

Mr. E. W. Riches said that he had carried out a number of operations in which he had tried to follow Johanson's technique, and with the posterior strictures it was rather complicated to make the scrotal funnel and to get it accurately opposed to the urethra. The opening tended to contract and after six weeks a very narrow orifice into the urethra was found, without necessarily stenosis of the urethra itself. Mr. Riches wondered now whether the scrotal funnel had been necessary in all these cases because if one could do without it the operation was obviously very much simpler.

The President said that in the recent past, at any rate, stricture cases were very often looked after by junior residents and perhaps did not receive individual attention. His own feeling was that a patient who had to be dilated as often as monthly, needed other treatment.

He favoured a more aggressive surgical attitude. Urethrograms were useful but sometimes a little difficult to interpret. In many cases he preferred to make a permanent perineal opening in the bulbous urethra proximal to the stricture. Such an opening was easy to keep patent, and the stay in hospital after the operation was short.

Mr. Swinney, in reply, said that Mr. Moore might well be right in that there was no need to have an inlying catheter after the first stage. However, a catheter did help to keep a rather moist area dry.

With wide undercutting of the perineal skin he had never had any difficulty in burying a strip of skin in that situation.

## Seminal Tuberculosis

By HOWARD G. HANLEY, M.D., F.R.C.S.

IN the last few years genito-urinary tuberculosis has become a fruitful field for research in conservative surgery with a much more hopeful prognosis.

The primary genito-urinary lesion in most cases is in the kidney, but some people believe it can be in the prostatic-vesicular region, or in the epididymis. Whichever is correct, I would stress the importance of the prostate and vesicles as a source of symptomless latent infection. Whether it is possible clinically to separate prostatic from vesicular involvement I do not know.

Semb (1953) mentions that in a group of 54 men with renal tuberculosis, the prostate was involved in 30, the vesicles in 3 and the epididymes in 11, but he does not say how he decided that only the prostate or only the vesicles were involved in some of the cases. Rectal palpation may give adequate evidence of a positive nature, but I think it is valueless as a means of excluding a lesion in either organ.

Tubercle bacilli in the seminal ejaculate fluid could come from the epididymes, the vesicles or the prostate. Where there is no clinical evidence of epididymal involvement I am assuming that the bacilli come from the vesicles or prostate or both, but I do not think it is possible to differentiate any further than this in most cases, and I have therefore called this seminal tuberculosis.

The importance of seminal tuberculosis lies in the fact that not only may it provide the earliest proof of a tuberculous infection, but it may also lie dormant for very many years in an otherwise healthy and unsuspecting patient.

Ross (1953) and Gow (1953) reported in the B.A.U.S. review that 53% of the male patients had a genital lesion of some sort, 28 being epididymal. In the Institute of Urology Mr. C. I. Murphie and I have recently carried out a review of all Ministry of Pensions cases of g.-u. tuberculosis recorded since 1940, and it is clear that 35% of the men concerned reported to their medical officer because of a swelling in the scrotum. In many instances this had been present from three to six months. The history and clinical examination revealed other lesions in keeping with the B.A.U.S. series, but it was the epididymis which convinced the man that something was wrong. A careful review of the case notes shows that over 11% of these men were diagnosed as having non-specific epididymo-orchitis and were returned to their units for some months before the correct diagnosis was established.

There is no need to be hypercritical of this fact. In the absence of any other obvious tuberculous lesion, I do not know how one diagnoses an acute tuberculous epididymitis before it either develops a sinus or settles down into a hard nodular lump. The most thorough urine examination may not reveal tubercle bacilli in these early cases, or in fact at any time if the urinary tract is not actively involved, but there is no doubt that the majority of these early acute cases will have tubercle bacilli in the ejaculate.

In recent months I have seen several such acute cases, chiefly in young National Service men. The acute stage subsided so rapidly in one man that he was returned to his unit in three weeks following a completely negative urological investigation. However, after six weeks his seminal fluid culture grew tubercle bacilli and he was promptly recalled. He still had no clinical signs. His prostate and vesicles felt normal on palpation and his epididymal thickening was certainly not diagnostic of tuberculosis. But again his ejaculate contained tubercle bacilli and he is now on a prolonged antibiotic course. Surely this is the type of case where we may hope to cure a genito-urinary lesion with sanatorium and antibiotic therapy.

Epididymo-orchitis is now such a rare complication of gonorrhœa that an epididymitis in a young man to-day is probably a coliform or a tuberculous infection. A coliform infection can produce an

abscess and a discharging sinus on occasion, but months of waiting for a clinical diagnosis may be avoided by a seminal culture. Only an ejaculate specimen is of any real value. The few drops of mucus and possibly vesicular fluid one obtains after prostatic or vesicular massage are a waste of time to culture.

My interest in this problem was stimulated by 3 patients who were seen in the subfertility clinic, with complete azoospermia.

