REFRESHER COURSE FOR GENERAL PRACTITIONERS

LEUCORRHOEA

BY

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Whiteness is not a common feature of the abnormal discharges from the vagina, and so the word "leucorrhoea" is being used less and less: it is being replaced by the more widely applicable phrase "vaginal discharge," which covers all varieties of discharge regardless of colour, though usually excluding those that are blood-stained. The symptom is common; it occurs at all ages and is of widely differing significance.

Bacteriology

A distinction must be drawn between the flora of the vulva and vestibule and that of the vagina. At birth the vulva and vestibule are usually sterile, but this state of affairs does not last long: within a few hours organisms reach the area. Their type depends largely on those present in the immediate environment; provided this is clean, pathogenic bacteria in harmful concentration will be absent.

During the mother's pregnancy the foetal vagina is under the influence of the maternal oestrogens, and at birth therefore its epithelium is well stratified and the cells contain glycogen. Within 12 to 24 hours of birth Döderlein's bacillus makes its appearance and remains for about two weeks, until the effect of the maternal oestrogen has worn off. This bacillus, assisted by enzyme activity, is thought to break down the glycogen in the vaginal cells into lactic and other acids in lesser amounts, which together have a powerful bactericidal action. By the end of the second week of life the vagina is probably once again sterile, and it normally remains so in infancy and childhood. Another factor in keeping the vagina free of pathogenic bacteria during this period may be the anatomical arrangement: the walls of the vagina are in close apposition and the introitus is so nearly closed by the hymen that the passage of harmful organisms upwards from the vulva is unlikely.

During the reproductive years of life the bacterial flora is mixed, and pathogenic bacteria may be present, particularly in the lower one-third of the vagina. But they should not survive long, being inhibited in their growth by the vaginal acidity (pH 4-5.5). It has been estimated that a concentration of lactic acid of 1% may be present during these years. The vaginal acidity, which is so important in maintaining vaginal health, is temporarily neutralized by the menstrual flow, and this accounts for the tendency of infections of the vagina to return or relapse after each period.

Examination of the Patient

From all patients complaining of vaginal discharge a careful history must first be taken to obtain as much information as possible about the time and mode of onset; its quantity, colour, and consistency; whether it is irritating, offensive, or blood-stained; and any other special features. Then examination should be carried out in a good light. After preliminary examination of the abdomen and any general examination that seems necessary, the patient should be made to lie comfortably on her back with her thighs drawn up and separated; the labia are then parted, and the vaginal introitus is examined for the presence of discharge, signs of inflammation, ulceration, or oedema or other swellings. The urethral orifice should be swabbed clean with saline; if there is any suggestion of urethritis the urethra should be gently "milked" downwards with

the finger on the anterior vaginal wall: if it is possible to express pus from the urethra a swab must be sent for bacteriological examination: pus can never be expressed from the urethra in a simple case of vaginitis; it always means that there is some other condition present. The patient should then be turned on her side with her thighs drawn up, the upper one slightly more so than the lower one (see Fig.), and a lubricated Sims speculum gently inserted into the vagina.

If a discharge is seen a specimen diluted with saline should be inspected under the microscope for trichomonas or the spores and hyphae of vaginal thrush. The discharge is then removed with a swab on sponge-holding forceps, and the vaginal walls are carefully inspected for redness, signs of abrasion, ulceration, or other abnormality. The

Position for examination with a Sims speculum. A lower pillow or even no pillow might be better.

cervix is next inspected for erosion and evidence of cervicitis, and any excess of cervical mucus noted. Sometimes it is helpful to turn the patient into the knee-chest position, because, with the Sims speculum in the vagina and the patient in this position, the vagina balloons out, and a very clear view of the vaginal walls may be obtained. Finally, an ordinary bimanual examination should be performed to exclude disease of the pelvic organs.

In most cases this examination will give as much information as is required to find out the cause of a vaginal discharge. If the findings are equivocal specialist opinion should be sought, as special culture methods may be necessary.

