The Management of Recurring Urinary Tract Infection in the Female

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SUMMARY

A series of 70 cases of recurring cystitis in adult women is reported. Only in 9 was evidence found of structural changes in the urinary tracts, which might have predisposed to persistent infection. Reasons are given for concluding that in the others at least, the attacks were due to repeated access of faecal bacteria, especially during sexual intercourse. A prophylactic regimen is outlined and the early follow-up results in 51 cases so managed, are reported.


The normal urinary tract is mechanically self-sterilizing by means of a high flow rate in the pelvis and ureter and frequent complete emptying of the bladder without reflux. This means that bacteria introduced into the normal urinary tract can survive only by invading the tissues and then only until such time as the local defence mechanisms succeed in destroying them.

In the bladder, the resultant inflammatory reaction may produce local symptoms and by rendering the ureteric orifices incompetent, encourage upward spread of the infection by reflux. Even a single attack of acute pyelonephritis may result in measurable shrinkage of the kidney, and I have personally carried out nephrectomy twice in teenage girls in whom postcoital infection destroyed one kidney.

If tissue destruction does occur then fibrosis may lead to chronic vesico-ureteric reflux and obstruction at various levels (urethra, bladder-neck, ureter, renal tubules), as well as impairment of muscular contraction.

Any of these factors will contribute to stasis of urine with survival of bacteria within the lumen of the urinary tract and continued re-invasion of the tissues, i.e. chronic infection. In most situations, the stasis can be eliminated surgically but at the level of the renal tubules (chronic pyelonephritis) only long-term antibacterial therapy can assist the natural defences.

However, in most cases resolution is complete and it is therefore possible for a patient to suffer from repeated urinary tract infections with freedom from symptoms and a sterile urine in the intervals.

It is with this typical clinical picture, usually found in the sexually active female, that I wish to deal today. (In passing, I must enter a plea for the removal of this clear-cut entity from the miscellaneous conditions referred to confusingly as the 'urethral syndrome'.)

From January 1969 to March 1970 I was consulted in two hospital outpatient clinics by 70 women falling into this category. A careful note was made of the frequency, severity and anatomical extent of the attacks, as well as the predisposing factors, including especially sexual intercourse. In this series of patients, the mid-stream specimen of urine at the time of consultation showed evidence of infection in only 3. In 12 patients with a history of active vaginal discharge, a high vaginal swab was taken, but in none was any pathogenic organism cultured. The radiological abnormalities found included evidence of chronic pyelonephritis in 5 cases, of significant residual urine in 2, and of both in a further 2 cases. These 9 patients were excluded from the series but 7 other patients with minor developmental anomalies were included.

AETIOLOGY

It is well-known that these infections are caused by the patients' faecal organisms which have contaminated or colonized the perineal skin and distal urethra. Genital infection with the same bacteria is obviously a possible secondary source of contamination (though not found in this series), while occasionally coliforms from the husband can be incriminated, in the case of second marriages, for example. The evidence for recurring ascending infection is overwhelming and I do not propose to discuss it in detail here. Those who still believe that the attacks are due to reactivation of latent infection in the bladder-neck and proximal urethra will have to explain the recent work in which biopsy specimens taken from those tissues between attacks gave a culture of pathogenic organisms in only 1 out of 17 instances.

Although it has been suggested that turbulent flow in the urethra may carry bacteria back into the bladder, the relative immunity of sexually inactive women and the common relationship of the attacks to sexual intercourse suggest a simple milking effect. In one of my patients the mid-stream specimen of urine showed numerous spermatozoa and we are checking this observation which could obviously provide important evidence.

PREVENTION

Acceptance of these principles suggests that recurring cystitis might be preventable by one or more of the following measures:

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Reduction of the Number of Pathogenic Bacteria in the Faeces

The human colon is colonized with bacteria soon after birth and in the presence of a diet rich in protein the dense population of virulent organisms is sustained which has been held responsible for appendicitis, cholecystitis and diverticulitis, in addition to urinary tract infections.

A low protein diet has been shown to be effective in reducing the colony count of coliforms in the faeces. This may not be acceptable to many patients. Alternatively, the coliform population may be supplanted by a harmless species such as the Lactobacillus acidophilus which must be taken daily with an adequate amount of carbohydrate substrate. Enpact is scientifically produced for this purpose and several of my problem patients have reported great benefit from taking commercially produced yoghurt daily.

The Lactobacillus bulgaricus from which this is largely prepared, has a strongly bactericidal action though it may not establish itself in the bowel. The use of insoluble antibacterials is normally limited by the risk of super-infection with pathogens such as Monilia.

Reduction of Perineal Contamination

In this connection it is clearly important to exclude vaginal discharge as a secondary source of coliforms and in problem cases to consider the husband as a possible vector. In one of my cases, the patient had a 5-year record of freedom from infection while with her first husband. On remarriage, however, she fell victim at once to severe and frequent attacks of cystitis.

Adequate perineal hygiene involves a return of the habit of washing after defaecation which was the Roman custom (using a sponge) and which is still practised today in the ritual of various religions. Repeated changes of underwear, and the use of a bath or shower before intercourse are clearly important.

