school age were the same in both periods. The relative importance of violence during childhood increased for boys but not for girls. Violent deaths at ages 5-9 and 10-14 formed 17.0 and 18.0% of all deaths among boys and 9.5 and 7.2% among girls.

Conclusion

This short survey shows that since 1920 there has been a large fall in mortality during childhood, in which practically every cause of death shared, but it is evident that there is room for considerable improvement. The mortality level of diphtheria and violence showed an unnecessary and persistent wastage of child life. Although the infant mortality rate was lower than that of the highly industrialized countries of Europe, it was higher than in several other countries. This fact and the regional social class mortality of England and Wales suggest that the pre-war rate for the whole country could be reduced, probably by one-half.

HAEMATOMETRA DUE TO CICATRICAL STENOSIS OF THE CERVIX AFTER LABOUR

BY

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Haematometra after a birth injury to the cervix is a rare event. The following is a record of such a case.

Case Report

Obstetric History.—The patient, aged 24, had been married for two years. During her only pregnancy she attended an antenatal clinic in London, but was transferred to an E.M.S. hospital in the country before her confinement. The hospital records reveal that she had a surgical induction for post-maturity when three weeks past the expected date of confinement. Foetal distress became evident when the os was almost fully dilated. Forceps were applied, but were not successful in effecting delivery. The head was then perforated and the extraction became relatively simple. She subsequently developed parametritis and was not fit for discharge for six weeks. Even then she felt weak and did not recover her previous good health. The date of the delivery was Sept. 11, 1943.

History of Complaint.—In November, 1943, she had an attack of pain lasting about three days. The pain was like that previously accompanying her menstrual periods, but there was no loss. She says that she reported to a welfare clinic but that nothing abnormal was found. Similar attacks occurred in December, January, and February. She was then "bombed-out" and moved to the Midlands. In March, 1944, after the usual four-weeks interval, she had another attack, the pain being more severe. She reported to a doctor, who gave her tablets to ease the pain, which again subsided after three days. A month later, on April 15, the pain came on once more. This time it was worse than ever and was accompanied by vomiting. On April 18 she reported to the casualty department on account of the severity of the pain. She was found to have a tender abdomino-pelvic swelling and was admitted to the gynaecological wards.

Diagram of conditions found

On admission the history of recurrent pain at intervals of one month was elicited. On inquiry it was found that her present pain was intermittent and was mainly in the lumbar region. When asked if it was like labour pains she said that it was, "but much worse."

Her general condition was fairly good, though it was evident that the pain was severe. On abdominal examination she was found to have a slightly tender, firm, oval swelling arising from the pelvis and extending almost to the umbilicus, slightly to the left of the middle line. Contractions were watched for, but no alterations in consistence were demonstrable. On examining vaginally no cervix could be found. The abdominal swelling was continuous with a soft bulging of the vault of the vagina. The left vault was drawn upwards and to the left. At its summit was a narrow depression, about a quarter of an inch deep, which would admit the point of a uterine sound. Running into this depression were two scars, each about an inch long; one ran transversely across the vault, the other vertically up the left vaginal wall. Various sizes of probe were used in an attempt to establish communication with the swelling, but without success. The condition is shown diagrammatically in the accompanying figure.

Operation.—On April 18 the abdomen was opened. The free edge of the omentum was found to be lightly adherent to the floor of the vesico-uterine pouch and, more densely, to the left ovary. The body of the uterus was uniformly enlarged to the size of a twelve-weeks pregnancy. The cervix was drawn out to a length of about 4 in., and distended to a diameter of about 1½ in. Each tube had become sealed off at the abdominal ostium and was slightly distended. Hysterectomy was begun, and the uterus, together with the left tube and ovary and the right tube, was separated from its lateral attachments. The cervix was very thin-walled and was distended to the same diameter as the vagina, and it was therefore difficult to identify the line of separation of the two. At this stage the haematometra leaked at its lower end, and several ounces of thin chocolate-coloured fluid escaped. This was mopped away, and for the first time traction was exerted on the uterus. It was then found that the thinned-out anterior wall of the cervix had been completely torn across transversely, and its lower part could not be identified. The posterior attachments of the cervix were next divided and the uterus was removed. The bed of the uterus was inspected, but no sign of any intercommunication with the vagina could be made out, even when a finger was inserted in that organ. After peritonizing the raw area the abdomen was closed.

