CHRONIC NEPHRITIS.

I have no intention of going over the ordinary lines of treatment of chronic nephritis given in the text-books. It is far better to give entirely personal views and emphasise personal beliefs.

Two points in treatment are, I believe, of special importance and both are, unfortunately, at present beset with difficulties. These are the influence of *diet*—solids and liquids—in treatment, and the employment of *diuretics* to remove œdema. The first of these methods assumes particular importance in patients having nephritis with nitrogen retention; the use of diuretics is specially urgent in cases with œdema and large effusions into pleuræ and peritoneum. It may be said at once that the scientific basis of both of these forms of treatment is far from understood, and the procedure is thus largely a matter of trial and error. Often there is a “miss,” sometimes a remarkable and satisfactory “hit.”

Diet.—When I think over my recent experiences in the United States of America, I feel that we in Britain are now greatly behindhand in exploiting dietetic measures in the treatment of disease. Only the recent developments in diabetic therapy have roused us, but still in a sadly limited way. I am not recommending special dietetic régimes, such as the Epstein diet, in the treatment of nephritis, but dietetic measures of a more general kind. An excellent account of the dietetic principles involved in the treatment of nephritis is given by Christian and O'Hare in their revised chapters for the “Oxford Medicine” (Christian and Mackenzie). No extremes are advocated in protein or fluid intake. The main principles are as follows. In the early acute stage milk only, 800–1000 c.cm., is given, or occasionally bread and milk. After this stage is over, the diet should be of increased caloric value with a low content in protein and salt. The caloric value is mainly made up by carbohydrate and fat. The “low protein, salt poor” diet used by Christian in Boston is constructed to comprise 2000 calories, with not more than 25 g. of protein and 2 g. of sodium chloride. The fluid intake is fixed at 1200 to 1500 c.cm. in the 24 hours. As convalescence progresses protein is gradually added until 75 g. per day is reached, but no more is given until all evidence of nephritis has disappeared.

I am emphatic that such care in dietetics yielded to me better results in cases of nephritis than I am accustomed to expect at home, where the dietetics in hospital and private practice are much more haphazard.

Diuretics.—The profession at present is much in need of guidance in the mechanism and use of diuretic drugs. New drugs are constantly being advocated (novasurol, ammonium chloride), but it is difficult to form any just estimate of their value. The fact is, as I have indicated, that with our very imperfect knowledge of urinary secretion both in health and disease, the use of diuretic drugs is still largely on the “hit-and-miss” principle. A drug

acts like a charm in one patient and is valueless in the next. This being so, the only method available to us is to give one drug after another a fair trial over a reasonable time, beginning with the simplest remedies which can do least harm, if they happen to do no good. In order these might perhaps be roughly placed: plain water, caffeine, urea, various theobromin derivatives (diuretin, &c.), theocin and finally drugs like novasurol and calcium of ammonium chloride. I must not, of course, omit the use and great value of digitalis in cases of nephritis with œdema due to secondary cardio-vascular changes. In some cases gastric irritability will defeat some of these drug treatments, and the remedy will be vomited at once, as in a recent case where ammonium chloride was being tried.

The value of venesection should not be forgotten and I have seen copious diuresis follow the removal of blood without any drug being employed at all. It is, however, only too well known that so-called “urinary crises,” with extraordinary diuresis and clearing up of œdema may begin without any active treatment whatever!

I would emphasise again that I have deliberately omitted all points in treatment which are adequately dealt with in text-books and have tried to speak of some matters which are of great importance in the general management of nephritis, but not so commonly described.

THE RÔLE OF VACCINE THERAPY IN COLIFORM INFECTIONS OF THE URINARY TRACT.

BY

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THIS has been a debatable subject since the commencement of vaccine therapy. Cases claimed as wonderful successes and still more numerous ones that have been abject failures have fallen to the lot of almost everyone who has practised this treatment. It ought therefore to be of interest to consider some of the anatomical and immunological data that appear to operate and govern the results of treatment.

METHOD OF INFECTION.

This must be considered on account of the constant liability to relapse in this class of infection, since these relapses constitute, in a sense, reinfection. Bacteria of the coli-typhoid group have been shown to have a remarkable facility for passing into the blood stream from the tissues, not

doubt more especially from the large bowel, and again of being re-deposited from the blood stream into the tissues. Coliform bacilli have been frequently found in the blood stream of normal persons, and may be passed out through an apparently quite normal kidney, so that in a general sense these organisms are rightly regarded as practically non-pathogenic. If, however, they are set down from the blood stream in a tissue in which they can multiply they will set up a suppurative inflammation. For this to happen it is first necessary for the tissues to have suffered some pathological change, possibly a local change of reaction, judging, that is to say, largely by animal experiments. This postulate is probably equally true whether the infection takes place by the hæmatogenous route or by ascent of the ureters and direct implantation. It follows that in these infections, as in most others, there are two factors to consider: (1) the infecting agent itself; and (2) the localising factor, whatever it may be, that makes the particular tissue valid for its growth. In the present state of our knowledge of immunity we are only concerned with the former.

