Discussion

To summarize, one may say that here was a woman with no relevant family or past history, who had complained of cough for 18 months, and who gave a nine-months history of associated dyspnoea and dysphagia. Partial thyroidectomy had been performed five months before death, with apparent temporary relief. The first sign which might have led to the suspicion of an allergic background was the eosinophilia discovered nine months before death. The first time any specific lesion was found in the lungs was two and a half months before death, whilst the oedema of the face and hands began six months before death. The only attack which might have been called asthmatic was the terminal one during which the patient died.

The morbid anatomical and histological changes, however, seem to be identical with cases described by a number of authors under various titles, notably, Meyer-Dörken (1934), Harkavy (1943), Bayley *et al.* (1945), Bergstrand (1946), Smith (1948), and others. The generalized lesions found in the above case may be said to fall under three headings—namely, intimal proliferation, necrosis, and thrombosis of small vessels; focal necroses; and tissue oedema and eosinophilia.

The most striking lesions were the vascular changes in small arteries and the eosinophilia, which was constant in the peripheral blood throughout the course of the disease and was such a pronounced feature of the histological picture. For this reason in discussing this case I have decided to use the non-specific term diffuse eosinophilic arteritis rather than attempt to make any particular diagnosis.

In studying this case it is at once apparent that there are certain similarities to a number of other conditions. Thus the vascular changes are almost identical with those seen in polyarteritis nodosa. The focal necroses which have not been described in this latter condition are common, however, in other conditions in which hypersensitivity plays a part, as, for instance, after the use of sulphonamide drugs (Lederer and Rosenblatt, 1942). In this connexion it is interesting to note that, despite the patient's pyrexia, no drug of this group was at any time administered. The lung fibrosis is reminiscent of rheumatic pneumonia, and the eosinophilia and oedema are common findings of allergic phenomena.

It is difficult to escape the conclusion that the changes described both in this case and in the literature represent not a particular disease syndrome but a non-specific tissue reaction of allergic type which may vary from the benign lesions of the so-called Loeffler's syndrome (von Meyenberg, 1942) to lethal conditions such as the one described here. Examples of intermediate pathology may be quoted from the numerous varieties and gradations of polyarteritis nodosa.

In the cases of rheumatism, hypersensitivity to sulphonamide drugs, and nephritis many data exist concerning the exact precipitating factors, whereas in conditions such as polyarteritis nodosa no such evidence is yet forthcoming.

The above record is therefore presented as one of violent allergic reaction to some unknown precipitating stimulus, with widespread lesions of a type seen in a number of other conditions, and which it is perhaps justifiable to regard as representing part of the general pathology of the allergic state.

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OBSERVATIONS ON SYMPTOMATOLOGY AND TREATMENT OF CERVICAL EROSION

BY

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The large number of cases of cervical erosion seen in this out-patient department has focused attention on that condition, which was present in 36% of all the cases seen there from April, 1947, to June, 1949—some 870 cases of erosion in all. This prevalence may be due in part to the lack of post-natal care in the surrounding districts, though Fulkerson (1926), in his study of all cases attending the gynaecological department of the Cornell University Medical School, found that the incidence of cervicitis with erosion was 33%.

All patients were subjected to speculum examination of the cervix, and diagnosis was by direct observation either of an erosion or, in a few cases, of Nabothian follicles associated with a mucopurulent discharge from the external os.

The diversity of symptoms presented when cervical erosion was the only lesion found became evident. These symptoms have been analysed in 128 cases out of the 870 treated. The remaining cases of erosion have been set aside because they were associated with other conditions which clouded the issue, or because follow-up was impossible. In all other respects these 128 cases are unselected.

The symptoms of which the patients complained, and the numbers cured by healing of the erosion, are presented. The patients were examined six weeks after treatment, and were followed up for a period of from six months to two years, in order to observe the permanency of cure and to eliminate any purely psychological effect of treatment.

The treatment employed was thermo-cauterization of the cervix, using the electric cautery. The results of treatment in the 128 cases are analysed, and, in addition, the complications which occurred after cauterization in the 870 cases treated are reviewed.

Symptomatology

The symptoms observed in the 128 patients (summarized in Table I) were, in order of frequency, as follows.

