

RECENT VIEWS ON THE AETIOLOGY AND EPIDEMIOLOGY OF CERVICAL CANCER

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Earlier it was thought that cervical cancer is a disease of pregnancy and child birth. With more the number of pregnancies, chances of developing cancer cervix was thought to be higher. Trauma to the cervix during pregnancy and child birth with subsequent lacerations and cervicitis was considered to be related to cervical cancer. But recent observations on this fascinating topic have changed the outlook on its aetiology and epidemiology. Now it has been agreed upon that cervical cancer is a disease of coital origin. Marriage or coitus without marriage increases the risk of developing the disease. The role of pregnancy was found to be more apparant than real. The effect of multiparity has been correlated with the age of first coitus as a primary factor and not the child birth trauma.

Aetio-pathogenesis

Prior to menarche the vaginal portion of the cervix is covered in varying degrees with columnar epithelium, which is continuous with the endocervix. With increasing oestrogen production metaplasia occurs, so that columnar epithelium is converted into squamous epithelium.

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This process begins at puberty and is most active during adolescence, during pregnancy and immediately following delivery. It is postulated that this active metaplastic epithelium is susceptible to the carcinogen that is probably related to coitus. After coitus begins there is some degree of cervicitis, changes in cellular morphology, epithelial pattern, and sub-epithelial vascular arrangements may be found in the transformation zone. With years of intercourse, more cervicitis and more cervical trauma, dysplasia becomes more likely. Dysplasia may disappear without treatment, may become severe or may develop into carcinoma in-situ which later changes to invasive cervical carcinoma.

Epidemiology and Etiology

The real contribution of epidemiology has been the discovery that carcinoma of the cervix is a disease of coital origin (Martin, 1967; Coppleson, 1969; Rotkin, 1973; and Kessler, 1976). Out of the factors favouring the development of carcinoma of the cervix, Lombard and Potter (1950) and Lawson (1957) have stressed early age of marriage. Wynder (1955) and Wynder *et al* (1954) and (1960) have stressed early age of first coitus, absence of circumcision in the male partner and poor penile hygiene. Carcinoma of the cervix has relatively higher incidence in poorer

social classes (Stocks, 1947; Wynder, 1955; Wakefield *et al.*, 1973 and Beral, 1974). Fischer (1953) and Lancet (1961) have discussed the possible role of smegma as a carcinogenic agent. The possibility that sperm penetration of cervical epithelium may have mutagenic properties has been postulated by Coppleson and Reid (1967). Cancer of the cervix is four times as frequent in prostitutes as in other women and is exceptional in celibate women, indicates the venereal nature of this disease. There is increasing evidence an association between herpes virus type 2 and carcinoma of the cervix (Nahlimias *et al.*, 1973; Rawls *et al.*, 1972; Kaufman and Rawls, 1974; Gall and Haines, 1974 and recently investigations have started about the possible role of herpes type 2 virus in cervical carcinoma. Patients with cervical carcinoma have antibodies to herpes type 2 in a significantly higher percentage than matched controls. It has been estimated that the woman with herpes type 2 antibodies has four times the chance of developing a neoplastic cervical lesion than her counterpart who has no titre.

The part played by the male partner and the possible correlation between penile carcinoma and cervical carcinoma has been discussed by Martinez (1969); Blythe-Smith and Jenkins (1969). In connection with male contribution towards cervical cancer, Kessler (1976) showed a three and one half fold increase in the incidence of the disease in the second and third wife of men whose first wife had developed cervical cancer when compared with a control group in which the first wife was free of the disease. The role of circumcision is still debatable from the reported cases. In Jews, who routinely practice circumcision, carcinoma of the cervix is almost absent in

their wives whereas those Jewesses who had regular coitus with uncircumcised males developed cancer of the cervix (Jeffcoate, 1967). On the other hand, Chakraborty and co-workers (1976) observed that precursory lesions or invasive carcinoma of the cervix was not entirely related to male circumcision. Cancer of the cervix is seldom seen in Jewish or Muslim women. It is high in Hindu women. The circumcision of Jewish and Muslim men has been suggested to have some relation to this low incidence of cervical cancer. However, among the Parsees, who are scrupulously clean, cancer of the cervix is rare, even though the men are not circumcised. It is accepted that cervical cancer has a direct relationship to sexual activity, but circumcision of the male sex partner in itself is not a preventive measure. The aetiological agent of the uncircumcised male is thought to be human smegma. Cleanliness, especially genital hygiene, seems to play a role in prevention of cancer of the cervix. Hence the role of human smegma can not be ruled out entirely in the aetio-pathogenesis of cervical cancer. There is no definite racial immunity from cervical cancer. Incidence of course varies with social habits and customs.

Invasive cervical cancer is mostly a disease of advancing age, the peak incidence is between age 45 to 55, average being 48. This age is a decade later than preinvasive cervical cancer, average 38. Whereas increasing parity was considered important some years ago, more recently the effect of multiparity has been correlated with age of first coitus as the primary factor and not the child birth trauma. There does not appear to be correlation between parity and cervical cancer. Nieburgs (1951) and Christopherson

and Parker (1961), found the role of pregnancy to be more apparent than real. The number of pregnancies did not influence the degree of liability. The family history and menstrual history are not significant in cervical cancer. Marital history is very significant in cervical cancer. Sexual activity and cancer of the cervix also seem to be correlated. There is no association with age of menarche or natural menopause.

Chronic cervicitis with and without injury has no clear correlation to carcinoma of the cervix as it has been noted in cervixes showing no noticeable evidence of previous chronic inflammation or irritation. Syphilis has been significantly coincident with cancer of the cervix. In women with cancer of the cervix, syphilis was found approximately 3 times more frequently than in those women with cancer in other sites.

Mechanical irritation does not seem to be carcinogenic. There is no evidence of a hormonal relationship for cervical cancer in humans (Gusberg and Fichs, 1978). External carcinogens such as coal tar products in douches and vaginal applicators have no proven role.

There is no direct evidence that diet has been a factor in the causation of cervical cancer. However, the prevalence of this disease is higher in lower socio-economic groups in which other factors also take part.

So far both the aetiology and epidemiology of cancer of the cervix revealed cervical cancer to be more common in women of low socio-economic status, married women, especially those marrying at an early age, women with early age of first coitus, women who are prostitutes, women having coitus with uncircumcised partner especially those practicing poor genital hygiene and women who are

infected with herpes virus type 2 which is transmitted sexually.

Lastly, we fully agree and appreciate Gusberg's statement about cancer cervix that "the background of cervical cancer contains several significant facts but none which would identify an individual who would be particularly liable to develop the disease or one who would be immune to it. Therefore, in the struggle to conquer cancer of the cervix, all women must be considered to be possible candidates for the disease and all should be included in any programme of early detection by examination, cytologic smear, and biopsy."

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