is by no means a rare one. It is to be suspected whenever eczematization occurs in skin lesions receiving local treatment with sulphonamides.

Intradermal and patch tests are of little value in diagnosis, which is best confirmed by the reaction which follows a small dose of sulphanilamide by mouth.

My thanks are due to Major B. C. Tate, R.A.M.C., who first drew my attention to the existence of this condition, and to the Director of Medical Services, N.Z.E.F., for permission to publish this paper.

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THE MODERN TREATMENT OF GONORRHOEA

BY

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Consulting Venereologist to the Army

The following article has been written in response to a request from the Editor, who recently received a letter from a surgeon saying he was "appalled by the way patients are being mistreated in general practice." I have therefore set out the treatment somewhat dogmatically, because my remarks are meant not for the venereologist but for the general practitioner, who may be none too familiar with either gonorrhoea or its treatment.

GONORRHOEA IN THE MALE

The incubation period is of some importance; a gonorrhoeal discharge usually starts 3 to 5 days after infection, with extremes of 2 to 10 days; do not believe the patient who says he has not indulged in sexual intercourse for several weeks or even months—he is either a liar or suffering from a relapse. It is said that non-gonococcal urethritis—and this is a very definite entity—has a rather longer incubation period: often a week or 10 days or more. Don't forget the possibility of an intra-urethral syphilitic chancre causing a discharge, in which case the incubation period is likely to be not less than 3 weeks.

Diagnosis

In a typical case there is a profuse greenish-yellow purulent discharge from the urethral canal; make sure that it does come from within the urethra and not, as in balanitis, from behind a tight foreskin. A thin watery discharge usually indicates chronic gonorrhoea or non-specific urethritis.

1. Take a loopful of the pus from within the meatus with a platinum loop and spread it thinly and evenly on a slide—or preferably two slides—and allow to dry in the air. Do not rub the slide over the tip of the glans penis. Stain by Jensen's modification of Gram's method—gonococci appear as Gram-negative intracellular diplococci. If there is likely to be any question of legal proceedings it is a wise plan to have the discharge cultured as well, in which case it is better to refer the patient to a pathologist before starting treatment.

2. Take a specimen of urine into two or more glasses; if the infection is recent, that in the first glass will be hazy owing to pus, and that in the second clear (anterior urethritis). If both glasses are hazy there is posterior urethritis as well. Add half an ounce or so of acetic acid to the urine in each glass: if the haze is due to pus it will not disappear; if due to phosphates it will clear.

If gonococci are found treatment may be begun; if they are not found take further specimens (smear and culture) next day, having told the patient to hold his urine all night or at least 4 hours before coming to see you. If gonococci are still not found refer the case to a specialist. You may get into deep water if you undertake chemotherapy without having made a definite diagnosis.

Only in *urgent* cases in which the diagnosis is clinically probable may chemotherapy be started pending the result of microscopical examination.

Treatment

The general practitioner should be chary of undertaking the treatment of gonorrhoea unless he has had considerable experi-

ence not only of the disease but of chemotherapy: gonorrhoea cases have a way of "going wrong," and the sulphonamide drugs are dangerous in unskilled hands. Many practitioners do not care to treat these cases, and there are plenty of venereologists and V.D. clinics available in most parts of the country. Remember, the average venereal patient is not a satisfactory one: if you cure him he shows little gratitude; if you fail he is apt to turn nasty.

However, if you do decide to undertake treatment start on the following lines. Don't forget the importance of general as distinct from specific treatment. During the acute stage the patient should lead a quiet, peaceful, sedentary life, keep his bowels well open with cascara or liquid paraffin, and avoid sexual intercourse, alcoholic and other stimulants, and pornographic literature. No special diet is necessary. Above all things he should avoid introspection: many of these patients take far too much interest in their disease and its treatment. This applies more particularly to those cases which do not react well to specific drugs. All patients should be warned of the contagiousness of their condition and of the necessity for simple hygienic measures to avoid infecting their own eyes or communal articles such as towels, baths, etc. While it is true that *adults do not get gonorrhoea from such things as lavatory seats*, nevertheless young female children are particularly susceptible to infection, and simple hygiene is desirable on aesthetic grounds alone.

