THE TREATMENT OF GONORRHŒA.

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While much has been written on the treatment of syphilis, gonorrhœa seems to have attracted little attention, yet it is an important cause of non-efficiency among our soldiers. In the home army, from 1886 to 1895 (the latest figures I have by me), the average number constantly sick from this cause was 601, i.e., or the best part of a home battalion, which gives us for the ten years a loss of nearly 2,200,000 days of service. I believe that this loss may be considerably reduced by employing modern methods of treatment. This advance in treatment has been rendered possible by the introduction of more efficient drugs and by the careful investigation of the pathology of the disease by Continental workers, more especially Finger. As this foreign literature is, perhaps, not easily accessible to most R.A.M.C. officers, I propose giving a brief résumé of the more important points which should be borne in mind when dealing with this disease. It is always difficult to convey one’s meaning clearly in writing, and my description of the modern treatment may make it appear complicated and troublesome to carry out. I can only say that the work is not really so much as it appears to be, while, if cases are seen when actually undergoing treatment, the important points will be readily grasped and, with a little experience, difficulties will disappear. I will now go on to the various points which, up to the present, do not seem to have received the attention they merit in English text-books.

Anatomy.—For our present purpose the urethra consists of two portions, viz., all in front of the constrictor urethra, which is spoken of as the anterior urethra, while that beyond this muscle is called the posterior urethra, and is continuous with the bladder when full. Along the upper surface of the anterior urethra are Littre’s glands, while opening into the posterior are Cowper’s glands, the ejaculatory and prostatic ducts.

Pathology.—Finger, as the result of his work on this subject, says that gonococci, on gaining entrance to the urethra, form colonies on the mucous membrane. If not actively interfered with (i.e., if the expectant treatment be adopted), these colonies rapidly multiply, fresh centres are formed, and the whole mucous membrane becomes involved; in 85 per cent. of cases the posterior urethra is reached at
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the end of a week to ten days, at the same time the gonococcus invades Littre's glands and in the posterior urethra the ducts opening into it. When this has been allowed to occur, the gonococci are to a great extent protected against any remedy used to destroy them, as it will be readily understood how difficult it is to make any solution penetrate into a duct, and, indeed, infection of the prostatic ducts is one of the most common causes of a persistent chronic gonorrhoea. Simultaneously, the irritating toxins produced by the organism set up sharp inflammation of the mucous membrane, with a serous exudation which soon becomes purulent. This exudation, forcing its way out between the epithelial cells, opens up a path along which the gonococcus travels as far as the subepithelial layer of connective tissue. Alcohol increases the oedema, and so facilitates the passage of the gonococcus, hence its well-known deleterious effect.

Diagnosis.—A muco-purulent urethral discharge may occasionally be due to organisms other than the gonococcus, hence, if time permits, it is advisable to stain a smear, and in doubtful cases this should always be done. The essential thing, however, is to know whether the whole urethra is attacked or the anterior portion only, as in the former cases urethral injections with the small syringe are merely a waste of time and drugs, while in the latter condition balsams are of little or no use. To determine this, Thompson's two-glass test is employed as follows: Give the man two glasses—ordinary tumblers do well—and tell him to pass four to five ounces of urine into the first glass and to fill the second. The first glass contains the washing of the anterior portion, while the second is filled with the urine from the bladder, and shows any purulent secretion or threads coming from the posterior urethra. The first glass, therefore, shows the condition of the anterior urethra, the second that of the posterior. Remembering this, hold the glasses to the light and examine them by looking through. Thick, turbid urine means an acute urethritis; cloudy urine, with large solid threads, shows a subacute urethritis; while clear urine, with thinner threads, denotes a chronic condition. Mucoid transparent threads sometimes persist for long periods; these usually mean that a catarrhal condition of the glands exists, either as the result of severe inflammation or of too prolonged treatment. If any doubt exists in the observer's mind, let him fish one of the threads out and, after staining, examine it microscopically. If due to chronic gonorrhoea, numerous pus-cells or gonococci will be found, while in non-gonorrhoeal catarrh epithelial cells and mucoid material make up the bulk of the thread. Phosphaturia will cause
a pale, cloudy urine, which at once becomes clear on the addition of a few drops of acetic acid.

