NON-GONOCOCCAL VAGINAL DISCHARGES*

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During the course of histological work on the cervix and whilst engaged in investigating the therapeutic action of zinc chloride, L. T. Bond and I were impressed by the comparative absence of the true signs of inflammation in a large number of cervixes examined. In every case the cervix had been amputated for leucorrhoea and in many instances very advanced macroscopic signs were exhibited of what is commonly called cervicitis, a condition usually ascribed to the effects of chronic inflammation. The symptom regarded as typical of cervical inflammation is leucorrhoea, and the signs are erosion, enlargement, eversion and the presence of follicles. It is obvious that there are very many cases of true cervicitis, for example those of gonorrhoea and an occasional pyogenic infection occurring after labour or abortion, but if these are excluded the majority of the remaining cases are found to show very little beyond hypertrophy of all the tissue elements and increased activity of the gland cells. Many erosions show only the slightest and most superficial inflammatory reaction such as might be caused by contact of columnar epithelium with the acid medium of the vagina.

Bacteriological examination of the cervical canal and of the mucus expressed from the deep glands also shows little evidence of active infection, always excepting gonorrhoea. Even in the worst cases of leucorrhoea, cultures of true pathogens cannot be grown, and frequently the canal is entirely sterile. The occasional occurrence of one or more colonies of Döderlein's bacillus shows how easily the canal may be contaminated by the vaginal discharge, however carefully the swab is passed through the os. Moreover, if the contents of a Nabothian follicle is cultured both aerobically and anaerobically the result is usually a sterile plate. The preservation of the cervical canal from infection depends on a mechanism with which we are not yet entirely familiar, but which must be remarkably efficient. For example, in many cases of vaginitis due to trichomonas and a pyogenic infection, it is usual to find the cervical canal sterile even although the contents of the vagina at the very margin of the external os are frankly purulent. In the ordinary case of leucorrhoea, commonly labelled cervicitis, we have actual difficulty in demonstrating the effects of inflammation in the tissues or infection in the glands and mucus of the canal.

If the vaginal discharges are examined by film, culture and acid reaction, it is surprising to find how many of them show little or no elements of pus or pyogenic organisms but, instead, large masses of squamous cells, Döderlein's bacilli, and a few indeterminate organisms which seldom appear on the culture plate. The pH varies from 4 to 5. In others, taken from a vagina showing a little redness or actual vaginitis, the discharge, of a pH from 5 to 7, may have all the characters of true pus, but such examples are uncommon during the child-bearing period except in cases of gonorrhoea or trichomonas. The original site of leucorrhoeal discharges shows little or no signs of inflammation, and this applies to the discharge itself, even when the latter is taken from the vagina. While the state of cervical infection and inflammation may be postulated as the cause in married or parous women, it cannot be advanced to account for the often profuse leucorrhoea of young virgins. The discharge occurring in these patients may be as copious as that found in any other patient and associated with a large red erosion, but it is very highly acid and does not show any trace of infection.

Endocrine pathology of leucorrhoea

There is other evidence also, which I cannot here describe in detail, strongly suggesting that we must discard the term, cervicitis, in the description of the majority of cases of leucorrhoea and that it is necessary to adopt a new idea based

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upon an endocrine pathology. There is a certain condition of the uterine body generally recognized as the result of an imbalance of the ovarian hormones. It is not inflammatory, but is associated with hypertrophy, menstrual excess and irregularity. The name, metropathia, suggests the name, trachelopathia, for the analogous condition of the cervix. We know that the endometrium is closely controlled by the follicle-luteal mechanism, and we also recognize now that the cervical mucosa is also subject to certain rhythmic changes during the menstrual month. We submit, therefore, that an aberration of the endocrine secretion or of its activation by receptors in the local tissues can be and is responsible first, for a disturbance of function of the cervical glands, and later for an alteration in structure of the cervical tissues.

Fig. 1
Case 14.—Aged 47. Seven children, last one ten years ago. Operation for cystocele and chronic cervicitis. Some thick, viscid leucorrhoea. Cervix: very large erosion.

spermatozoa. Woolner reported that in monkeys there are cyclic histological changes in the cervix, and Bond and I found in the human cervix changes in the glands and particularly a diapedesis of polymorphonuclear leucocytes beneath the columnar epithelium and into the canal just before the onset of menstruation.