One of my patients, a model, was hurt by what she considered to be my insinuations of personal uncleanliness—she bathed twice a day. However, when she took her evening bath after her daily bowel action instead of before, her attacks promptly ceased.

The use of antibacterial substances applied to the perineum has been tried and generally abandoned on account of local irritation or superinfection. However, it has recently been claimed* after a carefully conducted trial, that povidone-iodine ointment applied to the external urethral meatus night and morning, is extremely effective for this purpose. Its lubricating action may help to reduce the urethral trauma which perhaps lowers the local resistance to bacterial invasion.

Removal of Bacteria from the Bladder after Sexual Intercourse

As urine is an excellent culture medium in which bacteria may double their number every 20 minutes, a single organism could produce a count of 20 - 30 million during a night's sleep. It seems logical therefore to advise emptying of the bladder after intercourse, at least in resistant cases.

Long-term Systemic Antibacterial Therapy

This clearly offers protection against repeated infection similar to that afforded by suppressive therapy in malarial districts. The expense and risk of side-effects surely indicate that this line of treatment should not lightly be adopted in the type of case under review. On the other hand, it is entirely suitable for cases of chronic pyelonephritis with recurring cystitis due to descending contamination, a situation which is often quite obvious clinically.

THE EFFECT OF A REGIMEN OF PERINEAL HYGIENE IN 61 CASES

The 61 uncomplicated cases referred to above were advised to carry out the following regimen which has been incorporated in a printed leaflet devised by the medical staff for use in the Liverpool Regional Urological Centre:

Regimen for the Prevention of Cystitis in Women

1. After a bowel action, the skin should be gently cleansed from front to back using soft toilet paper and then washed thoroughly with a soapy flannel. After rinsing and drying, a good talcum powder may be applied. (The flannel should be washed and squeezed out and used only for this purpose and should be boiled once a week.)

2. The underclothes should be changed more frequently than necessary for ordinary social hygiene.

3. A good wash, bath or shower before intercourse is clearly advisable.

4. When possible, the bladder should be emptied after intercourse. This washes out any germs which may, in spite of all precautions, have entered the urethra.

5. Finally, remember that germs invade your body more readily when your resistance has been lowered by illness (a cold or bowel upset, by exposure to cold and wet and by general debility). Make sure that you get enough sleep and enough good food, and that you do not forget to take a holiday when you need one.

In November 1969, the 51 patients with attacks occurring at intervals of 6 months or less were sent the following questionnaire:

1. Have you continued with the hygienic measures which were recommended? (Yes/No)

2. Have you had any further attacks of cystitis? (Yes/No)

3. If so,
   (a) Have the attacks been more or less frequent than before?
   (b) Have the attacks been more or less severe than before? (More/Less/Same).

An analysis of the 36 replies produced the following results: no further attacks 10; fewer attacks, less severe 7; fewer attacks, same severity 8; and same frequency, less severe 1.
Thus, even if all those patients who failed to reply are taken as failures, as many as half of our cases claimed improvement. As these patients are acting as their own controls, the trial cannot be regarded as scientifically satisfactory; a prospective survey is important and this is under way.

CONCLUSION

Women with simple recurring cystitis may obtain worthwhile benefit from a regimen of perineal hygiene. When this fails, the husband should be considered as a possible source of contamination and brought into the scheme. For particularly stubborn cases, the choice may be made between a regular application of a non-irritant and non-specific antibacterial to the perineum and the adoption of a low-protein diet with or without the daily administration of a culture of the Lactobacillus acidophilus.

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REFERENCES


Eclampsia and the Anaesthetist*

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SUMMARY

The anaesthetists' role in the management of eclampsia is increasing. In part this increase is explained by the freer use of caesarean section as a form of delivery. In addition, in certain cases conduction anaesthesia is the treatment of choice in eclampsia.

The anaesthetist in modern practice is an expert in intensive care and as such can offer much to the obstetrician in the management of a condition where cardiac failure is imminent, electrolyte and metabolic balances are disturbed and the cornerstone of treatment is a form of controlled hypotension.


The role of the anaesthetist in eclampsia can be relatively minor or very major depending upon the approach of the obstetrician, the knowledge of eclampsia which the anaesthetist has and the anaesthetist's availability for prolonged periods at any time of the day or night. Above all, the treatment of eclampsia requires a clear-cut policy which is strictly adhered to by all who play any part in the management of such cases. A variety of therapeutic schemes has never produced, from both the maternal and foetal point of view, as good results as has a single scheme. In other words, schemes may be changed for series of cases but except for minor variations should not be altered for individual patients. It is into such a system that the anaesthetist will be incorporated as a team member.

WHAT IS ECLAMPSIA?

Eclampsia is a disease confined to pregnancy, labour or the early puerperium in which grand-mal type convulsions occur in a patient with a raised blood pressure, proteinuria and clinically obvious oedema. These latter characteristics are almost invariably present and exceptions are very rare.* Craig in a series of 49 consecutive cases of eclampsia, found evidence of the impending fit in the known preconvulsive history and findings in all cases.