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Cigarette smoking and spontaneous abortion

Cigarette smoking, one of the first manifestations of woman's social emancipation, is emerging as a possible threat to her procreative role. Smokers may have a shorter reproductive life span—both an increased incidence of premature menopause¹ and an earlier age of natural menopause² have been observed. Smoking during pregnancy is associated with a reduction in birth weight and an increase in perinatal mortality.^{3,4} Suspicions that it may also play a part in spontaneous abortion⁵⁻⁷ have been given substance by a recent study⁸ carried out in New York.

Earlier reports of an increased incidence of spontaneous abortion in women who smoked were retrospective; moreover, they could not confidently distinguish between spontaneous and possibly illegally induced abortions, and they failed to take into account other potential contributory factors. When the New York survey was carried out induced abortion was legally available, so that the cases studied were more likely to be truly spontaneous. The survey group and the controls were matched for age, parity, marital status, ethnic group, and social class; and the analysis took account of variables such as maternal age and history of spontaneous abortion, induced abortion, and live birth. Women who aborted spontaneously were almost twice as likely to smoke as were controls who carried a pregnancy to viability. Not perhaps unexpectedly, the association was less definite in women who had had two or more spontaneous abortions; such women are more likely to have an inherent and persisting defect, such as an abnormality of Müllerian fusion or cervical incompetence, which would be independent of any environmental factor.

What remains to be established is whether the association between cigarette smoking and spontaneous abortion is causal. Kullander and Källén⁹ found that it was reduced to borderline significance when they took account of whether the pregnancy was desired: women with an unwanted pregnancy may be more likely to smoke than those who are content to be pregnant. Only by identifying a mechanism by which cigarette smoking could give rise to spontaneous abortion could we be confident of a causal relation.

In early pregnancy spontaneous abortion is frequently associated with abnormalities of the conceptus, and chromosomal anomalies have been described in 22-64% of such abortuses.¹⁰⁻¹² Though one retrospective study suggested an association between cigarette smoking in pregnancy and congenital heart disease in the offspring,¹³ other studies^{9,14,15}

have failed to show any link between smoking and congenital malformations. Moreover, the proportion of abnormal karyotypes in the abortuses of women who smoke appears to be reduced rather than increased.¹⁶ Since chromosomal anomalies are predominantly associated with abortion in the first trimester¹⁷ these findings fit the observation that there is no significant association between smoking and spontaneous abortion in the second or third months but that the association becomes progressively more pronounced from the fourth to the seventh month of pregnancy.⁹ The increased perinatal mortality in the offspring of smokers is partly due to an increased incidence of abruptio placentae,^{4,9,18} and placental damage, possibly secondary to anoxia as proposed by Longo,¹⁹ might also be the underlying cause of the excess spontaneous abortion in smokers.

A disturbance of the normal immunological compromise between mother and conceptus may provide an alternative explanation. Cigarette smoking, though it appears to have no effect on cellular immunity^{20,21} or even to enhance it,²² may impair humoral responses.^{23,24} Deficiency of an immunoglobulin capable of specifically blocking a maternal cellular immune reaction against paternal antigens has been found in a group of women with a history of recurrent abortions. This immunoglobulin was identified in the serum of multiparous women and developed in one woman during the course of a pregnancy that resulted in a live birth.²⁵

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² Jick, H, Porter, J, and Morrison, A S, *Lancet*, 1977, **1**, 1354.

³ Rush, D, and Kass, E H, *American Journal of Epidemiology*, 1972, **96**, 183.

⁴ Meyer, M B, Jonas, B S, and Tonascia, J A, *American Journal of Epidemiology*, 1976, **103**, 464.

⁵ Hudson, G S, and Rucker, M P, *Journal of the American Medical Association*, 1945, **129**, 542.

⁶ O'Lane, J M, *Obstetrics and Gynecology*, 1963, **22**, 181.

⁷ Zabriskie, J R, *Obstetrics and Gynecology*, 1963, **21**, 405.

⁸ Kline, J, et al, *New England Journal of Medicine*, 1977, **297**, 793.

⁹ Kullander, S, and Källén, B, *Acta Obstetrica et Gynecologica Scandinavica*, 1971, **50**, 83.

¹⁰ Carr, D H, *American Journal of Obstetrics and Gynecology*, 1967, **97**, 283.
¹¹ Lauritsen, J G, *Acta Obstetrica et Gynecologica Scandinavica*, 1976, suppl No 52.

¹² Szulman, A E, *New England Journal of Medicine*, 1965, **272**, 811.

¹³ Fedrick, J, Alberman, E D, and Goldstein, H, *Nature*, 1971, **231**, 529.

¹⁴ Underwood, P, et al, *American Journal of Obstetrics and Gynecology*, 1965, **91**, 270.

¹⁵ Richards, I D G, *British Journal of Preventive and Social Medicine*, 1969, **23**, 218.

¹⁶ Alberman, E, et al, *British Journal of Obstetrics and Gynaecology*, 1976, **83**, 621.

- ¹⁷ Dhadiyal, R K, Machin, A M, and Tait, S M, *Lancet*, 1970, **2**, 20.
¹⁸ Underwood, P B, *et al*, *Obstetrics and Gynecology*, 1967, **29**, 1.
¹⁹ Longo, L D, *Science*, 1976, **194**, 523.
²⁰ Suciu-Foca, N, *et al*, *Lancet*, 1974, **1**, 1062.
²¹ Whitehead, R H, *et al*, *Lancet*, 1974, **1**, 1232.
²² Silverman, N A, *et al*, *Clinical and Experimental Immunology*, 1975, **22**, 285.
²³ Finklea, J F, *et al*, *American Review of Respiratory Diseases*, 1971, **104**, 368.
²⁴ Nyman, G, *Lancet*, 1974, **2**, 1379.
²⁵ Rocklin, R E, *et al*, *New England Journal of Medicine*, 1976, **295**, 1209.