Convalescence was uneventful. When the patient was examined six weeks after discharge from hospital the condition of the vagina was the same as before operation, except for the absence of the swelling. The depression indicating the position of the cervical canal was still drawn upwards and to the left, and fixed in that position.

Comments

Haematometra is most commonly due to a congenital deformity, and then develops when menstruation begins. Acquired haematometra may be due to a variety of causes, the commonest being neoplasm of the cervix. Carcinoma, fibroadenoma, adenomyosis, or operations for these conditions, have been reported. Herring (1939) has published a case in which haematometra followed radium treatment for benign haemorrhage. Schockaert (1938) records a case due to cervical ulcer in prolapse. Cicatrization following cauterization of the cervix is a recognized cause. Caustics, stem pessaries, and gonorrhoeal and diabetic vaginitis have also been cited.

In a series of 19 cases reported by Bernstein and Walter (1939) congenital causes were responsible for 11. Of the remaining nine cases only two could be ascribed to obstetric injuries, and in each there was a vesico-vaginal fistula. In one the haematometra was found at operation nine years after childbirth; in the other the condition was found three months after delivery, and was due to adhesions in the fornices.

In the present case it seems, from the history, that the operation was performed during the sixth menstruation into the closed uterine cavity. There had been regurgitation of menstrual fluid into the tubes, which at the time of operation were sealed at the abdominal ostia. The adhesions of the omentum to the floor of the vesico-uterine gutter suggest that there had been a spilling into the peritoneal cavity at some stage before the tubes had become sealed off.

Two interesting features are the complete obliteration of communication between the uterus and the vagina, and the distension and thinning of the cervix. It is possible that the cicatrization occurring after the parametritis had drawn the lower end of the cervix upwards and to the left, and that this had been followed by sacculcation of the cervix when the menstrual fluid filling this organ had been subjected to pressure by uterine contractions. The remaining part of the cervical canal might then have become subject to a "valve-action," with elongation and lateral compression, causing its virtual obliteration. That some such sacculcation was present is evident

from the relative positions of the distended cervix and the site of the obliterated os externum.

In most cases of acquired haematometra the stenosis is incomplete and there is some leakage past the obstruction. So complete an obstruction and so extensive a haematometra as that here described must be very rare.

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FAILURE OF IMMUNITY RESPONSES IN LOCALIZED DISEASE

BY

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During investigations on the influence of inflammation on immunity, evidence accumulated which suggested that, once a condition had become localized, there was a change in the absorption of substances from the site of inflammation and that the zone around the focus acted as a selective membrane stopping entry of substances of high molecular weight into the body. This conception found some support in the literature both from the work on the permeability of the tissues to dyes (Menkin, 1935, 1940) and from the work on staphylococcal lesions by Fleming (1939) in this country and by Hite, Banks, and Dack (1938) in the United States. The former showed that the level of staphylococcal antibodies was not raised above the level for the general population in persons who had suffered from a series of boils, while Hite and his co-workers found that patients with persistent sinuses from osteomyelitis also showed no rise in antistaphylococcal haemolysins. These workers, too, failed to demonstrate any absorption of antigens or of antibodies introduced into these natural sinuses in man or into artificially induced sinuses in animals.

The list of substances already thought not to be absorbed from inflamed areas includes various vital dyes, particularly trypan blue, horse serum, typhoid and paratyphoid vaccines, staphylococci and their toxins, and *B. botulinus* antitoxin. One recent observation supports this general picture. McClean (1943), in the course of work on gas-gangrene infections, found that animals dying from *Cl. welchii* infections had no *welchii* toxin in the circulating blood but large amounts localized in the infected muscles.

It is desirable for three reasons to settle the question whether antigens are absorbed from a chronic focus. First, it is taught that there is no necessity to stimulate the body's specific anti-bacterial defences during the course of naturally occurring disease, as adequate or even excessive amounts of antigen are already reaching the body from the lesions; secondly, it is possible to show what organism is causing a disease, since during the course of the disease, or in convalescence, the specific antibodies will always appear in the serum; thirdly, the absorption of bacterial products will account for all the toxic effects seen in inflammation.