Local Changes.

Acute Conditions.—Here we have to consider the anatomical changes. The commonest site of infection is the kidney pelvis, and this one seldom has an opportunity of seeing in early cases, but there appears to be an active catarrhal inflammation of the mucous membrane causing the acute symptoms that we see in this stage. From the mucous membrane, bacilli escape into the blood stream and, more especially during the evening rise of temperature, these may be grown in blood cultures. From the pelvis the infection may involve the tubules and spread up into the substance of the kidney; blockage of the tubules leads to the formation of definite collections of pus in the kidney substance (pyelonephritis); the abscesses so formed may increase in size and have a very serious bearing on any attempts at immunisation.

Chronic Conditions.—These may follow the acute disease or may arrive by slow and unnoticed stages. The condition is a chronic purulent catarrh of the pelvic mucosa. In old-standing cases the mucosa becomes ragged and eroded, the epithelium is irreparably damaged, and a diffuse fibrosis ultimately results.

Bacilluria and the "Carrier" State.—In this condition the organisms are localised in the urinary tract, presumably in some pouch of the kidney pelvis in which drainage is incomplete. During periods of quiescence they are not infecting the tissues and the body makes no reaction to their presence in the sense of a leucocytic exudate, but there may be no immunity in the host and acute exacerbations may occur from time to time as a result of tissue infection. These chronic conditions are allied to those residual infections met with in urinary typhoid "carriers" and show all their well-known intractability to treatment.

IMMUNITY.

Having discussed these anatomical considerations we can now consider the immunity side of the problem. By subcutaneous inoculation of dead bacilli in increasing doses it is easy to establish an immunity to the coli-typhoid group of organisms. Why, then, should we so often fail with infections of this type to eradicate the disease? The explanation is to be sought partly in the anatomical states already described, and partly in immunological conditions. When we speak of an immunity to an organism such as the *B. typhosus* we mean that if living organisms of this type gain access to the body they will be unable to settle down in the specific tissue—the mucosa of the small bowel—and set up typhoid fever, or in the case of dysentery organisms to infect the large bowel in the same way, and it is probable that if the coliform bacillus had a specific locus in this sense it would be in the intestinal canal. Part of the process of immunisation is to render these specific tissues insusceptible to the attack of the organisms. It would appear that the kidney pelvis is not a specific tissue for the coliform bacillus in this sense and therefore does not develop a local immunity in the same way and to the same extent that a truly specific tissue would. To these problems of immunisation the anatomical changes in many cases add further difficulties. In chronic ulcerative conditions a dense fibrous tissue develops and not only helps to exclude any antibodies that may be circulating in the blood, but acts mechanically in preventing the formation of a new epithelial covering. Then in the true carrier states, characterised by phases of pure bacilluria, the organisms living in the urine are entirely outside the range of immunity processes, whether local or general. It will be seen from these data that the immunisation of a patient, even with an autogenous vaccine, will not necessarily result in a cure, and we can now consider what can reasonably be hoped from this line of treatment.

We may say that immunisation in the serological sense is easily achieved, that it may be expected to have some effect so far as an invasion of the tissues in general is concerned, and that it will probably have some effect on the local lesion provided the anatomical changes are not too advanced and the infected area not too much encumbered with scar tissue.

PRACTICAL CONSIDERATIONS.

Of what practical value, then, is vaccine therapy in these cases? I think it might be summed up as follows.

Acute Cases.—In acute conditions, whether first or subsequent attacks, vaccine treatment is not indicated. It is almost certain to do harm in cases in which a pyelonephritis has developed because the effect of a vaccine on an undrained abscess (which is what these collections of pus in the close-packed kidney substance amount to) is to increase the activity and tension in the abscess and greatly to aggravate the condition. With intensive alkali

treatment the bulk of the acute cases clear up completely and the question of immunisation does not arise. If the disease is prolonged and no underlying cause, such as a stone or some other mechanical condition, is found to be keeping it going, a careful attempt at immunisation may be made. It is wise in such cases to begin with small doses, say from 2 to 5 millions. If the inoculation has no effect as judged by the temperature chart it may be repeated with double the dose on the third day. If the temperature rises and remains high some form of loculated pus must be suspected, and it would be wise to stop the vaccine. If the temperature falls, as it probably will, larger doses of vaccine rising gradually from 20 up to 200 millions or more should be given, gradually increasing the intervals between the injections to 7 or 10 days as the dose of vaccine is increased. In this way a considerable degree of immunity will be attained which will lessen the liability of a chronic pyelitis resulting and will probably prevent a recurrence, at any rate, in the near future. Whether or not the patient has been treated by vaccines it is always wise to examine the urine from time to time, after an acute attack has apparently cleared up, to see whether the infecting agent still remains in the urinary tract.

