were more prominent. Immunoglobulin A in cervical mucus is the secretory IgA which is resistant to proteolysis. This secretory IgA when present on epithelial surfaces appears to possess both virus neutralizing and considerable antibacterial activity, further the coating of the organisms by secretory IgA causes

agglutination thus inhibiting their invasive capacity.

The uterine cervix is biologically similar to the other external secretory glands of the body in that it serves as a barrier - preventing the bacteria of the vagina from entering the sterile uterine cavity. (Hulka and Orman, 1969).

AIM OF THE WORK

The aim of this work is to study the immunoglobulin A in endocervical secretions of *Trichomonas vaginalis* infected women in Egypt.

THE FEMALE CENITAL TRACT

The organs of reproduction of women are classified as external and internal. The external organs and the vagina serve for copulation; the internal organs provide for development and birth of the fetus (Williams, 1980).

External Genitala.

The external organs of female genital tract are commonly designated the vulva, which includes:

Mons pubis, is the fat filled cusion over the anterior surface of the symphysis pubis. After puberty, the skin of mons pubis is covered by curly hair.

Labia majora, which are two rounded folds of adipose tissue covered with skin, extending downward and backward from the mons pubis and merge into the perineum posteriorly, where they join medially to form the posterior commissure.

Labia minora, they are two flat reddish folds, made of connective tissue and covered by stratified squamous epithelium, it converge anteriorly where each divided into two lamellae, the lower two of which fuse to form the frenulum

The PH of the vagina in adult women varies with the level of the vagina, being highest in the upper part because of an admixture of alkalin cervical mucus. Some authorities give the normal range of 3.5 to 4.2, but the generally accepted figures are from 4.0 to 5.5, with an average of 4.5 (Jeffcoate, 1982). The PH of the vagina varies with the time in the menstrual cycle and effects of ovarian hormones, during menstruation the flow of alkaline blood raises the vaginal PH to levels of from 5.8 to 6.8.

The acidity of the vagina is of great importance for it explains the resistance of the mature vagina to pyogenic organisms.

The vagina undergose some changes in different ages, so the vagina of the newborn child is under the influence of oestrogen which has crossed the placenta from the maternal circulation. The epithelium is therefore moderately well developed and contains glycogen, Doderlein's bacilli appear by the third or fourth day when the vaginal acidity approaches that of an adult (PH 4.5 → 7). By 10 - 14 days the oestrogen stimulus is lost and the epithelium atrophies and becomes devoid of glycogen, the PH then rises to approximately 7 and remains at that level until the approach of puberty when, with the onset of full ovarian function. Throughout childhood Doderlein's bacilli are present in small numbers but after puberty they are the predominant organism. During pregnancy the acidity of the vagina is high (PH 3.5 - 4.5). After the menopause the epithelium atrophies and loses its glycogen,

Doderlein's bacilli are found in fewer numbers and the PH rises to a range of 6 - 8. In some women menopausal atrophy is slow to develop, possibly because of oestrogen production by the adrenal or by the cells of ovarian stroma (Joffcoate, 1982).

Vaginal discharge: The vagina of the adolescent and adult woman in the reproductive years is lined by a layer of stratified squamous epithelium 10 to 30 cell thick; the thickness, activity and glycogen content being controlled by variation in the level of circulating oestrogens. Oestrogen act as an enzyme, causing an increase in the RNA content of the cell and the synthesis of protein and glycogen. The glycogen is formed only in the superficial cells. Once these cells have been exfoliated, the glycogen is converted into lactic acid by the lacto-bacilli of Doderlein, which are the normal vaginal inhabitants, the vagina also harbours large numbers of bacteria, mainly Staphylococci and micrococci, corynebacteria, bacteria of faecal origin, aerobic Streptococci, Betahaemolytic Streptococci and vaginal yeast. These bacteria are non pathogenic and are normal vaginal inhabitants (Jones, 1978).

Only in certain circumstances, due to a change in vaginal acidity, epithelial resistance or damage, do the vaginal flora become pathogenic. For example before puberty and after the climacteric, when oestrogen production is low, the vaginal epithelium tend to be inactive and only a few cell layers thick. The cells are of the intermediate or parabasal types,

contain no glycogen and Doderlein's bacilli are absent, so that the PH raises to between 6 to 7. The relatively inactive epithelium of a postclimateric women is prone to infection, whilst the manylayered acid vagina of a young woman is resistant to most pathogens.

The normal vagina is kept moist by a transudate from the vaginal wall and by the secretions of the columnar cells of endocervix. During the menstrual cycle, the quantity of the secretions varies, and is related to the oestrogen production. The peak is reached at ovulation, when a much greater exfoliation of the vaginal epithelial cells occurs, so that some women notice a vaginal discharge only at this time (Jones, 1978).

The amount of vaginal discharge ordinarily present in adults is such that the introitus feels confortably moist but there is not enough to leave more than an occassional stain on underclothes. It is normally increased in:

1. At the time of ovulation
2. During a few days premenstrually when there is increase secretion from all parts of genital tract.
3. During pregnancy
4. During sexual exitement du to Bartholin's glands secretion.

A non blood, non infected vaginal discharge is named leukorrhoea, it can therefore considered largely physiological, it consists mainly of the cervical componant, it contain mucus, epithelial depris, organisms of various kinds, some leucocytes but it never contain more than occassional pus cell. It can stain clothing if not removed by bathes and change the clothing, it causes excoriation and soreness of the vulva, but it never causes pruritus and is never offensive (Jeffcoate, 1982).

Pathological vaginal discharge

An irritant discharge from the vagina often indicates a true vaginitis due to a pathogens, the discharge caused by infection is mucopurulent or frankly purulent, its colour varies from cream to yellow or green, it is often offensive, especially when Coliform bacilli are present as primary or secondary invaders. Its chief microscopic characteristic is the presence of pus cells. The commonest lesions causing a discharge of this kind are as follows:

A) Infection

1) Vulvovaginitis du to infection with the Gonococcus, Trichomonas vaginalis and Candida albicans in the adult and with non specific organisms in the child-hood and old age.
2) Cervicitis, gonococcal or puerperal; secondary infection of an erosion.
3) Endometritis, puerperal, tuberculous or senil.

4) Secondary infection of wounds, abrasions and neoplasms sited in any part of the genital tract.

B) Neoplasms

Any growth which is exposed to the lumen of the gential tract can cause a continuous discharge which is at first white or cream and non offensive. Only when the growth becomes ulcerated and infected, the discharge become purulent, offensive and blood stained. This symptoms are charcteristic of a malignant neoplasm but they are also caused by benign lesion such as cervical polyp and submucous fibroid.

C) Urinary and Faeculent Discharge

The vaginal escape of faeces or urine can be confused with a vaginal discharge.

D) Rarities

These include the intermittent emptying of a hydrosalpinx or ascitic fluid through the Fallopian tubes and uterus (Jeffcoate, 1982).

Diagnosis of the cause of the vaginal discharge:

1) CLINCAL HISTORY

Amount of the discharge is judged by the need to wear a sanitary towel. Onset - Leukorroea has a gradual onset. A sudden onset of discharge nearly always means infection.

Relation to menstruation, ovulation and pregnancy -