Treatment. — Having determined how much of the urethra is affected, and the stage of the disease, we are enabled to adopt suitable treatment. A word or two as to drugs may be useful. The most effective remedy we at present possess is undoubtedly nitrate of silver. This has two drawbacks: it precipitates in the presence of sodium chloride, losing much of its therapeutic value, and it causes considerable irritation. The newer silver preparations, e.g., protargol, albargin, argounin, argyral, largin, icthargan, &c., are compounds of silver nitrate and an organic substance. They do not precipitate with chlorides, are soluble in water, cause much less irritation than nitrate of silver, and rapidly destroy the gonococcus. The great objection to their use at present is their high cost, and they should not, therefore, be ordered as a routine treatment in every case, e.g., injections of protargol with the small syringe in cases of posterior urethritis, for which condition a cheaper drug might be equally well employed with the same result. Permanganate of potassium is useful for irrigating acute cases, as it has a slightly astringent effect and does not irritate; its curative value is, however, very small, and benefit must be looked for rather from the mechanical action of flushing than from its bactericidal power. Sulphate of lime may occasionally be found useful as an astringent in chronic gleety cases with much mucoid discharge; its value in the ordinary case of gonorrhoea is, however, very small. One of the most important factors in the successful treatment of gonorrhoea is to begin as early as possible before the gonococci have penetrated to the subepithelial layer and invaded the ducts. Experiments have shown that 4 per cent. protargol, if injected within twelve hours of infection, will entirely prevent the development of the disease. As regards methods of treatment, a considerable variety are possible; each authority, of course, has his own, which he claims is the best. I would suggest that the following be tried, and that the one which gives the best results be adopted or improved upon to suit the officer's fancy.

Methods of Treatment. — This may be roughly classified as (1) small syringe, (2) large syringe, (3) irrigation, (4) mechanical.

(1) Small Syringe Method. — For anterior urethritis Neisser and Finger both favour this method, using one of the newer silver salts. They, however, strongly insist on the following points being observed: (a) The injection must be of sufficient volume to gently distend the mucous membrane, and thus allow the solution to get
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into contact with every portion of its surface; about one-third of an ounce is the quantity usually required. (b) The injection must be retained for some time; Finger directs that each injection be held for two minutes on the first day, three on the second, increasing the time daily up to fifteen minutes. (c) At least three injections should be given daily, at intervals of eight hours, say at 6 a.m., 2 p.m., and 10 p.m. (d) The strength of the solution should be as much as the patient can tolerate. When using protargol have two solutions, one containing one grain to the ounce, and the second eight grains to the ounce. Begin with the first; when this ceases to cause any discomfort, add gradually increasing quantities of the second till it is being used undiluted.

(2) The Large Syringe Method.—This method may be used for either anterior or posterior urethritis. It makes more work for the medical officer and soils his hands, but gives good results. A four or six-ounce metal syringe, to which a blunt rubber nozzle is attached, is filled with the solution selected. With his left hand the surgeon now seizes the man's glans, while with the right he presses the nozzle of the syringe into the meatus. With a short, sharp push the urethra is fully distended, and the fluid immediately allowed to escape by withdrawing the syringe. This is repeated till the syringe is empty. Should it be desirable to inject the bladder, first wash out the anterior urethra, then refill the syringe, and maintain steady pressure till the sphincter yields, allowing the fluid to run into the bladder. After a few minutes the man should be told to empty his bladder into a glass vessel, and show this to the surgeon.

