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URINARY INFECTIONS

The presentation to the clinician of many chemotherapeutic substances having an action against the organisms which infect the urinary tract has placed upon him a heavy responsibility for their proper use. It has also multiplied the work of the bacteriologist, who is now expected to find out not only what organisms are present but also to say to what drugs they are sensitive. Three articles on the subject^{1 2 3} in the *Journal* of October 30 are timely because they indicate the limitations of such drugs and the factors which militate against successful therapy; they also make it clear that there can be no complacency in treating these infections and that many of the fundamental principles known before the advent of antibiotics must still be applied if cures are to be obtained.

Garrod, Shooter, and Curwen¹ investigated the results of treatment in 686 patients, grouping them according to the patient's condition, the infecting organism, and the drug used. They confirm the widely held opinion that the patient's condition is the most important factor, dividing their cases into those with a urinary tract abnormality, those with a history of previous infection, and those with neither. When an abnormality of the urinary tract is present the prognosis for cure of the infection is poor, and even if at first a sterile urine is obtained recurrence of infection is the rule unless the abnormality is corrected surgically. The prognosis is good when the urinary tract is normal and there has been no previous infection; in this group 80% of males and 88% of females were cured. The history of a previous urinary infection makes the outlook less favourable. The nature of the infecting organism also has an influence on the prognosis: coccal infections are most easily eliminated, and then coliform infections, provided drugs to which they are sensitive are used. Some patients, however, particularly those with coccal infections, were cured even though a drug considered inappropriate by *in vitro* tests was used. *Proteus*, *pyocyanea*, and *paracolon* infections proved the most resistant to therapy. The choice of the actual drug

used out of those to which the organisms were sensitive appeared to have little effect on the outcome, and sulphonamides must keep their place in treatment if only because they are less costly than the newer antibiotics.

Durham, Shooter, and Curwen² carried out tests to discover the value of sulphonamides in preventing infection after vaginal operations. Sixty patients were given 1 gramme of "sulphatriad" three times a day for seven days after operation, and 42 similar cases were used as controls and given no sulphonamide. In both groups a large majority of the patients became infected, and although coliform infections were to some extent lessened by sulphonamide those due to *Str. faecalis* were increased. Table V in the paper by Garrod and his colleagues showed that *Str. faecalis* was 100% resistant to sulphonamides, but only 17% of the organisms tested were resistant to penicillin. This is surely an indication for combined therapy in these cases. The main factor in producing the high rate of infection in the gynaecological cases was the use of the catheter, whether indwelling or used intermittently. Out of six patients not catheterized five were free from infection, while of 11 repeatedly catheterized only one remained free. Catheterization of a female patient is usually carried out by a nurse, and the technique sometimes leaves much to be desired. A widely read textbook of nursing makes no mention of the need for a lubricant for the catheter, and a recent inquiry by the British Association of Urological Surgeons showed that in most hospitals throughout the country the use of a lubricant for the female catheter is not considered necessary. The female urethral mucous membrane is as delicate as that of the male and just as sensitive to the effects of trauma. It is perhaps for this reason that the rigid glass or metal catheter has been largely superseded by the soft rubber instrument, but it must be apparent that the introduction, without contamination, of a soft catheter into the urethra of a stout woman lying in bed is difficult, especially if it is attempted single-handed. The use of a catheter after pelvic operations is unfortunately often necessary, although it can sometimes be avoided by giving a parasympathetic stimulant such as carbachol. If a catheter has to be passed in the ward its insertion should be invested with the full rites of a surgical operation, just as it is in paraplegic cases.⁴

The paper by Shackman and Messent³ discussed the effect of an indwelling catheter on the bacteriology of the male urethra and bladder. After prostatectomy by any method in which the bladder is completely closed an indwelling catheter is unavoidable,

¹ *British Medical Journal*, 1954, 2, 1003.

² *Ibid.*, 1954, 2, 1008.

³ *Ibid.*, 1954, 2, 1009.

⁴ Hardy, A. G., *J. Bone Jt Surg.*, 1954, 36B, 368.

⁵ *British Medical Journal*, 1953, 2, 954.

⁶ Page, B. H., *British Medical Journal*, 1952, 2, 1415.

