Surgical.

THE ÆTIOLOGY AND TREATMENT OF LEUCORRHOEA.

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THE term leucorrhœa means, strictly speaking, a white discharge. It has, however, become a generic term covering any purulent vaginal discharge, and it is from this broader aspect that I propose to discuss the condition to-day. One should never lose sight of the fact that the condition is a symptom or sign and not a disease, and that for this reason each case requires full investigation as a preliminary to treatment. The condition is one of great frequency, and though there seems to be a tendency to class it among the minor ailments it may be and often is a source of much physical and mental anguish to the patient. Of recent years far more attention has been and is being given to the treatment of leucorrhœa, and many valuable articles on the subject have been published. To some of these I shall have occasion to refer later. For the purpose of this paper I have looked up the records of 350 gynæcological cases and find that of these 105 complained primarily of leucorrhœa, while a further 124 mentioned discharge as one of their subsidiary symptoms. This gives some idea of the frequency of the symptom.

The ætiology includes a wide range of possible pathogenic factors, both as regards infecting organisms and as regards local and general pathological conditions. Complete lists of these may be found in any textbook of gynæcology. It is not my purpose to give such a list in full, but rather to refer to those factors which I have found to be common, those which are liable to be overlooked and those which are likely to be productive of discussion.

It is now generally agreed that the discharge is, in a majority of cases, of cervical origin. A variety of pathological conditions, however, predispose to determine the onset of, or aggravate the cervical condition, and may bring about the failure of any treatment directed solely to the cervix.

Origin of Discharge.

For descriptive purposes they may be divided into local and general.

From the point of view of this paper the most important local cause is cervicitis and it is to the treatment of cervicitis that most of my later remarks will apply. Vaginitis without apparent cervicitis also calls for mention as it will be found in a small number of cases.

Common Causes.

Cervicitis may occur in virgins, but is far more frequent in married women. The onset is usually determined by the trauma of parturition, but in some cases no history of any causative factor can be obtained. In women who have had children two groups of cases are found : first, the group showing laceration of the cervix to greater or less degree, associated with erosion or ectropion, generally accompanied by œdema and enlargement of the cervix ; second, the group showing cicatrization and hardening of the cervix, often associated with the formation of retention cysts, the Nabothian follicles. I find the prognosis to be better in the former group.

In virgins an erosion is usually found if an examination under anæsthesia is made. Mucous polypi are not infrequently found associated with cervicitis. While they sometimes cause or accompany leucorrhœa, they more often give rise to a blood-stained discharge, from the presence of which in younger women their presence may be suspected.

Other ætiological factors which require mention are uterine displacements, including retroversion and prolapse, tumours, including fibroids and carcinoma of the cervix or body of the uterus and adnexal disease. The discharge accompanying prolapse is usually dependent on the coincident cervicitis and ceases on operative cure of the prolapse. It need hardly be mentioned that rings introduced for the relief of prolapse almost invariably cause a certain amount of discharge as a result of mechanical irritation. The discharge accompanying tumours is rarely a true leucorrhœa and is seldom the predominant symptom. Foreign bodies and parasites are occasional local causes of discharge.

Acute gonorrhœa is, of course, a frequent cause of vaginal discharge. I do not include these cases in this paper since those I meet with I refer to the Venereal Disease Clinic. There are, however, many cases of chronic leucorrhœa in which gonorrhœa is suspected but cannot be proved bacteriologically, and it is these cases which give rise to the existing difference of opinion as to the frequency of gonorrhœa as a cause of chronic leucorrhœa. There is in such cases a definite cervicitis, and usually a mixture of pathogenic organisms is found in a smear. It would seem that if the gonococcus was the invading organism, it has been overgrown by more prolific varieties.

Gross adnexal disease, which may be of gonococcal origin, is usually associated with leucorrhœa, the diagnosis being made from the findings on pelvic examination. There are other cases in which the history and signs of adnexal disease are very vague, and in which the diagnosis is only made after very full investigation. It is possible that unrecognized adnexal disease is responsible for the failure of treatment of cases which appear, clinically, to be due only to cervicitis.

Turning now to general ætiological factors, that to which I wish to draw particular attention is the general condition of the patient. Anæmia, specially chlorosis, has long been known as a cause of leucorrhœa, but I am inclined to think that in many instances the general condition of the patient is at fault in a more subtle manner. It has been my experience that leucorrhœa is met with far more commonly in hospital than in private practice; also that private patients are, on the whole, far more easy to cure than are hospital patients. To what factor should one attribute these differences? My suggestion is that the differences in the mode of life could have, and may have, an important bearing on the matter.

