MUCOPOLYSACCHARIDE ACTIVITY OF EXFOLIATED VAGINAL CELLS IN INFLAMMATORY AND DYSPLASTIC SMEAR

THESIS

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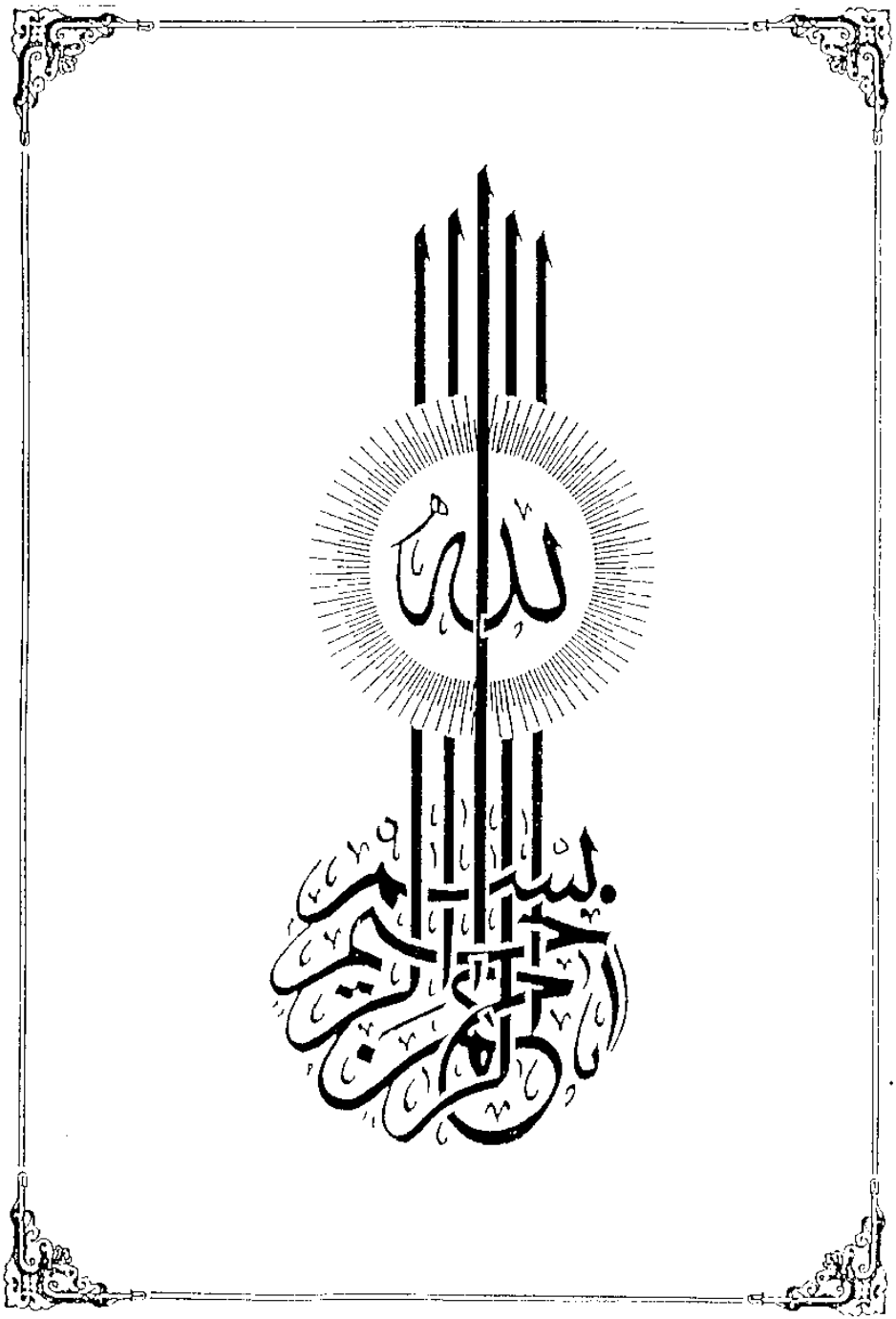

TO MY SISTER LOBNA

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Cramer and Cutler (1974), stated that while the cervix accounted for half of the malignancies in the female genital tract in 1947, it now accounts for less than one-third of the cases. They attributed this decrease in the incidence of cancer cervix to the wide spread use of vaginal cytology and the effort to educate the population. Nevertheless, cancer cervix remains the commonest cancer in the female genital tract.