The first man aged 33 had been married seven years, and was symptomless from a urological aspect. His wife had undergone much gynaecological interference before Dr. H. A. Davidson discovered his azoospermia. His testicles were normal but rectal examination revealed two hard fixed vesicles which were immediately diagnosed as tuberculous. His seminal fluid contained pus cells and acid-alcohol-fast bacilli in about equal proportions. He had a non-functioning calcified kidney but although his urine never at any time contained tubercle bacilli, the kidney after nephrectomy contained living bacilli which were cultured. His ejaculate remains contaminated three years later in spite of antibiotic therapy.

The other two men were also azoospermic and were referred to the clinic with pyospermia. They gave no history of any genito-urinary symptoms and, unlike the first man, had no clinical signs of vesicular involvement, but the seminal fluid gave a positive tuberculous growth. No other genito-urinary focus has been discovered so far in either patient.

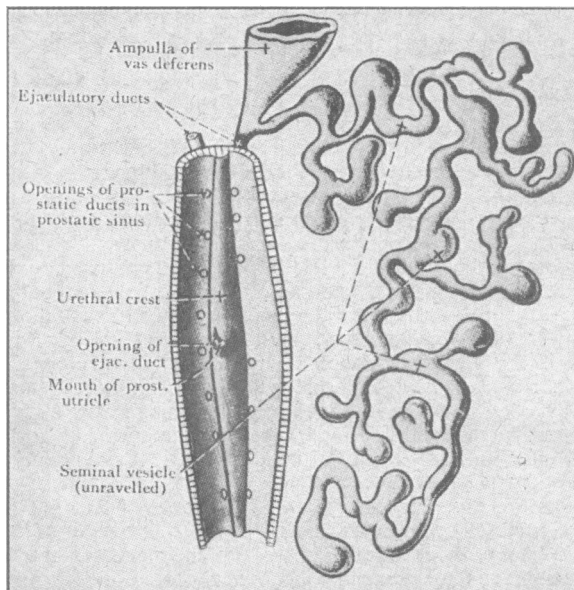


FIG. 1.—Diagram of prostatic urethra and seminal vesicle from E. B. Jamieson's "Illustrations of Regional Anatomy". By kind permission of the publishers Messrs. E. & S. Livingstone, Ltd.

Seminal tuberculosis does not necessarily cause azoospermia and 4 further cases were detected owing to the persistence of a pyospermia after adequate sulphonamide therapy. One man's sperm count was down to 30 millions per c.c. but the others were well within normal limits. No clinical signs of tuberculosis were detected in the genito-urinary tract apart from a positive semen culture, and some dubious nodularity in the prostate. I am now very suspicious of any pyospermia which does not show rapid improvement on sulphonamides, and I think this view is justified by the detection of these 7 cases of genital tuberculosis in the subfertility clinic in three years.

If we refer to Fig. 1 it is obvious that involvement of the seminal vesicle alone will have little effect on the number of sperms or even on the ejaculate volume until a large area of the vesicle is destroyed. Further vesicular destruction now results in a progressive drop in the ejaculate volume, but provided that the vas, ampulla and ejaculatory ducts are patent the sperm numbers will be unaffected.

In my experience, by the time the vesicles are palpable, the ejaculate volume has been reduced to 1 c.c. or less. One patient has had bilateral vesiculo-prostatic involvement and a unilateral epididymectomy. He produces no ejaculate whatever but live sperms are present in the first few cubic centimetres of urine passed after an orgasm. Obviously the vas, ampulla and ejaculatory duct on one side are still patent though the vesicles are destroyed or blocked.

*Prostatic tuberculosis* probably has little effect on the ejaculate volume or upon the sperms until obstruction of the ejaculatory ducts occurs when, of course, a total azoospermia results.

As I mentioned previously, it is very difficult and perhaps impossible to be sure that only the prostate or only the vesicle is involved. I can understand, however, that if the prostate is not infected the urine may never contain tubercle bacilli, a situation frequently found in cases of tuberculous epididymitis, but these are the cases where a seminal culture is of value, because all 5 of the acute cases I have met with have had a positive ejaculate culture. This finding must be treated with great caution, since the series is too small to be important, but obviously if we continue to find positive cultures in all the epididymitis cases even when there appears to be no clinical vesiculo-prostatic lesion, it will add great support to the theory that the epididymis is involved secondarily to the prostatic area and the condition is not a blood-borne infection.

Before leaving the question of subfertility I would point out that seminal tuberculosis of even long standing does not necessarily produce sterility. In fact it probably only rarely does. I have 4 patients who have sired children since I first knew they had seminal tuberculosis, 3 of them having had a unilateral epididymectomy. One man who is at present in hospital undergoing a prolonged antibiotic course made his wife pregnant immediately before entering hospital, only a week or so after I had found a semen specimen full of pus cells and tubercle bacilli. The fact that semen can be loaded with tubercle bacilli over a period of years does show how resistant to infection are the female cervix and vagina, since they are so very rarely involved. Tuberculous endometritis on the other hand is now known to be much more prevalent than we once thought, and although the authorities consider it to be hæmatogenous in origin, one cannot help remembering these tuberculous ejaculates.