Trachelopathia in virgins.—A typical example of what I have called "trachelopathia" is the clinical condition of profuse leucorrhoea in young virginal adolescents or adults. In such cases there is not any question of infection. On examination under an anaesthetic we find the hymen intact, the vagina pale pink and heavily rugose. There is a white discharge, often curdy, in the middle and lower part of the vagina and a profuse fluid mucoid secretion in the vault. The pH of the white material is very low, 3 to 4. The cervix bears a bright red circumferential erosion from which may ooze points of blood on contact with a wool swab. If the cervix is squeezed, a large amount of clear thin

It is important to reconsider the histology and pathology of the non-gonococcal cervix and to re-examine its relation to the hormonal activity of the ovary. The mucus of the cervix shows distinct changes during the month. It varies in amount, hydrogen-ion concentration, viscosity and translucency. At the time of ovulation it is most abundant, translucent and least viscous, while the hydrogen-ion concentration is more alkaline than at any other time. A further property of this fluid is that it is bacteriostatic or bactericidal for some organisms, and it is also possible that under some conditions it may be lethal to

Fig. 2

Case 124.—Aged 22. Virgo intacta. Biopsy of erosion: thick mucoid excessive discharge, pH 3.5. Culture: B. Döderlein and anaerobic diphtheroids. Cervix: circular, granular erosion.

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mucus is readily expressed, sometimes up to as much as a fluid drachm. If the erosion is examined under the microscope it is found to be a vascular partially-denuded patch with a varying degree of polypoid processes and glandular crypts. There is a very superficial infiltration of leucocytes especially in the polypi or in the areas in which the epithelium has been lost. The reaction is probably due to contact of the exposed tissue with the acid medium of the vagina. Bacteriological examination never shows anything but a pure growth of Döderlein's bacillus. Here we have a typical case of non-infective leucorrhoea which I believe is due to an excess of oestrogenic influence on the cervix.

Effect of oestrone on post-menopausal women.—I have obtained further evidence by the injection of oestrone. I selected three post-menopausal women, between the ages of fifty-six and sixty-three, who were to have amputation of the cervix for prolapse. I gave each of them 400,000 units of oestrone during the three weeks before the operation. At the time of operation there was in each case a considerable quantity of mucus secretion, and the histology showed a condition similar to that of the fertile period. As a means of control I injected another woman with progesterone, which is a general sedative genital hormone, and did not find any alteration in the typical senile condition of the cervix.

Leucorrhoea after labour.—The commonest type of non-gonococcal leucorrhoea is that which begins after labour, especially if there is cervical laceration and eversion of the lips. Even in such cases there is not often any true sign of inflammation of the tissues around the canal, or pus in the glands. Culture from the mucus within the canal rarely yields any pathogenic organisms. Further, if the history of the labour is examined, the great majority of patients will be found not to have given any evidence of post-partum infection from which a subsequent alleged cervicitis might be derived. In these patients there is often considerable hypertrophy of all the tissue elements, including the glands. The secreting surface is much increased by enlargement of the canal and eversion. Perhaps the contact of the mucosa of the canal with the acid vaginal medium may stimulate an increased activity of the exposed glands. There is, therefore, much evidence in favour of the existence of a non-infective leucorrhoea, probably due to oestral influence.

(The diagrams were devised by Dr. L. T. Bond, with whom these investigations were made.)

Fig. 3

Case 112.—Aged 42. One child, nine years ago. Operation for prolapse. Leucorrhoea—slight yellowish. Cervix: macroscopically lacerated, with marked eversion.

DISCUSSION

Dr. Morna Rawlins asked if Mr. Bourne could give any information as to the treatment of such cases. She came into contact with them over and over again. She gave advice but the actual treatment was very difficult.

Major Marjorie Bolton said she was at present treating girls between 18 and 20, and many of them were suffering from minor discharges due to this condition and not due to infection.

Col. A. J. King said that in his experience of young women who complained of discharges, he had seen relatively few of the type of case described. An extraordinary proportion of young women with discharges had trichomonas infection. The frequency of the infection had been a complete revelation to him and it became quite monotonous. Whatever the clinical condition of the patients might be many of them had the typical appearance of trichomonas which Mr.