Vaginal Discharge before Puberty

Vaginal discharge before puberty is most commonly a sign of infection, seldom localized to the vagina, more usually taking the form of a vulvo-vaginitis: any of the pathogenic bacteria may be responsible. The vulva and vaginal introitus are red, swollen, and oedematous, depending on the severity of the infection. There may be purulent discharge, in which case it should be possible to obtain some on a swab for immediate culture. Treatment with one of the sulphamides or other appropriate antibiotics is usually quickly effective, daily baths with gentle washing and drying are also indicated. In resistant cases oestrogens (ethinyl oestradiol or stilboestrol) should be given by mouth, the dose being appropriate to age. For a child of 6 a daily dose of stilboestrol 0.5 mg. should be sufficient.

Another cause for discharge in childhood and infancy is a foreign body in the vagina. This may sometimes be

seen sticking in the introitus, when it may be readily removed. If the foreign body is well in the vagina, recognition is much more difficult, though it may be possible to feel it with a little finger in the rectum. For removal, admission to hospital and examination under anaesthesia with tiny specula (Kelly's cystoscope may be useful) is usually required.

Vaginal Discharge During the Child-bearing Years

Discharge at this time is fairly common and generally results from infection of the vagina or cervix. The two common forms of vaginitis are those due to *Trichomonas vaginalis* and to the fungus *Candida albicans*. Cervicitis is usually the result of lacerations at childbirth, with infection and failure of involution leading to chronic hypertrophy of the cervix, and thus to blockage of the cervical mucus-secreting glands with the formation of visible cysts, known as Nabothian follicles.

Trichomonas Vaginitis.—*T. vaginalis* is an oval flagellate with axostyle and undulating membrane; it is found in great numbers in the vaginal secretion in certain forms of vaginitis. The discharge in these cases is offensive and may cause a burning sensation: dyspareunia, dysuria, and frequency of micturition are other symptoms. In appearance the discharge is yellowish, watery, and slightly frothy. The vagina may be very tender: it looks inflamed, and widespread discrete red spots may be seen, giving the surface a strawberry-like appearance. Because of the activity of its three or four flagellae the organism is easily seen under the microscope in a fresh hanging-drop preparation. The source of infection is not known: though the disease is seen in virgins, there are cases in which transmission during coitus cannot be excluded, because the organism has been found in the sub-preputial and prostatic secretions and in the bladder of the male. The organism causing vaginitis differs from that found in the mouth and large bowel. One perplexing observation is that *T. vaginalis* may be present in the vagina without causing any inflammation or other inconvenience. Treatment of the vaginitis, in the first instance, is by pessaries, such as those containing acetarsol or silver picrate. The patient should be told to insert one or two pessaries each night between two periods, and thereafter daily for the week immediately following the next two periods. This will cure most cases. Alternatively, antiseptics may be injected as a thick cream into the vagina by means of special applicators. Douches are of little value in the treatment of vaginitis: they may, however, be prescribed two or three times a week as a method of cleansing the vagina between treatments. Salt solution, one teaspoonful of salt to the pint (570 ml.), should then be used. For the few cases which are not cured, vaginal cleansing, drying, and powdering twice a week is required, using acetarsol or silver picrate powder. Insufflation of the vagina with antiseptic powder must *never* be carried out in pregnancy, because of the risk of fatal air-embolism. In resistant cases the possibility of reinfection by the husband should be considered.

Vaginal Thrush.—This form of vaginitis is particularly common during pregnancy and causes much local irritation. The findings are striking: the vaginal walls are covered with a thick white curd-like matter that adheres to the skin. Confirmation of the diagnosis is made by finding the characteristic spores and hyphae on microscopy. The urine in such cases should be particularly tested for sugar. Treatment comprises, first, vaginal cleansing under vision, with soap or detergent and water, until all the matter has been removed; and, secondly, antiseptic measures. The cleansing gives the patient immediate relief, and should be repeated twice a week. Thereafter the vagina, vestibule, and vulva are painted carefully and completely two or three times a week for two weeks with 1% gentian violet in water or 1% gentian violet in equal parts of spirit and water, care being taken that no vaginal folds are overlooked.

Alternatively, chlorophenesin ("mycil") pessaries may be advised. In resistant cases subclinical diabetes should be excluded by a sugar-tolerance curve.

Cervical Discharges

Cervical erosion is recognized by finding a circular area of velvety redness around the external os. This appearance results from the downgrowth of columnar epithelium from the cervical canal. If, in addition, there is overgrowth of the columnar epithelium the erosion is thrown into folds and may be called papillary. The condition is seen in virgin women and in women who have not borne children, and its cause is then unknown: in parous women infection at childbirth is probably the main factor, and the erosion is seldom seen without some cervicitis.