Apart from the subfertility aspect, seminal tuberculosis is surprisingly free from symptoms or signs. We all have cases where an epididymectomy has been performed some years ago, but where the prostate or vesicles remain hard or nodular. In fact we do not often expect this nodularity to disappear even though the patient remains symptomless and his urine sterile.

In the past few months I have managed to review 7 of my old genital cases who were originally discharged from the outpatients department as cured, by an orchidectomy, and or, nephrectomy—as far as one could tell by urine examination. 4 of these 7 patients have positive semen cultures; fifteen, thirteen, eight, and five years after their last hospital treatment. All these originally had, and still have, nodular prostates so that the present activity is nothing new. One man has 3 children and another has 1 child, born since the original infection. Firm conclusions cannot be drawn from 7 cases, but it is obviously very difficult to persuade men to attend the outpatient department again after a long interval of time, particularly if they had a nephrectomy or epididymectomy fifteen years ago and now feel perfectly fit. However, where it is possible, I feel confident we shall find that if the prostatic-vesicular region was originally involved, it will still be involved to-day in a high proportion of cases.

As urologists we must now decide the most important problem of whether this latent tuberculous vesiculo-prostatitis matters or not, and whether we should attempt to treat it or not. Until the advent of the antibiotics there was nothing we could do for the patients. Some more courageous amongst us, notably the late Mr. F. McG. Loughnane, advocated total removal of the vesicles, but most surgeons were content to leave well alone. Now in view of the fact that 4 out of the first 7 old epididymitis cases had active disease still present after five to fifteen years, I think we should try and treat these men. They do not necessarily remain latent for ever. For example, we have a man in St. Philip's Hospital who has just developed a tuberculous epididymitis five years after his nephrectomy. He has been symptomless all his time but he has had a latent vesiculo-prostatitis. We have all seen such cases.

If a man has a tuberculous kidney there is no question about the advisability of sanatorium regime as an adjunct to, or instead of surgery, but it is very difficult to know whether it is justifiable to urge him to have three to six months' treatment because he has a vesiculo-prostatitis.

At the moment I am urging such patients to come into hospital for three months. This period is not long enough, which makes one's responsibility even greater. Those who cannot come into hospital are being treated with a modified antibiotic course of streptomycin, isoniazid and PAS, so that in time we shall have two comparable series.

#### TREATMENT

It is too early to assess the results of antibiotic treatment in this small area of the whole large field of genito-urinary tuberculosis. My impression so far is that the seminal cultures become negative with treatment more easily than the urine from a renal lesion does, but the number of relapses after only three months' treatment is very high.

From first principles, if there is a large caseating area in the prostate or vesicles, antibiotics will not produce a cure, but we could reasonably expect good results in the absence of large areas of caseation. Some form of grading of the lesion is therefore necessary but I find this very difficult to do. The only two positive cultures which became negative after three months' treatment and have stayed negative for a year or more, had each a normal ejaculate volume, thus showing that very little of the vesicular structure had been destroyed. The majority of the other cases became negative during treatment but tended to relapse rapidly when the drugs were stopped. Six months' treatment would therefore appear to be essential in most cases, but it may well be that ambulatory treatment is sufficient if active infection is confined to the seminal system.

## CONCLUSIONS

The vesiculo-prostatic system is involved in genito-urinary tuberculosis in over 50% of cases, and the seminal fluid of such cases will generally contain tubercle bacilli. These are easily cultured and this fact provides a useful adjunct to early diagnosis particularly since a clinical diagnosis may be very difficult to make.

As a method of estimating quiescence or cure of vesiculo-prostatitis the seminal culture is invaluable.

After a simple nephrectomy for a tuberculous kidney, an active but symptomless focus is left behind in the seminal tract in a high proportion of patients.

Does it matter that this active focus can be left behind and remain unsuspected for very many years? Personally I think it does matter and that we should attempt to treat the condition until it is culture negative. If this is so the days of simple nephrectomy or epididymectomy without any form of antibiotic therapy are over.

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Mr. David Band said that he was firmly convinced that the conservative treatment of genito-urinary tuberculosis in the male could be curative if the treatment was undertaken in a sanatorium, and if the patient was cared for over a prolonged period in a sanatorium with full chemotherapy. He had discussed the question of examining the seminal fluid in such patients with the physician-superintendent, but they had both felt that it was undesirable to embark on such examinations on patients already admitted to the sanatorium community.

The President said that it was well known that the death-rate in urinary tuberculosis was higher in the male than in the female.

Mr. Hanley said that he was quite prepared to admit that a long sanatorium regime was perhaps unjustified in this very chronic form of genital tuberculosis, particularly if prolonged antibiotic therapy, supervised in the outpatient department, proved adequate.

This was largely a matter for further investigation.

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