react with Ehrlich's reagent (Gray, 1953). Spectroscopic examination of cholera stool might show some such compound.

The presence of *E. coli* in the gut is necessary for the conversion of bilirubin into faecal urobilinogen (Baumgartel, 1950). The temporary alteration of the intestinal flora (since the *E. coli* population becomes very meagre in the early stage of cholera) may be responsible for the failure to convert bilirubin into urobilinogen. Thus Sborov *et al.* (1951) found that in patients treated with chlortetracycline urobilinogen disappeared from the stool.

Although it is hazardous to draw any conclusion from a single liver-function test, a normal thymol turbidity test and the absence of an abnormal amount of urobilinogen in the urine of cholera patients suggest that there is probably no gross dysfunction of liver in this disease. This is further supported by the fact that the histological appearance of liver in cholera patients does not show any gross abnormality.

What, then, is the cause of the small rise of serum bilirubin that we observed in these patients in the early stages? Haemolytic mechanism has been suggested in cholera (De *et al.*, 1952, 1954). But our finding of serum bilirubin was within the normal range, and as we could not detect any rise in the plasma haemoglobin level we can definitely exclude the role of haemolysis. In fact, the early enthusiastic papers of the above workers are followed by a more cautious report, where they recorded a much smaller percentage of patients showing signs of haemolysis than what they had found before (De, 1954). The haemoconcentration that occurs in cholera entails a greater osmotic work for the liver cells to pick up bilirubin from the blood for secretion into the bile capillary. This may be the cause of diminished secretion of bile and the slight rise of serum bilirubin concentration that we observed in cholera patients.

Summary

Tests of the stools of cholera patients in the stage of purging showed that in most of them there was no detectable amount of urobilinogen.

The serum alkaline phosphatase level and the thymol turbidity of these patients remain within the normal range.

Evidence is given which suggests that there is no obstruction to the flow of bile into the gut in cholera, and some possible explanations for the absence of faecal urobilinogen in these patients are discussed.

Although there is a slight rise in serum bilirubin in these patients there is no evidence of any haemolysis, nor is there any evidence of the depression of hepatic function.

We are grateful to Principal A. K. Dutta Gupta for permission to use hospital records, and to Professor S. N. Sarkar for his help during these investigations.

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Medical Memoranda

Colporrhaphy During the Puerperium

It is well known that secondary repair of unhealed vaginal lacerations during the puerperium is a satisfactory procedure, but the advantages of deliberate formal perineorrhaphy have not attracted attention. In some cases this operation is urgently required, and from the patient's point of view it may be done most conveniently during the puerperium. At such a time the difficult arrangements for supervision of an existing family have been made, and a later visit to hospital will be more difficult to arrange as the family grows larger. The demands of a family are imperious, and most women will tolerate great discomfort for many years rather than forsake their maternal duties for a few weeks. From a national standpoint there is clearly economy of hospital beds and expense if a confinement and operation can be combined at a single admission and without additional days spent in hospital.

PRESENT SERIES

A short account is given of 46 patients upon whom formal perineal repair during the puerperium was practised during the past eight years. Their ages varied from 21 to 44 years, and the operation was done a few days (mostly four or five days) after delivery. In these days of restricted admission to maternity hospitals relatively few multiparae are delivered in hospital. This series is composed almost entirely of women referred for some abnormality to the antenatal and subfertility clinics. The principal reasons for consultation were as follows: (1) Eight women presented with prolapse, with actual protrusion of the cervix or of a rectocele or cystocele early in pregnancy. Pessary support was necessary in five of these cases. (2) Twelve women were referred from the subfertility clinic on account of multiple miscarriages (two to five miscarriages). (3) Sixteen women complained chiefly of urinary incontinence dating from a previous delivery and always worse during pregnancy. The following is a typical example.

Case 1.—A gravida 2, para. 1, aged 21, had had her first baby 18 months previously, delivered with forceps. She had had distressing urinary incontinence ever since. After delivery the perineum was seen to be very inadequate, with marked descent of the anterior vaginal wall. Simple posterior colporrhaphy on the fourth day after delivery cured her incontinence. Six weeks after delivery the perineum was sound and the bulge of the anterior vaginal wall was no longer seen.

In 25 cases there was complaint of pelvic discomfort and dragging pain after walking or standing, either alone or associated with other symptoms. In these cases the vulva is usually relaxed and gaping, often after a single confinement. The following example is typical.

Case 2.—A gravida 2, para 1, aged 26, had a very deficient perineum after two normal confinements, with constant backache, and some stress incontinence appeared during pregnancy. A simple posterior colporrhaphy was done on the ninth day after delivery. At post-natal examination seven weeks later she said her backache had gone and bladder control was normal. She added that her whole outlook upon life had improved since her operation; she felt full of energy and her husband had remarked upon her greatly improved temper.

After delivery the perineal tissues are remarkably supple and elastic. At operation dissection is easy, the fascial planes separate cleanly, and the levators can be brought together without tension. Healing proceeds rapidly; patients can get up on the fifth day after operation and should be ready to go home three to four days later—that is, departure from hospital is not delayed. Early ambulation does not seem to interfere with a good final result. No attempt has been made to carry out any elaborate procedure, and anterior colporrhaphy with support of the urethral angle has been performed once only. Nevertheless in 16 cases with marked stress incontinence dating from before the

pregnancy there has been only a single failure to give relief. No complication or difficulty of any kind has been met with.