Chemotherapy

Before starting this exclude previous intolerance and other contraindications such as certain dermatoses, blood dyscrasias, renal disease, jaundice, and neuritis, and ask the patient if he has already taken any sulphonamide. Remember that the sulphonamides may cause vertigo: do not allow a patient to drive a car or pilot an aircraft while taking these drugs. Under optimum conditions from 80 to 90% of early acute cases will be cured by the best of the sulphonamide preparations without any other treatment. Those recommended are sulphadiazine, sulphathiazole (thiazamide, M & B 760), sulphapyridine (M & B 693), and sulphanilamide, in that order of merit; the first-named is often unobtainable, and sulphathiazole is therefore the usual choice. Prescribe 5 g. (10 tablets) a day for 2 days—3 tablets on rising, 2 at midday, 2 at tea-time, and 3 at bedtime; the tablets should be given crushed; two tumblerfuls of water or other bland fluid to be taken on each occasion. It is of the utmost importance that the fluid intake should be *at least 6 to 7 pints* in the 24 hours in order to avoid the risk of haematuria, which may be a very serious complication of treatment. If the patient shows a dramatic improvement at the end of 48 hours no further chemotherapy may be needed; if, however, there is still some discharge, or the urine is still hazy with pus, continue chemotherapy on the same dosage for a further 2 days; total—20 g. of sulphathiazole in 4 days. Then *stop* the drug. Insist on seeing the patient daily, preferably early in the morning, and do not give a prescription for, or supply, sufficient of the drug for more than one day: sulphonamide preparations cannot be obtained by the patient from a chemist without a prescription. The sulphonamide preparations appear to act best and to be less apt to cause haematuria or anuria when the urine is rendered alkaline; therefore prescribe the following from the start of the treatment:

Pot. cit. (or sod. cit.)	..	..	gr. xxx
Pot. bicarb. (or sod. bicarb.)	..	..	gr. xx
Chloroform water	..	..	ad 3ss

Sig.—One tablespoonful to be taken 4 times a day.

If the discharge clears in 2 to 4 days watch the patient daily for 7 days after the termination of chemotherapy, noting whether there is any discharge or heavy threads in the urine; if both are absent at the end of this period a presumptive cure has been obtained. If after 4 days' chemotherapy minor signs of urethritis persist, put the patient on to antero-posterior irrigations (into the bladder) of 1 in 10,000 potassium permanganate or 1 in 8,000 oxycyanide of mercury. (Before using the latter drug make sure the patient is not taking iodides in any form.) Irrigations should not be carried out by the patient himself but by someone skilled in the procedure. The lotion should be at blood heat, given with an irrigator, raised not more than 2½ feet above the patient's penis, and a nozzle of the Janet type; the anterior urethra should first be cleansed, and the

solution then coaxed, not forced, into the bladder. Fill and empty the bladder two or three times, using 2 pints of the antiseptic lotion. Do not in any circumstances use a syringe for urethral treatment: syringing is an inefficient method, and serious consequences may result. If 7 days' irrigation fails to complete the cure you may give a second course of sulphonamide drug, but first have a total and differential white blood count done to avoid the risk of agranulocytosis; preferably use a different preparation—e.g., sulphadiazine, 6 g. a day for 4 days, or sulphapyridine, 5 g. a day for 4 days. If this second course of chemotherapy fails you may assume that the patient is sulphonamide-resistant, and further chemotherapy is not only useless but even dangerous.

Cases which resist chemotherapy and irrigation are most likely to be troublesome—look out for complications, especially epididymitis and prostatitis. The most efficient treatment for sulphonamide-resistant cases is artificially induced hyperpyrexia; this is a dangerous procedure unless carried out by an expert. The most effective method of raising the patient's temperature is the heat cabinet—e.g., the Kettering hypertherm or the inductotherm—but as these cabinets are rarely available, recourse is usually had to simpler methods, such as intravenous or intramuscular injections of various forms of protein—e.g., typhoid or *coli* vaccine, sterile milk, peptone, or one of the various proprietary preparations.

If the patient is not cured after two courses of chemotherapy and irrigation refer him to a specialist; the same applies to those cases which show intolerance of the sulphonamides.

Intolerance to Sulphonamides

The following are the commoner side-effects of sulphonamides, with recommendations concerning them.