Jeffcoate (1975), estimated the general incidence of cancer cervix in women aged more than 20 years in the order of 2 per 10,000 per annum.

Mc Gowan (1978), stated that there is no other major cancer in which much is known about the disease pattern, methods to reduce morbidity and eliminate mortality than cancer cervix. They described three ways by which cancer morbidity and mortality could be reduced, namely; prevention, ealier detection and improvements in treatment. Cancer prevention is the goal of cancer etiology, the cervix uteri has many advantages over other sites in the body for the study of carcinogenesis. These derive principally from its accessibility allowing for direct observation and tissue selection for biopsy.

The etiology of cancer cervix is unknown but the

accumulated data suggests that different factors are operative in the genesis of this disease.

Dorn and Cutler (1959), Graham et al. (1960), found that the average prevalence of cancer cervix was higher among the poor members of the population than among the wealthy.

Coppleson et al. (1971), Thomas (1973), and Beral (1974), stated that extensive epidemiological data suggest that cancer cervix might be considered a mildly contagious sexually transmitted disease.

Rotkin (1973), found that women who begin their sexual life in their teens, who have multiple sexual partners and who are multiparous at an early age, are at a greater risk for cancer cervix than women who begin their sexual activity later and have few marital partners.

Ferenczy (1977), believes that the findings of Rotkin suggest a sex-related transfer of a factor or factors triggering the cancerous events. Furthermore, the natural history of the disease suggests that the patient must be exposed to this factor at an early age and that the exposure must be sustained over a long period of time in order to develop the disease.

Gagnon (1950), covering an annual average of 13,000 nuns during a 20-year period, was not able to find a single case of cancer cervix. Towne (1955), reported only six cases in a similar large religious community over a 20-year period.

Maliphant (1949), Barron and Richart (1971), found a relationship between parity and the occurence of cancer cervix not taking into consideration the age at marriage.

Boyd and Doll (1964), emphasized the importance of early marriage among the contributing factors for the genesis of cancer cervix. They found that early marriage was more frequent among patients with cancer cervix than among controls, and attributed this to the more frequent coitus and the susceptibility of the young cervical tissue.

To establish the relation between male circumcision and the occurance of cancer cervix in the female partner, Handley (1936), investigated the incidence of cancer cervix in the Fiji islands where 90,000 Fijians lived side by side with 70,000 Indians. Fijians practiced male circumcision while the Indians did not. Handley found a higher incidence of cancer cervix among Indian women and attributed the difference to the hygienic effect of circumcision as it seems likely that smegma or infected material

retained by the prepuce has some carcinogenic action.

Bleich (1950), observed that carcinoma of the penis is associated with lack of circumcision, thus supporting Handley's opinion.

Terris et al. (1973), recently stated that there is no objective supportive evidence to the role of circumcision in the causation of cancer cervix as other factors also operate. These factors include the age at first coitus, frequency of sexual intercourse, cleanliness and hygiene, and religious prohibition of extramarital sexual relations.

Coppleson and Reid (1967)$_a$ advocated the concept that during the dynamic phase of transition from columnar to metaplastic epithelium conditions may exist which permit environmental factors having a neoplastic potential to exert a mutagenic influence on the metaplastic epithelium.

Coppleson and Reid (1968), proposed that spermatozoa may penetrate the endocervical cells, change their genetic makeup by providing them with large quantities of nucleic acid which acts as a mutagen.