Leucorrhoea.—As is generally recognized (Young, 1930; and others), the cardinal symptom was leucorrhoea. The discharge was typically not more than moderately profuse, mucoid, and white or yellowish in colour. No fewer than 102 (80%) complained of leucorrhoea, and 92 (90%) of these were cured as a result of treatment. Of the remainder four were found to have persistent or recurrent erosion,

TABLE I.—Symptoms Present in 128 Cases of Cervical Erosion

Symptom	No. of Cases	Percentage Incidence	Percentage Cured
Leucorrhoea	102	80	90
Backache	75	59	60
Abdominal pain	75	59	56
Frequency of micturition	32	25	75
Menorrhagia	24	19	67
Pruritus vulvae	15	12	100
Dysmenorrhoea	14	11	71
Dyspareunia	11	9	73
Cervical haemorrhage	11	9	100
Sterility	9	7	33
Sense of pelvic weakness	3	2	67

two had trichomonas vaginitis which had not been present at the time of treatment, and in four cases no abnormal discharge could be found on examination.

Backache.—Of the 75 (59%) patients who complained of backache 45 (60%) were cured by cauterization of the cervix, and were still cured when seen six months to two years later. The backache associated with cervical erosion was typically of a constant aching character and was felt in the lumbo-sacral region. It is not claimed that the majority of cases of backache in women are due to cervical erosion. Barns (1948) has stressed the importance of causes other than lesions of the pelvic viscera. Yet the fact that 60% of the women in this series who had cervical erosion and complained of backache were permanently cured by treatment of the cervix demands careful consideration. This is at variance with the views of many writers such as Fulkerson (1926) and Wilfred Shaw (1948), but Young (1930) states that a low backache is not infrequently associated with cervicitis. It is submitted that cervical erosion can by no means be ignored as a cause of this common symptom.

Abdominal Pain.—Of the 75 (59%) patients who complained of abdominal pain 42 (56%) were permanently cured by cauterization of the cervix. The pain in these 42 cases is thought to have been due to the erosion; it was localized in the right iliac fossa in 11 cases and in the left iliac fossa in 4, and was more generalized in the lower abdomen in 24. The pain was of two types—either dull, aching, and constant, or acute and lancinating. The importance of cervical erosion as a cause of troublesome and sometimes severe abdominal pain must be stressed. In this series 56% of patients with erosion and complaining of abdominal pain were permanently cured by treatment of the cervical lesion. Six patients had already undergone abdominal operations without relief, and were subsequently cured by simple cauterization of the cervix. The following two cases illustrate this point.

Case 1.—A married woman aged 34, with one child aged 7, complained of attacks of pain in the right iliac fossa for one year, and of leucorrhoea. An emergency appendicectomy had been performed four months previously. The removed appendix was normal. The pain continued. On examination she was found to have a cervical erosion, which was cauterized. After six weeks the cervix was healed and the patient was symptom-free. Two years later the cervix was healthy and there was no abdominal pain and no discharge.

Case 2.—A married woman aged 44 complained of dragging lower abdominal pain, with intermittent acute exacerbations, since the birth of her only child 18 years before. Three years after delivery a pelvic floor repair had been carried out, followed two years later by subtotal hysterectomy, appendicectomy, and right oophorectomy. There was no relief from the abdominal pain. On examination a marked chronic cervicitis with an erosion and numerous Nabothian follicles was found. The cervix was cauterized. Six weeks later the cervix had healed and the patient was symptom-free. After one year the pain had not recurred, and the patient felt better than for nearly twenty years.

These facts will be sufficient to emphasize the association of abdominal pain with cervical erosion. It is suggested, therefore, that before any operation is performed on a patient complaining of abdominal pain of no clear origin, and particularly if such pain is associated with a vaginal discharge, the cervix should be examined and cervical erosion excluded.

Frequency of Micturition.—Of the 32 (25%) patients who complained of day-and-night frequency 24 (75%) were cured by cauterization of the cervix, with no other treatment. Unfortunately, microscopical and bacteriological examination of a catheter specimen of urine was carried out in only 16 of the 32 cases: only one showed evidence of infection, the organism being *Bact. coli*. Of the remaining 15 cases of frequency known to be unassociated with infection 14 were cured by cauterization of the cervix. This supports the hypothesis that cervical erosion often causes a trigonitis, in which no organism can be recovered from the urine, and is in agreement with the observations of Vassallo (1936). The one case of infection is of interest, as it illustrates how cervicitis can be an aetiological factor in the production of recurrent cystitis (Winsbury-White, 1933). In the case under review, in which there had been numerous attacks of recurrent cystitis, the condition has remained entirely cured for two years, following a single course of sulphonamide therapy and healing of the cervical erosion.