Infections of the Urinary Tract

In the past difficulty appears to have arisen because the diseases on which the work on specific immunity has been done were all those in which there is a septicaemic phase—for example, lobar pneumonia, typhoid fever, syphilis, bacterial endocarditis, streptococcal septicaemia, and puerperal fever. From these conditions it has been argued by analogy that the less spectacular conditions of localized disease had the same general immunity pattern. One way of demonstrating the incorrectness of this supposition is to examine the serological responses of patients with localized diseases in which the diagnosis is so obvious that the identification of the infecting organism needs no serological support. The first series of cases recorded below had an infection with one single organism in an area which is normally sterile—the urinary tract; they ran a normal course and responded to the normal treatment. The accompanying Table shows 22 such cases. The cases were taken

in sequence; only those organisms which auto-agglutinated in saline or which agglutinated to a high titre with all normal sera were excluded. Four strains were discarded for these reasons. The duration of the infection ranged from one week to many

Case	Age	Duration	Agglutination	Organism
1	22	6/12	1/25	Coliform
2	22	2/12	0	"
3	23	3/52	0	"
4	23	2/12	1/25	Proteus
5	23	1/12	0	Coliform
6	24	7/12	1/2	"
7	24	3/12	0	"
8	31	2/12	0	"
9	36	2 years	0	"
10	42	1/52	1/8	"
11	49	6/12	0	"
12	50	3/52	0	"
13	53	Years	0	"
14	53	"	0	"
15	60	"	0	Proteus
16	60	"	0	Coliform
17	61	2 years	0	"
18	62	Years	0	"
19	64	9/12	0	"
20	68	8/12	1/4	"
21	75	Years	1/25	"
22	76	"	0	Pyocyanus

years, the ages of the patients from 22 to 76. In the older age group, most of whom were men, a partial obstruction was present in some of the cases. It will be seen that 16 patients show no trace of agglutination of the autogenous organism; of the remainder only 3 reach a titre of 1/25.

These results may be compared with those given in cases in which coliforms may reasonably be held to have reached the blood stream.

Case 23.—The patient had an arthritis of one wrist. The cultures from the joint gave a pure growth of coliforms. The patient's serum agglutinated suspensions of the organism to a final titre of 1/2125. Complement-fixation tests, using the suspension of the organism as antigen, were positive even with a dilution of the serum to 1/1280.

Case 24.—The patient, an elderly male, had an old stricture of the urethra, in association with which there had been no fewer than six abscesses as well as persistent cystitis. Cultures of pus from an abscess and of the urine gave the same coliform in pure growth. This was agglutinated to 1/640.

Peritonitis

To discover whether the usual cases of peritonitis behaved as localized or as generalized diseases from the standpoint of their immunity responses, four patients who had all been admitted together were examined; one of these had a perforated gastric ulcer, the others perforated appendices. All had peritonitis and ran a perfectly normal clinical course after drainage, leaving hospital in three to four weeks. It was impossible to distinguish clinically between the cases as to the degree of infection, the severity of the peritonitis, or the effects of the toxæmia on the patient, though the bacterial content of the exudates was different in the four cases; the organisms isolated were tested against the patient's serum either for agglutination or for complement fixation or precipitins.

Case 25.—Perforated gastric ulcer. Pus sterile.

Case 26.—Perforated appendix; cultures—coliforms. Test on 14th day of illness: agglutination and complement-fixation tests negative. Repeated on 21st day, tests still negative.

Case 27.—Cultures—coliforms and haemolytic enterococci. On 9th day: agglutination of coliforms negative; complement fixation with both organisms negative. On 16th day: agglutination of coliforms to 1/16; complement fixation with coliforms to 1/8. Complement fixation with enterococci negative.

Case 28.—Perforated appendix. Cultures—*Staph. aureus* and an enterococcus. On 14th day: precipitins and complement-fixing antibodies not found. On 21st day, still negative.

These last three patients were completely recovered from their infections at the time of their leaving hospital. It might be argued that antibodies might have been present later in convalescence, but it is certain that they were not present in time to influence the local disease.

Diseases of Respiratory and Alimentary Tracts

In attempting to obtain the same type of information in localized diseases of the respiratory or alimentary tracts, the problem is complicated by the difficulty of finding cases in