Subacute Cases with Recurring Febrile Attacks.—In this class of case treatment by vaccines is eminently desirable and usually effective, but it must always be remembered that there may be some primary factor at the bottom of the trouble. Some of these cases turn out to be tuberculous, others have stones in the bladder or kidney.

Chronic Infections.

Vaccine treatment of these cases, in my hands at any rate, has usually been unsuccessful. The patients will come to tolerate gigantic doses of the vaccine without getting rid of the infection. Some patients say that their symptoms are less marked if they have an occasional inoculation. If there is a liability to febrile attacks such injections are certainly advisable. It is only fair to say that others have been more fortunate in their treatment of these cases, especially in the earlier days of vaccine therapy. The organisms under consideration in this paper are essentially those of the coliform group which are usually associated with an acid urine; there are organisms of allied groups, such as *B. alkaligenes* and *B. proteus*, which usually occur in alkaline urine, and these, although they may cause primary infections, are mostly associated with some other condition such as stone or growth, and for this reason it is well to know what particular coliform organism one is dealing with. It is hoped that these remarks will be some guide as to when it is reasonably worth while to attempt immunisation in infections of the urinary tract, and although the day of extravagant expectations from vaccine therapy is for the moment past, it may help to explain some of the not unreasonable disappointments that fall to our lot in treating this class of case.

ROUND THE WARDS AT THE BOLINGBROKE HOSPITAL.

WITH

MR. ZACHARY COPE.

THERE are half a dozen patients in the wards at present from which we may be able to gather some useful information. We will first take the cases of two little children.

CASE 1 is a little child, 3½ years of age, who was well until the middle of December, when he slipped off the pavement, but was pulled back rather sharply by a person holding his right arm. That same evening some pain was felt round the shoulder, and within a few days a swelling developed above the right clavicle. I saw him first on Dec. 22nd, when there was a fluctuant swelling the size of a hen's egg above the right clavicle. It was painless and fixed and did not pulsate. The movements of the right shoulder were normal and the only abnormality by X rays was a rather bigger gap than normal at the right sternoclavicular articulation. On inserting a hollow needle an ounce of clear serous fluid was withdrawn and soon clotted. On the first examination a tentative diagnosis was made of a branchial cyst. The swelling showed no tendency to subside spontaneously, and by the time operation was undertaken a prolongation could be felt in front of the clavicle. An incision was made parallel to and just above the clavicle and the swelling found to be a loculated cystic mass, partly subcutaneous and partly under the posterior edge of the sterno-mastoid muscle. Most of it was removed, but a portion was too adherent and was simply mopped with pure carbolic acid and drained. Even when the mass was removed its nature was doubtful. Some cysts were large and some very small and gelatinous. The diagnosis rested between cystic hygroma and hydatid cysts. The microscope showed it to be a cystic hygroma or collection of dilated lymph cysts.

This condition is not infrequently met with in children, most commonly in the neck, but sometimes in other parts. The interesting point about the case was the sudden development of the swelling after a slight injury.

CASE 2 is also a child of 4 years, who was sent up to the hospital because he limped and complained of pain in his left knee. There was no fever. Manipulation of the knee caused pain, but there was no swelling nor special tenderness over the region of the epiphysal lines. The practitioner in charge had suspected osteomyelitis and had wisely sent it up for advice. There was no vacant bed in the hospital, so we asked him to watch the patient for a few days and send up again if any further symptom developed. A few days later the child came with a definite swelling of the knee, which was tender. There was also considerable swelling in the lower and outer part of the thigh. Under an anaesthetic I made a small incision in the latter region and explored the space behind the lower end of the femur. No evidence of pus or oedema. A needle inserted into the joint withdrew pus. A small incision was then made and a great deal of flaky pus removed. Some flakes were like big lumps of custard. The joint was washed out with saline solution and closed up again.

The acuteness of the onset and the nature of the pus made me think that in this case we were dealing with a case of pneumococcal arthritis. A culture of the pus, however, proved negative, and the joint remains hot and puffy though fever is almost absent.