Bendich et al. (1974), further emphasizing the role

of spermatozoa, proved that mammalian spermatozoa may penetrate cultured mammalian cells and significantly modify their genome, growth characteristics and morphology.

Nahmias et al. (1970), Kaufman and Rawls (1974), postulated that cancer cervix may be caused by a sexually transmitted virus, the suspected virus was Herpes Simplex virus Type II (HSV-II). They conducted seroepidemiologic studies and found that patients with invasive and non-invasive cancer cervix had a higher incidence of neutralizing antibodies against HSV-II than controls.

Aurelian et al. (1971), identified the virus at the ultrastructural level in cervical cancer cells grown in tissue culture.

Centifano et al. (1972), demonstrated the virus in the male genitourinary tract which could be a possible source of infection.

Franklin and Jenkins (1973), in a prospective study of women with herpis genitalis, found that cervical dysplasia developed twice as often and carcinoma in situ eight times as of ten compared to controls.

On the other hand, Rawls et al. (1969), pointed out

that the association between cancer cervix and HSV-II may not be causal and that the virus infection and malignancy may be co-variables with sexual promiscuity or the virus infection may follow the neoplastic change.

Kessler (1974), pointed out that the serological methods used by the various investigators are quite variable and that the level of antibodies against HSV-II also varies from population to population, and may be high among control populations free from cancer cervix. Accordingly the association between HSV-II and cancer cervix should be concidered with caution. Furthermore, although herpes virus has been the most studied and best documented virus in relation to cancer cervix, other viruses may possibly be involved and should be investigated.

Bechtold and Reicher (1952), Simeckova et al. (1962), Jordan et al. (1964), found that there is an association between trichomonas infestation and cervical atypia, Christopherson and Parker (1964), Koss (1964), believe that the atypias produced by trichomonas are not sufficiently severe to be confused with carcinoma in situ.

There is a generally held belief that early detection of cancer is one of the most important factors in achieving therapeutic success. Papanicolaou and Traut (1943), first

realised the potentialities of exfoliative cytology in the early diagnosis of cancer cervix. Their efforts were responsible for the beginning of a world wide recognition of Gynaecological Cytology.

Frost (1979), stated that as experience with careful evaluation of cytologic-histologic correlation increases, it is becoming obvious that exfoliated cells are not only an accurate mirror for the diagnosis of many morphologic features of the parent epithelium but they also aid in the understanding of their biologic process. Furthermore, cellular samples allow repeated examination of maximal surface area (larger than that of a biopsy specimen) without disturbance of the lesion.

Cytology is a means of screening apparently healthy and symptomless women to discover the early stages of cancer when the chances of cure are high. Christopherson et al. (1970), reporting on a mass screening program in and around Louisville, Kentucky, found that towards the end of the program that lasted for II years the rates for advanced invasive cancer had decreased 32% from pre-existing rates, while those of stage I disease increased from 13 to 57% representing earlier detection.

Mac Gregor (1974), in Aberdeen, Scotland, reported a

reduction in the clinical rate of cancer cervix by 50% of that noted ten years earlier to the mass screening program. He also reported a reduction in the mortality rate by 30% while England and Wales reported a reduction of only 10%.

Coppleson and Reid (1967)b, stated that Dr. Hans Hinselmann of Germany in 1927 correctly assumed that if the living tissue of the cervix could be visually inspected in sufficient detail, the very early stages of this cancer could be detected. He coined the term Colposcopy and developed his first colposcope. Hinselmann pointed out that the great value of colposcopy lies in its ability to differentiate the benign from the malignant lesions and to pinpoint the exact position from which a biopsy should be taken as a random biopsy may well miss the very spot which contains early cancer.

Wespi (1949), emphasized that in the detection of early cancers in and around the squamo-columnar junction, there is no doubt that the results obtained by colposcopy are quite the equal to those obtained by cytology.

According to Limburg (1958), Navratil et al. (1958) and Fritsches and Busch (1977), colposcopy alone and cytology alone can fail to detect the presence of histological preclinical carcinoma. The best results, however, would