Even in these days of improved conditions of life of the working classes it is by no means uncommon to see in the Out-patient Department the prematurely aged, harassed and anæmic woman whose constitution is unable to stand the strain of frequent pregnancies, household overwork and often, one suspects, defective feeding. This type of patient is one in which leucorrhœa is most difficult to cure although it may be relieved by prolonged local treatment, together with what general treatment may be possible. In

this connection it is important to note that Sharman [1] mentions good results in certain cases of leucorrhœa from the administration of radiostoleum. These results suggest that at least in certain cases dietetic defects may be of ætiological importance.

In a book by Tyler Smith [2], published in 1855, the author states that he seldom saw a case of leucorrhœa in a patient resident at the sea-side, and believed for this reason that sea air possessed preventive and curative properties. This also supports my view as to the importance of the general health, and it would be of interest if members resident at the sea-coast would give their views as to the frequency of leucorrhœa in their practices.

It is obvious that systemic disease may, in some cases, give rise to leucorrhœa by lowering of the local resistance or by the actual production of local lesions.

One systemic disease to which I wish to refer is syphilis. It is not, I believe, usually given as a cause of leucorrhœa unless it is associated with definite local lesions. I

Systemic Disease.

have, however, recently seen several cases in which leucorrhœa was the one symptom of which the patient complained and in which I failed to discover any definite local lesion. In one of my cases I found evidence only of mild vaginitis, insufficient, in my opinion, to be the sole cause of the leucorrhœa; in a second the patient complained only of discharge coincident with the onset of pregnancy, and smears of urethra and cervix proved negative for gonococci; while in a third case the true diagnosis was suggested by a history of six miscarriages in a period of ten years. In all these cases a positive Wassermann reaction was found. The possibility of syphilis as an ætiological factor should therefore be borne in mind.

Finally, I put forward the suggestion that in some cases leucorrhœa may be of nervous origin and is, in such cases, analogous to mucous colitis. We are all conversant with the neurotic type of woman whose whole interest is centred on the fancied disease of some particular organ, often the uterus, and I think it is possible for an excess of cervical mucus to be formed in these patients, the mucus causing local irritation with mild vaginitis and leading to leucorrhœa. One knows that a diagnosis of neurosis only too often means that some physical lesion has been overlooked, but nevertheless I feel certain that the neurotic element in many cases is a factor which hinders cure.

The successful treatment of leucorrhœa depends in the first instance upon the recognition of the cause in each individual case. For purposes of

Treatment. description treatment may be considered under the headings of local and general.

The local treatment to be advised is determined on the condition found on examination. Tubal infections, tumours of the body and cervix of the uterus are treated on their merits and without direct reference to the leucorrhœa. Similarly, displacements of the uterus, particularly prolapse, must be corrected before special treatment for the leucorrhœa can be successful. In cases of prolapse the presence of severe leucorrhœa is, other things being equal, an indication for operation. If a pessary is inserted it will almost certainly increase the discharge, while if one is already being worn it will maintain the discharge against any form of local treatment with which I am familiar. It sometimes happens that discharge persists even after a successful operation for prolapse and in these cases local applications, with which I shall deal later in connection with cervicitis, give good results.

For purposes of treatment I divide cases of cervicitis into three groups :—

- (1) Cervicitis with laceration and ectropion.
- (2) Cervicitis with œdema, thickening and erosion.
- (3) Cervicitis with fibrosis, follicle formation and stenosis of the os.

Lacerations of the cervix should be repaired by operation, specially when they are deep or are bilateral. Cases of this type cannot be cured by local applications.

Group 1. The milder degrees of laceration are frequently found and for them local non-operative treatment is usually satisfactory. The question is purely one of degree and failure of non-operative treatment to produce a cervix of normal appearance is an indication for operation.

Group 2. The second group, that of cervicitis with erosion, gives, in my experience, the best results obtainable with local non-operative treatment.

Group 3. Cases in the third group are those most difficult to deal with. I believe that thorough dilatation of the cervix to allow adequate drainage, destruction of any retention cysts with the electric cautery and linear cauterization of the endo-cervix give the best results in a majority of cases.