Side-effect	Recommendation
Headache, lassitude, disorientation, diplopia, insomnia	Unless severe, maintain dosage. Keep patient in bed
Pyrexia (above 100° F.)	Reduce dosage; force fluids; stop drug if temperature persists
Nausea, vomiting, epigastric discomfort, diarrhoea	If mild, maintain dosage but give a diet of slops and alkaline gastric sedatives. If more severe, reduce dosage or stop altogether
Conjunctivitis (sulphathiazole)	Imperative to stop drug and force fluids
Cyanosis	Exclude sulphur-containing foods and drugs. Do not stop drug unless severe. Give methylene blue 0.5 to 1 g. a day by mouth
Haematuria	Discontinue drug; force fluids. If oliguria or anuria develops call in a G.U. surgeon: ureteral catheterization or nephrostomy may be indicated
Dermatitis	Avoidance of exposure to the sun assists in prevention. Discontinue drug. Induce diuresis; check leucocyte count
Agranulocytosis	May be ushered in by sore throat, headache, and fever; do blood count. Pentnucleotide 0.35 g. intramuscularly twice daily. Transfuse with fresh defibrinated blood
Haemolytic anaemia	Omit drug, induce diuresis, transfuse
Jaundice, toxic hepatitis, acute yellow atrophy	Imperative to discontinue drug

Summary.—In dermatitis (rash) and fever it is wise to stop the drug and force fluids. In conjunctivitis, acute haemolytic anaemia, haematuria, severe leucopenia, hepatitis, and jaundice it is imperative to do so. Remember that persons who have shown themselves susceptible in the past will almost certainly do so again. Therefore always question the patient as to previous idiosyncrasy before prescribing sulphonamide drugs.

Complications

These usually call for specialized treatment unless they react to the sulphonamides, and therefore will only be mentioned briefly.

Infection of Tyson's glands, situated on each side of the fraenum, and of the para-urethral ducts, situated beside the meatal opening, is not uncommon; it usually clears up under chemotherapy. If not, it may have to be dealt with by electrocautery or surgically.

Folliculitis (inflammation of Littre's glands), infiltrates, and peri-urethral abscess usually occur somewhat late and in maltreated cases, and may call for the use of Kollmann's dilator or intra-urethrosopic treatment such as cauterization or incision.

Posterior urethritis probably occurs in a large proportion of those cases which are not treated in the early stages. It usually presents no special symptom; when it does, frequency, strangury, or even retention of urine may occur. Treatment consists of hot baths and suppositories of morphine, gr. 1/4, and atropine, gr. 1/70, one each night for a few nights; rarely it may be necessary to pass a

soft rubber catheter to relieve retention, but this should be done only as a last resort and with the strictest aseptic precautions.

Epididymitis occurs in about 5% of cases, and can usually be avoided if the patient leads a sedentary life during the acute stage and wears a jock-strap or sports slip. It may be caused by external violence such as a blow, too strenuous exercise, unskilled instrumentation, or over-forcible irrigation. In the acute stage the patient should lie up, the testicles should be supported with cotton-wool and bandage, and ice-packs or glycerin of belladonna or kaolin poultices applied. It usually clears up rapidly under chemotherapy; if it does not, puncture with an intramuscular needle often relieves the acute pain. Irrigation, if being given, should be stopped during the acute stage. Epididymitis is usually preceded by prostatitis and vesiculitis, and these should be dealt with when the condition has subsided. The vas deferens on the affected side is usually permanently blocked, so that if the condition is bilateral the patient is likely to be permanently sterile.

Prostato-vesiculitis.—This probably occurs in all cases of posterior urethritis and almost always precedes an epididymitis or arthritis. If acute it usually resolves under chemotherapy, but if it persists sedative treatment by means of hot sitz baths and morphine-and-atropine suppositories is indicated. A prostatic abscess generally bursts into the urethra, but may require surgical incision. In the chronic stage, when the only evidence is pus and perhaps gonococci in the secretions, regular gentle massage every 5 to 7 days and diathermy are indicated.

Arthritis and tenosynovitis usually attack one or two of the larger joints or the tendons around them—e.g., knee, ankle, shoulder, wrist; arthritis may also affect several of the smaller joints, such as those of the hands and feet. Treatment should be directed to the original focus—nearly always the prostate and vesiculae seminales; artificial hyperpyrexia is very successful in early cases.

Cowperitis, keratoderma blennorrhagica, septicaemia, and endocarditis occur very rarely and call for the services of an expert.

Ophthalmia is rare in adults, and usually reacts very rapidly (within 24 hours) to chemotherapy. Protect the sound eye; instil atropine drops into the affected one and bathe frequently with boric lotion or sterile normal saline. Since ophthalmia may lead to permanent blindness it is wise to call in a specialist.