Menorrhagia.—There were 24 (19%) patients who complained of an excessive menstrual loss—that is, the loss was more than their normal or their periods had become more frequent. No treatment other than cauterization of the cervix was employed, and as a result no fewer than 16 (67%) were cured. Details of these cases in which the periods returned to normal after cauterization are given in Table II. It would appear, therefore, that menorrhagia

TABLE II.—Details of 16 Cases of Menorrhagia Cured by Cauterization of Cervix

Age of Patient	Menstrual Cycle in Days		Remarks
	Before Cauterization of Erosion	After Cauterization of Erosion	
33	5-6/21. Profuse loss	3/24-26. Average loss	Probably climacteric
35	9-10/28. Profuse loss	6-7/28. Average loss	
27	5/14-20	5/26	
44	7/14	7/28-49	
22	7/26. Profuse loss	6/26. Average loss	Child 3½ years
43	5/14-21. Moderate loss	5/28. Average loss	
48	7/21. Very profuse	3/21. Average loss	Child 11 months
34	3-10/14-28.	3/28	
25	12/28. Profuse loss	7/28. Average loss	
36	5-6/14-28	5/24-28	Child 19 months
41	7/28. Very profuse loss	7/28. Average loss	
26	5/21. Profuse loss	4/26. Average loss	
24	7/28. Very profuse loss	7/28. Loss much less; now average	
17	7/14. Profuse loss	7/28-34. Average loss	
28	10/21	4/28. Average loss	
30	8/28. Profuse loss	7/28. Average loss	

is in some cases associated with cervical erosion. This fact has been noted also by Young (1930), Ground (1936), and Joubert (1946).

Pruritus Vulvae.—Fifteen patients (12%) complained of pruritus vulvae; no demonstrable cause, other than a cervical erosion, was found. All were cured by cauterization of the cervix. This eliminated the cervical discharge, which was probably the cause of the pruritus. These findings differ from those of Jeffcoate (1949).

Dysmenorrhoea.—Fourteen patients (11%) complained of dysmenorrhoea. Ten (71%) were relieved of the symptom by cauterization of the cervix. The dysmenorrhoea

was of the spasmodic type in nine, six being cured by treatment of the cervix. It was of the congestive type in five, four being cured by cervical cauterization. It seems possible that cauterization may cure spasmodic dysmenorrhoea in some cases by interfering with the sympathetic innervation of the cervix in a manner similar to that following cervical dilatation.

Dyspareunia.—Of the 11 (9%) patients who complained of deep dyspareunia 8 (73%) were cured by cauterization of the cervix. In none of these was the dyspareunia associated with any other obvious clinical cause. It has been noted that, in some cases in which there is cervical erosion, movement of the cervix during vaginal examination causes pain, and it is therefore not surprising that these patients complain of dyspareunia.

Cervical Haemorrhage.—There were 11 (9%) cases of bleeding from the cervix. Seven complained of intermenstrual bleeding and two had a post-coital loss. In addition, two patients complained of post-menopausal bleeding for which curettage of the uterus showed no cause. The bleeding, which was from the "eroded" area of the cervix, was cured in every case by treatment of the cervix.

Sterility.—Nine patients (7%) complained of sterility. Three of these, of whom one was a 1-para and two were nulliparous, conceived six, five, and one month after cauterization respectively. Cervical erosion is a recognized cause of subfertility, and these figures, though small, bear this out.

Sense of Pelvic Weakness.—Three patients, in whom no prolapse was demonstrable, complained of a sense of pelvic weakness simulating prolapse. This was entirely eliminated in two of the cases by cauterization of the cervix.

Comment on Symptomatology

Of the 128 cases of erosion, 19 (15%) were "congenital" in origin—that is, occurred in patients who had never been pregnant. A separate analysis of the symptoms in these 19 cases revealed no noticeable difference in the symptomatology.

In addition, many of the patients complained of general fatigue and listlessness, and experienced an improvement in their general health after the cervix had been treated. Many and varied symptoms not localized to the pelvis have been attributed to cervicitis by some writers (Derow, 1940; and others), and Young (1930) and others stress the role of cervicitis as a focus of infection in the aetiology of systemic disease. No instance was observed in this series.

An attempt to analyse these general symptoms has not been made, but it may be fairly stated that the local symptoms already discussed may in themselves be sufficiently worrying to the patient to make her feel a great deal better when they have been cleared up.