Chronic cervicitis produces a sticky discharge, not usually irritating or offensive unless there is some superadded vaginitis. It may also be associated with a number of other symptoms, particularly lower abdominal aching and backache, which probably originate from the tense, blocked cervical glands. The general health may be impaired. There may also be sterility, because the purulent cervical discharge is inimical to the spermatozoa.

The cervix in such cases is hypertrophied, lacerated, and often everted. The columnar epithelium of the canal may be exposed and may have replaced the squamous epithelium around the external os as in erosion. Mucoid material may be seen in the os, and when it is lifted away with forceps its stickiness is at once apparent. There may be an associated parametritis, when the woman may complain of pelvic pain, backache, and dyspareunia; then pain on moving the cervix is an important sign. Bacteriological examination of cervical discharges is necessary only if there is an associated urethritis or Bartholinitis, or if the condition does not respond to treatment; then specialist facilities are required because of the uncertainty in excluding gonococcal infection by smears and culture methods alone, and because of the advisability of blood tests.

Cervicitis may be materially improved by superficial linear cauterization of the cervix in the out-patient department, the anterior lip being treated one week and the posterior lip the next; but symptoms are unlikely to be completely relieved, at least in a severe case, until deep cauterization with electric hot-point, diathermy coagulation, or excision with knife or diathermy of a substantial part of the hypertrophied cervix has been carried out; for these latter procedures admission to hospital or nursing-home and anaesthesia are required. Treatment in this way is effective; there are few complications and little risk. The most troublesome complication is secondary haemorrhage occurring about the end of the second week. This is treated by morphine and rest if the bleeding is slight, and by a firm vaginal pack if bleeding is severe. Very occasionally a widespread pelvic infection flares up after cervical cauterization. In women over the age of 40 amputation of the cervix or even hysterectomy may be preferred.

The prevention of cervicitis is an aspect of intrapartum and post-partum care which tends to be neglected. During labour every care must be taken to prevent infection of the mother, by strict aseptic and antiseptic techniques and by keeping her away from the sources of infection. Should infection occur it must be treated adequately. When the woman is examined a month or so after delivery the examination should include a careful assessment of the state of the cervix and thorough speculum examination in a good light so that any cervical faults may be recognized and treated without delay.

Post-menopausal Discharges

After the menopause the lack of ovarian secretion leads to a partial atrophy of the vaginal epithelium, which together with lack of acidity at this time may allow infection to occur. A thin watery discharge results which may be blood-stained, and the vagina shows a widespread punctate red

mottling. In such cases preliminary curettage, possibly cervix biopsy, and examination under anaesthesia are usually required to exclude genital cancer. Treatment of the vaginitis is first by oestrogen pessaries, one twice daily for two to three weeks, reserving stilboestrol 0.5 mg., or ethinyl oestradiol, 0.05 mg., daily by mouth, together with sulphonamides or antibiotics locally or parenterally, for resistant cases. Treatment with oestrogen by mouth should not be continued for more than 7 to 10 days at a time if the likelihood of oestrogen-withdrawal bleeding is to be kept to a minimum. Pessary treatment is less likely to cause such bleeding.

Also after the menopause are to be seen the discharges caused by retained and neglected pessaries and by other foreign bodies. After removal of the irritant the discharge usually clears up quickly unless some permanent damage has resulted.

After the menopause and after surgical procedures on the cervix there may be some cervical stenosis leading to accumulation of fluid or pus in the uterus, forming a hydrometra or pyometra. This may discharge suddenly or intermittently. Examination under anaesthesia and dilatation and curettage are required in such cases to establish the diagnosis, to promote drainage, and to exclude associated cancer.

Miscellaneous Causes of Discharge

Every now and then a woman is seen with a severe vaginitis which is being maintained by treatment. Douching with antiseptics can cause a severe vaginitis either because the antiseptic remains on the skin in high concentration after the water has evaporated or, more likely, because of skin sensitivity; the daily wearing of a tampon can also cause much local irritation. To stop all local applications is the obvious first treatment in such cases; often no other therapy is required.