Test of Cure

If the patient has reacted well to chemotherapy, with or without irrigation, and if presumptive cure has been obtained by one or two courses of the drug within a week of discontinuing treatment, he should be re-examined once weekly for 3 weeks in order that any tendency to relapse may be detected, and then finally at the end of 3 months. *No lower standard of cure is permissible.* At the 3 preliminary weekly tests of cure the urethra should be examined for any discharge and the urine for heavy threads—i.e., those which sink within a minute. It is best to see the patient early in the morning after he has held his water all night. The presence of gonococci or numerous pus cells indicates incomplete cure.

Final Test of Cure

(a) Look for any discharge.

(b) Examine all-night specimen of urine in two or more glasses, telling the patient to retain some urine in his bladder. Make smears and cultures from any discharge or threads.

(c) Massage prostate and seminal vesicles firmly but gently with the patient in the knee-elbow position; expressed fluid should appear at the meatus. If it does not, tell the patient to pass the remainder of his urine: centrifuge this; make smears and cultures. Note condition of Cowper's glands before removing finger from rectum.

(d) Wash out urethra and bladder with oxycyanide of mercury lotion 1 in 8,000, leaving some in the bladder.

(e) Examine anterior urethra with the urethroscope for follicles, infiltrates, stricture, etc.

(f) Pass the largest curved sound which will traverse the meatus (say 22–26 Clutton) into the bladder.

(g) Tell patient to empty bladder.

(h) Take a specimen of blood for Wassermann, Kahn, or other serum test to exclude syphilis; have a gonococcal complement-fixation test done if the patient has been resistant to treatment or has suffered from complications.

If the patient passes all these tests satisfactorily he may be dismissed as cured.

Relapse

About 5% of all cases may be expected to relapse, and this is much more apt to occur in those cases which have reacted

poorly to chemotherapy. Treatment of a relapse is similar to that of the original attack, but tests of cure should be even more meticulous.

Summary of Treatment

1. Make sure of the diagnosis.
2. Before starting chemotherapy inquire for history of previous intolerance. No special diet is necessary.
3. Give sulphathiazole, 5 g. a day for 2 to 4 days, in evenly spaced doses; the drug need not be taken during the night. Give concurrent alkaline mixture and plenty of fluids. In place of sulphathiazole the following may be used: sulphadiazine, 6 g. a day for 4 days; sulphapyridine, 5 g. a day for 5 days; or sulphamonomide, 5 g. a day for 5 days. *Never give a sulphonamide preparation for more than 7 consecutive days in any circumstances.*
4. Look out for toxic effects of sulphonamides.
5. Look out for complications.
6. Always do a blood count before a second course of a sulphonamide.
7. Make certain that tests of cure are meticulously carried out: you cannot be sure the patient is cured unless you do. If he is not, he may unwittingly infect some innocent person.

Warnings

Cases are divided into two classes—those which are cured by sulphonamides and those which are not. Refer the latter to a specialist. You may regret it if you don't.

Don't give more or less of the sulphonamide than the dosage indicated above. If you overtreat, serious reactions which may endanger the life of the patient may occur. If you undertreat you may make the patient sulphonamide-resistant: he may then take months to cure.

Don't attempt procedures with which you are not familiar—e.g., irrigation, instrumentation, prostatic massage.

Don't use a syringe for intra-urethral treatment, and don't use provocative instillations for test of cure.

Gonorrhoea is a serious disease, and sulphonamides are dangerous drugs, not to be prescribed lightly.

The average V.D. patient is an unsatisfactory one; he is usually a liar. Tread very warily, especially as regards prognosis.

Appendix: Technique of Irrigation

Tell the patient to pass water.

Cleanse the glans penis with a little of the lotion to be used.

Use an irrigating vessel, preferably of glass, connected by six feet of rubber tubing to a blunt-pointed glass nozzle (Janet type).

Pour two pints of the lotion at 100° F. into the container and expel air from tube and nozzle. Clip the tubing.

Adjust the height of the irrigating vessel not more than 2½ feet above the patient's penis.

Patient should stand, or lie on an examination table.

Insert nozzle into the meatus, release the clip, and allow lotion to fill the anterior urethra. Repeat three or four times, allowing the urethra to empty after each filling.

Insert nozzle and tell patient to relax, take deep breaths, and try to pass water. In this way lotion may be coaxied into the bladder. *Don't force it.*

Repeat this procedure two or three times.

GONORRHOEA IN THE FEMALE

Treatment of this is carried out on similar lines to that in the male. Chemotherapy in proportionate dosage, making allowance for weight, is usually successful provided there are no closed foci—e.g., Bartholinitis. Douching is to be deprecated; dry swabbing or swabbing with weak alkali is usually preferable. Skenitis, Bartholinitis, cervicitis, and salpingitis should be dealt with as they occur, preferably by a specialist. Tests of cure should be carried out immediately after the menstrual period for 3 consecutive months following termination of treatment. They should include both microscopical and bacteriological examination of all pathological specimens and, of course, blood tests.