(3) Irrigation Method.—This is very suitable to military hospitals, as when the anterior urethra alone is affected the soldier can irrigate himself, and, if supervised, a dozen men can do so at the same time. Apparatus required: An irrigator can, or better, hanging glass vessel, with five feet of rubber tubing, a push stop-cock, and a Maiocchi's double-channel glass nozzle. The irrigator should be five feet above the man’s penis, when the anterior urethra is being irrigated; reduced pressure may be used by only opening the stop-cock half-way, while if it is desirable to fill the bladder, the tap should be fully opened. In acute cases the best and cheapest solution to use is potassium permanganate, beginning with 1 ½ grains to the pint, and never exceeding 2 ½ grains to the pint. The solution should be about body temperature, and the irrigation employed each morning, or, if no discomfort is experienced by the patient, a second irrigation may be given in the evening. I am inclined to think that, in anterior urethritis, one irrigation in the morning, followed by an injection of
protargol in the evening, will yield the best results. To apply this treatment the surgeon, wearing a mackintosh apron, should be seated opposite to the patient, and the latter's penis pulled through a hole in a piece of waterproof reaching down to a slop bucket. Turn on the tap, and wash the glans thoroughly, then, keeping the tap open, slowly apply the nozzle to the meatus, and, increasing the pressure by opening the tap a little more, allow a pint of fluid to run through. The fluid will run up to the sphincter, but not beyond as long as the outflow tube is left open; if it is desired to fill the bladder, close the escape tube by pressing the finger on it, and tell the patient to try to pass his water; this releases the sphincter and allows the fluid to flow into the bladder. When the man feels that his bladder is full, shut off the stream, and let him empty his bladder into a glass vessel. Note how much he can hold comfortably, and whether the solution shows much change as the result of having been in his bladder. The irrigation (as also the large syringe injection) thoroughly washes out the urethra, carrying away all gonococci lying on the surface and in the folds of the mucous membrane. It also has the effect of massaging the epithelium, which subsequently sets up a certain amount of oedema and serous exudation in which the deeper-lying gonococci are carried to the surface. Occasionally marked oedema of the penis may occur; this will subside if left alone. Irrigation may be employed at any stage of the disease, and is not contraindicated by epididymitis. When the subacute stage is reached, it is better to use albargin, beginning with $2\frac{1}{2}$ grains to the pint, and increasing to 5 grains to the pint. Nitrate of silver, 8 grains to the pint, is also useful in obstinate cases, but it stains the fingers badly. The methods already described are useful in acute and subacute cases. In chronic cases, however, when the gonococcus has penetrated to the subepithelial tissue lining the ducts of the various glands, something more is required. For the anterior urethra the easiest procedure is to pass a large bougie. This, by stretching the mucous membrane, compresses Littre's glands, and expels their contents. An injection of protargol, if given at once, will destroy the gonococci lying in these expelled casts. The size of the bougie is, however, limited by that of the meatus, and it is not always possible to use a bougie of sufficiently large calibre to properly stretch the mucous membrane. To obviate this various screw-bladed dilators have been introduced. These can be passed through a relatively small meatus, and when in the urethra opened out to any required size. The best one is Kollmann's irrigating dilator, as it permits of the urethra being thoroughly washed out, while the mucous membrane is kept on the stretch.
When using any instruments in the urethra, strict asepsis must, of course, be maintained, as otherwise a second pyogenic infection may be set up, and a spurious gonorrhea ensue. A chronic posterior urethritis is almost due to infection of the prostatic ducts. Mechanical dilators are of little use in this condition. The best procedure is to fill the bladder with albargin (5 grains to the pint), then insert a forefinger, protected by a rubber finger-stall, into the rectum and thoroughly massage the prostate for a couple of minutes. The pus cells and gonococci lying in the ducts are thus expelled into the albargin solution, which immediately destroys all gonococci. It is possible that a small quantity of the albargin solution may even work its way into the ducts; at any rate, experience shows that if this procedure be carried out on several successive mornings, it is often impossible to find any gonococci in the expressed prostatic secretion, which, as a general rule, we may look on as a proof of cure.

**Recapitulation of Main Points when Treating Gonorrhea.**

1. Before beginning any treatment always apply Thompson’s two-glass test.
2. If the anterior urethra is attacked, begin local treatment at once, either injections of protargol or permanganate irrigations, but do not force any fluid beyond the sphincter.
3. If both the anterior and posterior urethra are affected, employ irrigations or the large syringe injections, filling the bladder with the solution selected. At the same time give balsams, turpentine, salicylate of soda, urotropin, or other bladder antiseptic.
4. See the man’s urine daily, and order treatment according to the condition of the urethra as shown by the state of the urine in the two-glass test.

**When is a Gonorrhea Cured?**—This is not always an easy question to answer. The time-honoured test of “squeezing the pipe” to show the absence of visible discharge is absolutely worthless. If any one doubts this statement, let him apply Thompson’s two-glass test in a series of cases which show no visible discharge, and note in how many threads or even turbid urine is still present. The following is the plan adopted in some German hospitals, and if properly carried out very few uncured cases will be discharged from hospital. The first urine passed in the morning is examined. If this is clear and free from threads on three successive mornings, give the man a full diet, including beer and as much fatigue work as possible; if the
urine still remains clear, the man may safely be discharged cured. In many cases, however, threads will persist for some time. These must be fished out, stained and examined microscopically. When pus cells are abundant, with or without gonococci, further treatment is indicated, as there is some focus left which will start the disease. The importance of effecting a complete cure in these chronic cases cannot be over-estimated. When an attack of gonorrhoea has lasted for some time the host appears to become immune to the particular strain, and cases have been published in which the gonococcus has existed without showing any appreciable evidence of its presence for years. But if a case of this kind contracts marriage, the gonococcus on being deposited on the mucous membrane of another person is capable of starting the disease afresh, with unpleasant or serious consequences. It is now recognised that the majority of cases in which women suffer from obscure pelvic troubles are due to gonococcal infection, and this may be acquired from a husband who is totally unaware of his condition. Gonorrhoea is a common cause of sterility in women, hence, from a public health point of view, we should do our utmost to cure it. Efficient treatment will cause a certain amount of extra work for the medical officer, and a certain amount of consideration should be shown him, i.e., he should, if possible, be left undisturbed in this work, as the success or otherwise of the treatment depends, to a large extent, on mutual understanding between patient and surgeon. I am convinced, however, that the results will well repay the State.