Treatment

Treatment consisted of cauterization of the cervix with the electric thermo-cautery. This was done in the out-patient department, except when the hymen was intact, the erosion was very large, or an anaesthetic was required for some other reason. Cauterization was not carried out during pregnancy, and six weeks were allowed to elapse after delivery before an erosion was cauterized. The technique was to expose the cervix with a speculum and to cauterize the cervical canal as the first step, without preliminary dilatation. The area of the erosion was then cauterized in lines radiating from the external os.

This procedure caused little distress in the majority of cases. It is noteworthy that during the cauterization most patients experienced aching lower-abdominal pain, in many instances similar to that of which they had previously complained.

The patients were instructed to douche twice daily with a dilute "milton" solution and to avoid coitus for six weeks. Each was given a printed slip warning her to expect a temporary worsening of such symptoms as back-ache, lower abdominal pain, and vaginal discharge, and to be prepared for some bleeding at the time of the separation of the slough, eight to ten days later.

All patients reported after six weeks, and if the cervix had not healed the treatment was repeated.

Results

In 109 cases the cervix was healed six weeks after the first treatment. A further 17 were healed after two treatments, and in one case three treatments were carried out before healing occurred. In the remaining case the cervix failed to heal after being cauterized three times. This cervix was subsequently amputated, but microscopical examination revealed no pathological change other than chronic cervicitis with erosion. Simple cauterization of the cervix therefore resulted in healing in 99.2% of cases.

Recurrence Rate.—When the patients were followed up six months to two years after treatment 6 of the 128 cases (4.7%) were found to have a cervical erosion, with a recurrence of symptoms. These cervixes were known to have been healed six weeks after cauterization. None of the patients had been pregnant in the interim. They were therefore cases of recurrent erosion, representing a failure of treatment in 4.7% of cases and necessitating recauterization. This was carried out, and in four of the six cases the cervix was healed six weeks later. The remaining two cases were not followed up.

Complications

The complications which have been described after cauterization of the cervix are haemorrhage, pelvic infection, and atresia or stenosis of the cervical canal (Dell, 1938; Henkin, 1937; and others).

Of the 870 cases of erosion cauterized, six (0.7%) developed complications. There were two cases of haemorrhage, two cases of pelvic infection, and two cases of atresia of the cervical canal. No complications occurred in the 128 cases already analysed above.

Haemorrhage

Only two patients experienced bleeding severe enough for admission to hospital. That it was not serious even in these cases is shown by the fact that in each instance it was readily controlled by rest, sedatives, and hot douches.

Of the 128 cases analysed 47 (37%) experienced bleeding after treatment—in 42 the bleeding was slight, and in 5 it was "like a very profuse period" and the patients had to rest in bed at home for 24 to 48 hours. The occurrence and severity of haemorrhage in these cases bore no relation to the phase of the menstrual cycle in which cauterization had been carried out. This is at variance with the opinion of Maryan (1943).

Pelvic Infection

There was one case of pelvic cellulitis and one case of an acute exacerbation of a chronic salpingitis following cauterization. The two case histories are given below.

Case 3.—A nullipara aged 32 complained of constant lower-abdominal pain and of leucorrhoea for one year. There was

no history suggestive of abortion or salpingitis; the appendix had been removed. On examination the only gynaecological abnormality found was a cervical erosion. This was cauterized. Five weeks later the patient came to hospital complaining of increasing lower-abdominal pain since the cauterization, and of feeling "ill and feverish." She was flushed, her temperature was 99.8° F. (37.7° C.), and her pulse rate 96 a minute. There was tenderness but little guarding in the right lower abdomen. On vaginal examination the cervix was found to be healed. A tender, firm, ill-defined mass was palpable in the right fornix. On rectal examination the right utero-sacral ligament was found to be indurated, thickened, and very tender. A diagnosis of pelvic cellulitis was made. A five-day course of penicillin and sulphatriad, followed by short-wave pelvic diathermy, was given. The temperature and the pain subsided rapidly, though the induration in the right utero-sacral ligament persisted for some weeks. Three months later the patient was symptom-free and no sign of the cellulitis remained.