Finally, vaginitis unassociated with cervicitis may require treatment. Usually, of course, vaginitis is secondary to cervicitis, results from the flow of irritating discharge from the cervix over the vaginal mucosa and can be cured by treatment of the cervical condition. There is, however, a certain number of cases in which vaginitis is the primary condition. Here local causes of irritation such as parasites, including worms, trichomonas, &c., urinary infections and foreign bodies, including pessaries, must be looked for and, if found, removed. Senile changes in the vagina frequently produce discharge, usually leucorrhœal, sometimes blood-stained. Cicatrization and narrowing amounting sometimes to obliteration of the vaginal vault, together with fibrosis of the perivaginal tissues and vulva, are found on examination. The vaginal mucosa is smooth and shiny and may show punctate hæmorrhages. In this type of case pyroligneous acid, applied on cotton-wool to the whole vaginal surface gives very good results, three to four applications usually stopping the discharge completely. Any associated pruritus is also relieved.

Having thus dealt in general with forms of local treatment which may be indicated I now turn to the topical treatment of cervicitis.

The many varieties of such treatment which have been advised may be considered an indication of the lack of success attending treatment of this condition and while each form of treatment is claimed by its sponsors to give good results I have yet to find a treatment with which I can obtain good results in all cases. I propose therefore to describe briefly those forms of treatment with which I have obtained the best results and also to mention certain others which have been recommended.

The forms of local non-operative treatment include :—

The application of caustic chemicals such as pure carbolic acid, iodized phenol, silver nitrate or formalin to the cervix and cervical canal. This method will give satisfactory results in a proportion of cases and has the advantage of

Caustics. simplicity. An essential preliminary to each treatment is the removal of the thick mucus from the cervical canal by wool-covered probes dipped in liq. potassæ. This enables the caustic to come into direct contact with the tissues. Six treatments at intervals of not more than one week should suffice and if no improve-

ment is obtained the method should be abandoned. When there is much thickening and œdema of the cervix it is an advantage to introduce after each painting a pessary containing ichthyol (10 per cent.) and keep it in place against the cervix with a wool tampon.

I do not consider that there is much to choose between the various caustic applications. As a rule I use pure carbolic acid but have a preference for silver nitrate in cases in which gonorrhœa is suspected.

Application of the cautery : This method has so far given me the highest proportion of successes. I now use it in all cases of erosion and of minor degrees of laceration of the cervix, in some cases in which caustic applications have failed and

Cautery. in some cases of sclerosing cervicitis with follicle formation. Linear cauterization, the lines radiating from the os, is carried out, the lines being carried to a depth of 1 or 2 mm. I do not as a routine cauterize the cervical canal but aim at healing the pouting lips of the cervix and reducing the size of the external os to normal. Destruction of cysts in cases of sclerosing cervicitis can be effected by the cautery point. I use the electric cautery, which in most cases, at least in married women, does not require an anæsthetic. To avoid absorption of toxic products from the cauterized tissues I apply a glycerin tampon to the cervix at the end of the treatment and it is usually advisable either to apply further tampons or to order douching with mild antiseptics twice weekly during the period of healing. Healing is complete in about four weeks. A further application of the cautery can then be made if the first treatment proves inadequate.

Use of diathermy : This is a comparatively new form of treatment and excellent results are claimed for it. It has the disadvantage of requiring special apparatus and special technique. I have now used it in a number of cases with good

Diathermy. results in several but with complete failure in at least two. At present I consider that this method of treatment should be reserved for selected cases, chiefly the frankly gonorrhœal cases and those in which other forms of treatment have failed.

Use of mild antiseptics of high penetrating power : I include here treatment with such substances as mercurochrome, flavine and blue paint, which last is composed of methylene blue and brilliant green. *A priori* one would expect that

Antiseptics. this would be the method of choice inasmuch as the causative organisms are destroyed without damage to or irritation of the cervical tissues. I have obtained good results from the use of flavine in some cases in which I have used it alone, but my experience is that these substances are best used as accessories to the methods mentioned above. For this purpose I now employ tampons of flavine, 1 in 1,000, in glycerine for reducing œdema of the cervix and can recommend this method as successful in a large proportion of cases. Injection of methylene blue into the cervical tissues has been recommended, but of this treatment I have no experience.

The powder treatment : The principle of this method is to dry the vagina, deprive bacteria of the moisture necessary for their existence and absorb the discharge, thus giving almost immediate relief of symptoms. Various powders have

Powders. been used for this purpose, the most effective being kaolin, introduced by Nassauer's method. Nassauer recommends the use of a special powder blower having a pear-shaped end which occludes the introitus. The pressure

under which the powder is introduced then distends the vagina and allows the powder to come into contact with the whole of the vaginal mucosa, all folds and crevices having been removed. The treatment should be given daily, and twice weekly the accumulated powder should be removed by douching. It deserves thorough trial, particularly in cases of vaginitis and also in association with other methods of treatment. Better results are likely to be obtained in private than in hospital practice as in the latter case it is almost impossible to arrange for daily treatment.