COMMENT

In watching the progress of these patients, I have felt the results of operation have been almost always much better than I expected. Perhaps this is because so many of the patients were young women, but I believe that another important factor may be the elastic and mobile character of the puerperal tissues. It seems possible that the parts are better able to achieve a natural adjustment when the displacement has not existed for long, and, during the phase of tissue mobility, when there is adequate support by the perineum during involution. I do not mean to suggest that all patients can be dealt with effectively in this manner, and no doubt a more elaborate operation may be needed ultimately in some cases. At the same time, it does seem possible to give much relief, if not permanent cure, by a simple procedure, at a moment in a woman's life when time is of great importance and during a phase that calls for continued effort. There can be no doubt that nearly all these patients would have continued to suffer much discomfort and pain for many years before presenting themselves for operation in the orthodox way. The procedure has given great satisfaction and might be more widely used.

L. G. HIGGINS, F.R.C.S.

Mammary Gland Changes During Chlorpromazine Therapy

Since chlorpromazine hydrochloride ("largactil") has been undergoing widespread trial in the treatment of psychiatric disorders and in the management of the elderly, with promising results, there have been reports in the literature calling attention to certain complications and important side-effects, notably jaundice. There is little doubt that the drug modifies certain endocrine functions, either directly or indirectly. The case described below is, I believe, of considerable interest, in that there were mammary gland changes and unexpected breast development.

CASE REPORT

The patient, a single woman aged 67, has been in a mental hospital most of her life, having been certified in 1908. Perusal of her case notes shows that the illness was of schizophrenic nature. She was childish, emotional, stubborn, and had attacks of excitement, screaming, and sobbing. At times she laughed for no obvious reason, was resistive and troublesome, and could not give a coherent account of herself. Dullness, apathy, and withdrawal from reality were very apparent. This mental state persisted, and by 1932 she was continually muttering to herself, was auditorily hallucinated, and was faulty in bodily habits and hygiene. Her case notes showed that in 1950 she was thought to be deteriorating further. At this stage impulsive behaviour and destructiveness showed themselves. Electric convulsion therapy brought only the most temporary improvement. When she was having a routine mental and physical examination on July 5, 1955, there was little change in her psychiatric condition as described above. The only significant findings on physical examination were a blood pressure of 200/90, a moderate degree of atherosclerosis, and an undernourished appearance. Her breasts were involuted, and she was quite flat-chested. The optic fundi were within normal limits, and no retinopathy was present.

This patient, among 48 other females, was considered suitable for a trial of chlorpromazine therapy, and treatment began on July 6, 1955. With gradual increase over the first few days, she was eventually having a daily total of 150 mg., in tablet form and in three divided doses. This dosage continued for three months, during which time she seemed to tolerate the drug quite well. By October 10 there was considerable mental improvement, and in November the

patient was continuing to have chlorpromazine 25 mg. three times a day as a maintenance dose. She was then clean in habits, tidier in person and appearance, and quieter, and she no longer required sedation. She took an interest in her surroundings and did some knitting. Her conversation was relevant and coherent, although at times it was no more than a shy whisper. Whereas she was previously a problem patient, she became manageable, co-operative, and a willing and helpful ward worker.

During treatment she gained 12 lb. (5.3 kg.) in weight; and the most striking change was marked bust development and increase in size of the breasts—out of all proportion, it is felt, to the weight increase (see illustration). The development was not merely explained by deposition of fat. There was definite growth of mammary gland tissue, and a comparison with the previous picture of atrophic and involuted breasts showed a striking change. Secretion from the nipples was not observed. No oedema was found in this patient, nor was there any sign of congestive or circulatory failure. Uterine haemorrhage did not occur.

COMMENT

Reference to the British literature has failed to reveal a description of the changes of the nature and extent of those described above. Reports by Cohen (1955) and Gäde and Heinrich (1955) note secretion from the mammary gland, either with or without some increase in breast size, during administration of chlorpromazine hydrochloride. The increase in weight found in many of these cases does not seem to be accounted for by water retention, nor is it satisfactorily explained by improvement in the mental state (Elkes and Elkes, 1954). My patient has had weight fluctuations of ± 12 lb. (5.4 kg.) over the past ten years.

Winnik and Tennenbaum (1955) report the occurrence of galactorrhoea in 21 patients treated with chlorpromazine. The ages of these women ranged from 18 to 45 years, and none had previously had any transitory or persistent pathological secretion of milk. In five of these patients the psychosis appeared during the post-partum period, and milk secretion, which had been suppressed by drugs, reappeared during chlorpromazine therapy. In contrast with normal lactation, these authors found that the breasts were not enlarged; the condition was unilateral in six of their series.

The phenomena described lend support to the hypotheses related to the diencephalon, which have been put forward to account for the action of chlorpromazine hydrochloride on the central nervous system. Similar changes have been found in endocrine disturbances, notably the syndrome of Chiari and Frommel, and in some cases of neoplasm of the diencephalo-hypophyseal system.

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