Case 4.—A 5-para aged 36 complained of a dragging pain in the left iliac fossa and of a profuse yellow vaginal discharge for eight years, since the birth of her last child. She also had menorrhagia. She was said to have had an attack of acute salpingitis two weeks before. On examination her general condition was satisfactory. Pelvic examination revealed an enlarged and tender left tube and a cervical erosion. The erosion was cauterized. A week later she complained of severe pain in the left iliac fossa and a profuse blood-stained discharge. Her temperature was 101° F. (38.3° C.). The lower abdomen was tender, particularly in the left iliac fossa. Vaginal examination revealed an acutely tender swelling, with pulsation, in the left fornix. Acute salpingitis was diagnosed and a course of penicillin and sulphatriad was begun. Next day her condition had deteriorated, and laparotomy was performed. The peritoneal cavity contained thin offensive pus, from which anaerobic streptococci were later isolated. A small necrotic left pyosalpinx was found, surrounded by adhesions. The abdomen was closed, with drainage. Convalescence was stormy for two weeks, but the patient made a satisfactory recovery.

This danger of an acute exacerbation of a chronic salpingitis after cauterization of the cervix has been pointed out by Cannell and Douglass (1935), Dell (1938), and others and is again emphasized.

Stenosis

Two cases of haematometrium occurred; these were caused by occlusion of the external os by scar tissue.

Case 5.—A 2-para aged 36 complained of abdominal pain and discomfort, and of amenorrhoea, since cauterization of the cervix in the out-patient department ten weeks before. On examination under anaesthesia the external os was found to be occluded by a thin layer of fibrous tissue, and after the passage of a sound a small quantity of dark-red blood escaped. The patient subsequently remained well.

Case 6.—A 2-para aged 56 complained of post-menopausal bleeding and of soreness of the vulva. On examination a mild degree of prolapse, kraurosis vulvae, and a cervical erosion was found. In December, 1948, dilatation and curettage, biopsy of the cervix, and cauterization of the cervical erosion were carried out under general anaesthesia. The subsequent histological examination of the curettings showed no malignant change in the endometrium, and biopsy of the cervix confirmed the diagnosis of cervicitis with erosion. Ethinyl oestradiol was prescribed on account of the kraurosis vulvae. In February, 1949, there was no further bleeding and the patient was symptom-free.

In June, 1949, six months after cauterization, she complained of lower-abdominal discomfort and of a sense of pelvic weakness. On bimanual examination the uterus was found to be bulky. When the cervix was drawn down to test the degree of uterine prolapse an adhesion over the external os gave way and a large quantity of dark-red blood escaped from the cavity of the uterus. Subsequently a vaginal hysterectomy with pelvic

repair was performed on account of the concealed post-menopausal bleeding associated with prolapse. No evidence of malignancy was found in sections prepared from the uterus. The patient made an uneventful recovery.

First-stage dystocia is said to result occasionally from rigidity of the cervix due to scarring after extensive cauterization. Seven patients in the series of 128 cases were confined from 10 to 17 months after cauterization, and each had a normal first stage of labour. There is therefore no evidence in this series of dystocia following cauterization of the cervix.

Conclusions

Cervical erosion is a common and incapacitating lesion, and its clinical manifestations are not sufficiently recognized. This lack of appreciation of the symptoms of cervical erosion leads to the failure to look for, find, and treat the cause of many gynaecological complaints, thus in many instances condemning the patients to chronic ill-health as a result of such symptoms as leucorrhoea, backache, abdominal pain, and dysuria.

Worse still is the case of the patient who is subjected to some unnecessary operation on a mistaken diagnosis, when abdominal pain is the presenting symptom and the presence of a cervical erosion is overlooked.

The teaching so commonly heard that pain felt in the lower abdomen in one or other iliac fossa is ovarian in origin is, in my submission, unsound. Much more often such pain is due to cervical erosion, and the cervix should be inspected in such cases. Indeed, it should be inspected in all cases presenting the symptoms which have been discussed.

The treatment of cervical erosion by cauterization of the cervix in the out-patient department, without anaesthesia and without preliminary dilatation of the cervix, was in most cases found to be very satisfactory. Of 128 cases treated by cauterization, 99.2% were cured, with a recurrence rate of only 4.7%.

Serious complications after this treatment were few, and occurred in only 0.7% of a series of 870 cases. Although mild secondary haemorrhage from the cauterized area was relatively common, it was exceptional for the bleeding to be severe enough to necessitate the admission of the patient to hospital. Haematometrium and pelvic cellulitis may occasionally occur. In my opinion, if the cervix is cauterized in the presence of chronic pelvic infection, such as a chronic salpingitis, there is a very considerable risk of a severe acute exacerbation.

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