More troublesome is the occasional patient who has a vaginitis, often of unknown aetiology, in which the epithelium in some part of the vagina, perhaps at the vault, is seriously devitalized, being thin, atrophic, and often with great loss of mobility. The most that can be done in such cases is to search diligently for the cause, while trying by the judicious use of oestrogens locally and tonic measures generally to improve the patient's healing powers. Meantime temporary avoidance of coitus is desirable to encourage healing.

It is worth bearing in mind that watery discharges may be urinary in origin. If dating from a difficult confinement or operation, there may be a tiny vesico-vaginal fistula, perhaps with a sinuous tract and only discharging intermittently. Closely allied are the very rare cases in which a cyst of Wolffian duct origin has an external opening and discharges a small amount of fluid. Perineal sinuses, stitch abscesses, and tiny rectal fistulae can all cause vaginal discharge. The appropriate surgical treatment is required for all such cases.

A watery blood-stained discharge is an important sign of early carcinoma of the genital tract, especially carcinoma of the cervix and of the corpus uteri. If there is any suspicion of these diseases, careful examination under anaesthesia, biopsy of the cervix, and dilatation and curettage must be carried out without delay.

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BRITISH EMPIRE CANCER CAMPAIGN

REPORT FOR 1952

The thirteenth annual report of the British Empire Cancer Campaign, covering the year 1952, is an impressive volume of over 400 pages. It records the results of work in many centres in Britain; deals briefly with cancer research in Canada, New Zealand, Australia, and South Africa; and describes the researches of individual investigators supported by the Campaign, of Campaign Fellows, and of Campaign Exchange Fellows. In 1952 income from donations, collection, and legacies was £318,773, the highest figure so far attained. The total is £59,000 above the previous year, mainly owing to a large increase from legacies, which amounted to £138,416. In addition £19,393 was received from investments. The Campaign spent £221,439 on cancer research, £36,623 on appeals and publicity, and £8,162 on administration. There was a balance of £88,910 of income over expenditure at the end of the year.

The Campaign is attacking cancer on a wide front. This is evident from the admirable summary, by Lord Horder and Sir Heneage Ogilvie, of the work supported. There are sections on experimental and clinical carcinogenesis, hormones, the biochemistry of growth, tumour viruses, experimental chemotherapy, radiation chemistry and radiobiology, radiotherapy, and clinical pathology.

Clinical Pointers

Technical advances in radiotherapy which make it more effective, yet at the same time less unpleasant for the patient, are a major contribution to cancer research. There is, for instance, the use of very high-powered radiotherapy units. As long as 15 years ago a million-volt machine was being used in Britain, and to-day there are several operating at 2 MeV. Now, apparently, with the installation of x-ray equipment operating at voltages up to 30 MeV, we are about to enter what is likely to be the last phase of this line of advance. To reach this stage a great deal of painstaking physical and biological research has been necessary. At the Middlesex Hospital the much less costly "rotational therapy" method of delivering a large radiation dose to deep-seated lesions is being investigated, and the results appear promising. Work at Cambridge suggests that the combination of a chemical radiosensitizer ("synkavit") with conventional x-ray therapy may prolong the lives of those with inoperable bronchial carcinoma. At many centres the possibilities of radioactive isotopes are being eagerly explored. In contrast with the success of physical methods in treating cancer, trials of new chemotherapeutic substances have been less fruitful; nor has the work on hormones yielded any new lines of treatment for immediate application.

What may be termed environmental cancers have received their full measure of study. A suggestion that coal smoke and tobacco smoking may act together after the manner of a carcinogen and a co-carcinogen in causing lung cancer is being checked by studying the amount of carbon in the lungs and bronchial glands. Questions such as, Why is lung cancer rare in coal-miners? Why is it common in London, in both sexes? are being examined by statistical methods. Other experiments aim at isolating the products of cigarette smoke with a view to testing their carcinogenic activity in animals. Bladder cancer in dye-workers has been the subject of a four-year field study and of a report to the Association of British Chemical Manufacturers. Some interesting findings have emerged: each individual carcinoma has a characteristic induction time, and the age at which tumours appear depends on when exposure began; and, although incidence may depend on severity of exposure, the induction time is not affected by this. In parallel with the field work, the carcinogenic properties of the aromatic amines have been studied in the laboratory. Among other things, this may help in deciding which of them are too dangerous for industrial use. With a similar object, the carcinogenic activity of crude oils and their fractions has