Operative Treatment. Amputation of the cervix : This is a method which is stated to be useful in the last resort. I have never used it as a method of treatment of cervicitis as such, but consider it a necessary part of the operation for advanced cases of prolapse. Only indirectly, therefore, do I regard it as a method of treatment of leucorrhœa. Finally, I must refer to the use of dilatation of the cervix and curettage and of douches. There can be no doubt that the use of either of these methods under proper indications is of value. The indiscriminate use of either without regard to the local condition of the case is, however, not only useless but harmful and therefore to be condemned.

Value of Douching. Douches as adjuvants to other methods of treatment may be given once or twice weekly to clear away any accumulation of discharge and to allay irritation. I have at the present time several patients who have been treated by various methods, who are not entirely cured but who are kept quite comfortable and free from discharge by a weekly douche. I advise that normal saline, sodium bicarbonate, eusol or potassium permanganate be used for douching as these solutions are not irritating and therefore do not of themselves tend to maintain the discharge. It need hardly be said that the majority of patients are not in a position either to prepare the solution to be used or to sterilize the equipment for themselves, so that whenever possible the services of a nurse should be obtained. There can be little doubt that irritating douche solutions and unsterile douche nozzles have been responsible for keeping up the discharge in many cases.

Necessity of General Treatment. We have now to consider general treatment. Leucorrhœa should not be regarded as solely a local condition. It is an infection occurring in a part having a lowered local resistance, but as with other local infections the resistance of the body as a whole is important, though apt to be overlooked. General treatment includes the measures necessary to deal with any systemic disease which may have a bearing on the local condition and those calculated to increase the general resistance and improve the general health of the patient. Distant foci of infection, such as teeth and tonsils, may require attention. Tonics are of undoubted value and in cases of mild degree these alone may suffice to effect a cure. I have notes of only two such cases. In the first case the discharge was cured by treatment for a fortnight with an iron tonic ; in the second case the patient was given a tonic by her own doctor and at the same time was advised to consult me. She came to me a week later, by which time the discharge had disappeared.

The value of a change of air in improving the general health is well known and can be advised to those who are in a position to carry out the advice.

In view of the prominence now given to vitamins in the treatment of infections it is not surprising that they have been advocated in the treatment of leucorrhœa. I have no personal experience of the results so obtainable but good results have been claimed from

the administration of vitamin A (Mellanby), and vitamin D (Bauer), both quoted by Sharman [1].

Sharman, previously quoted, claims results in some cases by treatment with radiostoleum.

Vaccine therapy may be of assistance. It is probable that vaccines will prove of greatest value in cases in which one organism predominates or is the sole infecting agent. A case in which an almost pure culture of *Staphylococcus albus* was recovered from the cervix and in which an autogenous vaccine brought about a rapid cure is described by Forsyth [3]. In the treatment of gonorrhœal discharge also vaccine therapy has many advocates.

I find that by a judicious use of the foregoing methods of treatment the great majority of cases of leucorrhœa cases can be relieved and many can be cured, but one has to confess that in a certain number of cases no treatment appears to

Prognosis. have any effect. The proportion of relapses is higher than one would wish and it is not uncommon to find that the discharge returns as soon as treatment is stopped. Some causes of failure or of relapse are easily detected while others are far from obvious. Lack of attention to general treatment and incorrect selection of local treatment are obvious causes of failure and may be avoided by care. Excessive local treatment is also in my opinion a cause of apparent failure and may be avoided by stopping local treatment for a few weeks if discharge persists in spite of an apparently normal local condition. Failure to recognize a latent infection of the tubes or of the endometrium is another possible cause of failure and I believe that this point should be investigated in all cases which fail to respond to treatment. There may be a very mild and chronic salpingitis without palpable enlargement of the tubes or there may be an infective endometritis. Both conditions are associated as a rule. Stenosis of the internal or external os with retention of infective matter behind the stricture may occur in cases of sclerosing cervicitis.

A latent tubal infection may be discovered by injection of lipiodol and X-ray examination, when occluded tubes will be found. For this condition injection into the uterus of a mixture of tincture of iodine 1 part, and glycerine 9 parts, is advised by Remington Hobbs [4].

Stenosis of the os is both recognized and treated by dilatation of the cervix. The dilatation will be followed by a definite discharge of pus. The infection can be treated by injection of iodine and glycerin, while thorough dilatation will guard against recurrence.

There still remain cases in which treatment appears quite useless and for these one can only hope that further work on the subject will reveal some further etiological factor or some new method of treatment. I am inclined, however, to think that, in this condition, as in so many others, prevention will prove to be the best treatment.

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