Medical Memoranda

Intestinal Obstruction after Caesarean Section for Contracted Pelvis

Cases of intestinal obstruction after Caesarean section reported up to 1938 are not numerous. O'Connor (1934) had one death from intestinal obstruction in 436 cases of Caesarean section, the patient dying on the sixth day. No suggestion was made as to the aetiology, except perhaps toxæmia. Haultain *et al.* (1933-4) found that irregular action of the bowels was present in 24 patients (14.1%). The lax post-partum abdominal musculature, arising *de novo*, was the only aetiological agent suggested. Montgomery (1936) considered peritoneal adhesions a possible cause of intestinal obstruction after Caesarean delivery, but he does not mention the possibility of pelvic impaction of the uterus. Quigley (1937) reported three cases of intestinal obstruction in a total of 358 Caesarean sections simply as "ileus," with one case—"Intestinal Obstruction: Operation."

The following two cases, treated shortly after each other in 1930-1, aroused my interest at the time. Search of the literature, however, failed to disclose reports of any similar case, although some must surely have occurred. Both women were primiparae under 30. Gestation had been normal so far as was known; there was no evidence of toxæmia and no history of renal disease. In neither had there been any previous laparotomy, and no abnormality in the serous layers was observed at operation. Both were unbooked cases, admitted with obstructed labour.

CASE I

A. B., aged 19. Admitted to hospital on July 26, 1930, five hours in labour. No descent; Müller's test showed marked overlap of the anterior symphyseal border; P.V., sacral promontory readily felt. Classical Caesarean section was performed the same day under chloroform-open ether. A 7½-lb. full-term living male child was delivered. Closure was carried out in layers without drainage. Convalescence was uneventful, but there had been no bowel action by the third day. The patient then began to complain of distension and colic. The next morning she looked toxic and dehydrated, and had started vomiting. On rectal examination a large smooth rounded mass was felt, firmly fixed in and filling the true pelvis. It was concluded that this was the involuting uterus, which had become retroverted and impacted in the pelvis. It was therefore decided to reopen the abdomen.

On reopening through the original incision the uterus was found firmly impacted in the pelvis, and the pelvic colon in the region of the pelvic-rectal junction was very congested and flattened. It was decided to perform a colostomy. A Paul's tube was inserted into the transverse colon. The uterus was then fixed with a catgut suture to the anterior abdominal wall. The obstructive symptoms passed off and the colostomy was closed four weeks later.

It may be said that at the time of the Caesarean section there had been no evidence of sacculization of the uterus, indicative of a retroversion earlier in the pregnancy.

CASE II

C. D., aged 26. Admitted to hospital on June 9, 1931. 6½ hours in labour, which was obstructed, as in Case I, with gross pelvic contraction. The anaesthetic and the procedure were as in Case I. An 8-lb. full-term living male child was delivered.

In this patient convalescence was from the first somewhat stormy. There were early symptoms of chest complications, but, on the other hand, in the first day or two flatus was freely passed, and no distension was observed. On the third day, however, she vomited. Vomiting continued, and she became greatly dehydrated. The usual measures were adopted without improvement. A rectal examination on the morning of June 13 again revealed a large mass impacted in the pelvis. By this time, however, the patient was very toxic, and, furthermore, the chest condition had developed in a manner strongly suggesting embolic phenomena. Operation being unfortunately not feasible, the patient died the next day. No necropsy was allowed, but that the mass felt was the post-partum uterus I have no doubt.

The close resemblance between this and the preceding case struck me forcibly at the time, and I felt that prophylactic ventrifixation, as employed in the first case, would have prevented the post-partum uterus falling into the contracted pelvis and obstructing the colon. I have adopted the practice of ventrifixation after Caesarean delivery in all cases since then, and no symptoms of obstruction have occurred in any of them.

DISCUSSION

In both cases Caesarean section was performed for *marked pelvic contraction*. Even if a post-partum uterus were to become retroverted and fall into a *normal pelvis* there would be sufficient clearance to prevent its becoming impacted there. In the Caesarean operation the uterus is firmly compressed manually. Perhaps, in so doing, it is made small enough to fall into the *contracted* true pelvis, given that the latter is grossly contracted.

Whatever is the precise pathology, I am convinced that in both these cases the cause of the obstruction was the physical