⁷ Riches, E. W., *Practitioner*, 1952, 169, 392.

and when it is retained for any length of time urethritis results, less severe when the catheter is made of latex rubber. Some degree of cystitis follows in the majority of cases. The organisms present in the male urethra before catheterization are saprophytic, with staphylococci predominating; after prostatectomy there is a development of *Bacterium coli*. This is also the commonest organism in the bladder both before and after the prostatectomy, but proteus strains increase after operation. There is no invariable relationship between the urethral and bladder organisms either before or after prostatectomy and catheterization.

There are some important lessons to be learned from these reports. The exclusion of a urinary tract abnormality is essential if chemotherapy is to succeed. This may in some cases be done by an intravenous pyelogram, but other cases require more elaborate investigations. Even routine intravenous pyelograms for all cases of urinary infection will throw an added burden on already overtaxed x-ray departments, and in the absence of clinical evidence of abnormality it is a practical concession to allow one full course of treatment by the drug found appropriate after sensitivity tests. This course must be given in full dosage to avoid the development of resistant strains of bacteria. Combined therapy with more than one agent—the advantages and limitations of which have been discussed by Garrod⁵—may often prove of greater value than treatment by a single drug both in prophylaxis after operation and in treatment. The use of penicillin and sulphonamide together appears to be of particular value after prostatectomy.

Catheterization must be atraumatic as well as aseptic. "The cleaner you are the better, the gentler you are the best" is a good urological motto and applies to both sexes. The female catheter as well as the male should be lubricated by a sterile lubricant, and the importance of a careful technique should be impressed upon all who have to pass catheters. Red rubber catheters appear to have a greater irritant effect on the urethra than latex⁶ or possibly plastic instruments; they should not be used when an indwelling catheter is needed. The catheter should drain into a closed antiseptic bottle,⁷ and in any event should be removed at the earliest opportunity.

There is still no antibiotic which can be relied upon to eliminate proteus and pyocyanea infections; after removal of an obstructive factor most infections tend to be self-limiting except these two. The paper by Garrod and his colleagues¹ starts with the remark that twenty-five years ago the only available urinary antiseptic was hexamine. This drug has been excluded from the present *National Formulary* on the grounds

that it is unscientific; but when prolonged treatment is needed after the correction of an abnormality of the urinary tract it still has its advocates and its uses.

HUNTINGTON'S CHOREA

Huntington's chorea is one of the most distressing of all inherited diseases. The prolonged suffering of those affected, the disruption of family life, social and economic difficulties, the grim period of waiting through early and middle life for the dreaded signs of onset, the appalling risk (50%) that any child of a sufferer will himself develop the disease, and that, should he be married, he may have already passed it on to his children—all these considerations combine to present to those interested in medical genetics the unhappiest problems with which they have to deal. The new and careful survey reported by Dr. M. J. Pleydell in this issue is therefore particularly welcome, and especially so because it comes from a member of the public health service who puts forward practical suggestions which show how local health authorities, general practitioners, and mental hospitals could combine to help sufferers and their families, and which might indeed succeed in time in lowering the incidence of the disease in the community. In his own county of Northampton Dr. Pleydell has discovered eight families. If this incidence is typical of the country, there are more than 1,000 such family groups in England and Wales, so the problem is far from negligible numerically.

Huntington's chorea is due to a dominant gene, which is transmitted freely from generation to generation because the majority of those affected have had time to produce families before the disease appears. All surveys agree in showing that the gene has nearly always been received through a line of ancestors, and evidence that recent mutations may have occurred is only very rarely forthcoming. Bell's¹ useful table giving age of onset shows that in about 10% of patients the disease begins before the age of 20 years; in a further 20% it begins between 20 and 30, while some two-thirds of all those affected have developed their disease by the age of 40. If the fertility of those bearing the gene were the same, age for age, as in the community generally, we should expect a reduction in average total fertility, say, at a guess, by one-quarter. On certain simplified assumptions this figure can be linked to the expected mutation rate. About a quarter of the cases should be sporadic, coming from hitherto normal families. In about a further 20% the condition should be traceable no further back than one generation. Manifestly this is

¹ *The Treasury of Human Inheritance*, 1934, 4, 1. ² *Science*, 1951, 113, 294.