Tuberculosis of the female genital tract

Tuberculosis of the genital tract is almost invariably secondary to disease elsewhere—usually in the lung, less frequently in the renal tract, and occasionally in a bone or joint. There may be a long latent period between the initial infection and its discovery in the genital tract; often little or no evidence of the primary lesion remains, or it may be totally inactive. A known pre-existing pulmonary lesion will make the interpretation of pelvic symptoms (which may be quite imprecise) relatively easy, but even direct questioning may fail to elicit a history of tuberculosis and examination may fail to show any trace of an earlier lesion. Clinicians need to remember that tuberculosis is still the most important communicable disease in the world—nearly half of India's population has at one time been infected.¹ The incidence of reported disease in Britain has declined recently² but a reservoir remains, and global population movements ensure that there will be a steady seeding for the foreseeable future.

Earlier surveys showed that the peak ages for genital tuberculosis were in the 20s and 30s. Today the age range of affected individuals with pulmonary disease has two peaks⁴—the lower one representing an immigrant group and the higher one the indigenous population. A wide scatter of ages, with a maximum incidence in the fourth decade, has been reported from New Zealand⁵ for genital disease, which is often a chronic infection with abscess formation. The younger members of this group were immigrants from the Pacific Islands.

The Fallopian tube is the most common site of tuberculous pelvic infection, with spread to the uterine endometrium in 60% of cases. Less frequently organisms may be identified in the ovary, cervix, vagina, and vulva, but in virtually all cases the Fallopian tubes are affected as well. Most patients have bilateral lesions. Infection has usually been through the blood stream, but direct spread from other abdominal organs and the peritoneum is possible.

Most patients with genital tuberculosis present with infertility, abdominopelvic pain, or menstrual irregularity. Infertility is by far the most common of the three, and, though figures vary, up to 5% of those attending infertility clinics anywhere in the world will be found to have active disease. One-fifth of these will be entirely normal on clinical examination, and awareness that the disease is still with us is thus particularly important.

Though it may result from advanced active pulmonary disease, amenorrhoea is rarely a presenting symptom of genital tuberculosis. Malkani and Ragani,³ however, reported an incidence of amenorrhoea as high as 53% in some parts of India, attributing it to end organ failure from endometrial caseation. Menorrhagia and metrorrhagia are about as common as in other types of pelvic inflammatory disease, and there is a small but constant incidence of postmenopausal bleeding.

Genital tuberculosis is best diagnosed by histological examination of uterine endometrium taken before menstruation, with confirmation from culture or animal inoculation. Repeated examination of menstrual blood, collected with either a vaginal speculum or a cervical cup, may be useful. Changes may be seen in the hysterosalpingogram⁶ but these are not specific, and the procedure has found little favour in Britain. Laparoscopy is contraindicated if active pelvic disease is suspected, but some cases may be identified in this way by chance.

Treatment is straightforward: the drug regimens used so successfully for pulmonary lesions are also applied to genital tuberculosis. The outcome of such treatment, however, is nowhere as well documented as it is in pulmonary disease.

- ¹ Schaefer, G, *Clinical Obstetrics and Gynecology*, 1970, **13**, 965.
² Department of Health and Social Security, *On the State of the Public Health 1975*. London, HMSO, 1976.
³ Malkani, P K, and Rajani, C, *Indian Journal of Medical Sciences*, 1954, **8**, 684.
⁴ Stead, W W, in *Harrison's Principles of Internal Medicine*, 6th edn, ed M Wintrobe *et al*, p 865. New York, McGraw Hill, 1970.
⁵ Hutchins, C J, *British Journal of Obstetrics and Gynaecology*, 1977, **84**, 534.
⁶ Ekengren, K, and Rydén, A B V, *Acta Radiologica*, 1950, **34**, 193.

Breast lumps in adolescent girls

Public awareness of breast cancer has been heightened recently, largely through popular journalism, and in consequence a steady trickle of frightened young girls are attending surgical outpatients and specialist breast clinics. Many of them have cyclical mastalgia, nodularity, or asymmetry, but a small proportion will indeed present with breast lumps. How should doctors manage these breast lumps in teenage girls, and are they ever any cause for concern?

Cancer of the breast under the age of 30 is extremely rare, accounting for only 1.2% of the 6000 cases in Haagensen's series,¹ for example; and carcinoma under the age of 20 might be considered a medical curiosity, with only seven cases among the series of over 70 000 patients dying from the disease reported by Pirquets.¹ Stone *et al*, writing from a clinic in New York, recently described 143 adolescent girls presenting with breast lumps over 14 years.² As might be expected, over 70% proved to be fibroadenomas on biopsy. There was one case of infiltrating duct adenocarcinoma and two cases of cystosarcoma. The remainder were a variety of benign conditions including cysts and inflammatory lesions. On the basis of this experience the New York surgeons recommended careful observation and reassurance for two complete menstrual cycles with surgical excision if the mass persists.

At first sight this seems reasonable advice, given that cancer of the breast under the age of 20 is so rare and that when they do arise such cancers are said to have a comparatively benign course.¹ Nevertheless, a recent report in the *Lancet*³ described a 15-year-old schoolgirl who presented with a breast lump; it was diagnosed as a fibroadenoma but turned out to be an invasive carcinoma with extensive spread to the axillary nodes. She later died with massive hepatic metastases.

The safer policy, then, is for the surgeon to carry out an immediate biopsy on all breast lumps that appear in the breasts of postpubertal girls, if only to give them and their parents