URETHRAL FEVER, WITH RECORDS OF THREE FATAL CASES.¹

By F. SWINFORD EDWARDS, F. R. C. S. Eng.,

OF LONDON.

SURGEON TO THE WEST LONDON AND ST. PETER'S HOSPITALS; ASSISTANT SURGEON TO ST. MARK'S HOSPITAL.

IT will be within the memory of most that Sir Andrew Clark addressed the Medical Society of London on catheter fever in the latter part of 1883, and followed this by another paper on the same subject read before the Med. Chi. Soc. of Edinboro. Sir Andrew chiefly alluded to a form of fever which sometimes follows the entrance into so-called "Catheter Life" in elderly men, and in which death may occur without any lesion post mortem to account for it, i. e. no evidence of kidney mischief nor of septic infection. I do not purpose dwelling upon this form now, though in passing I might say that I agree with the remarks which fell from Mr. Savory in the discussion following Sir Andrew Clark's paper, to the effect that in those cases, i. e. where urethral fever follows the passage of a catheter terminating after a time in death, to account for which nothing is discoverable at the autopsy, in these cases, I say, the fever is produced by local irritation through the nervous system.

To me the term "urethral fever" seems more appropriate than any other which has been brought forward; for this fever is always caused by some disturbance of the urethra, whether from the passage of the bougie, sound or catheter; or it may follow some more serious operation on that canal, as for instance internal or external urethrotomy, divulsion or rapid dilatation.

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That the mere emptying of a distended bladder is not sufficient to give rise to this fever I would point out that one neither sees nor hears of it after relieving the bladder by either the rectal or supra-pubic punctures.

Instrumentation of the urethra may give rise to various constitutional disturbances for which I suggest the following classification, partly after Sir Henry Thompson:

1. Shock as evidenced by faintness, syncope, convulsions or death in a few hours.

2. Acute transient urethral fever. Where a rigor follows usually after micturition for the first time. The temperature rising rapidly to 104° or higher, and then slowly dropping to normal within 24 hours.

3. Acute recurring urethral fever. In this form rigors recur, followed often by herpes of the lips, face and ears, muscular pains and joint swellings.

4. Chronic urethral fever. Commencing often without any decided rigor or great rise of temperature generally associated with renal disease, though not always.

2, 3 and 4 may be caused either by (1) local irritation, or (2) absorption.

I do not propose to discuss these various forms seriatim, but will at once bring before your notice three cases of urethral fever ending, I regret to say, in death, and which have occurred in my practice; commenting upon each separately, having a view in the remarks I may make to points which have been raised in the discussions I have mentioned.

CASE 1. Stricture and Retention. Catheterism; Rigor; Death on the Fourth Day. E. Enticknap, æt. 22, a laborer, had difficulty in passing water for three years, during which time he has had retention four or five times. Two years ago he was laid up with gonorrhœal rheumatism. Ten weeks ago attended as an out-patient at the West London Hospital for stricture. At last attendance, No. 8, gum-elastic bougie was passed. Previous to admission several attempts had been made to pass an instrument but without success; in fact the manipulation must have been pretty severe, for he was bleeding from the urethra when first seen.

As the house surgeon was unable to pass a catheter, no prolonged

effort was made, but the patient was sent off to bed and ordered a hot bath.

After this a railroad catheter No. 4 was passed and four pints of urine drawn off. The note on the following day says:

Is in no pain; passed water this morning unaided; had a severe rigor at 5:15. During the next three hours 20 grs. of quinine were given; temperature 105.6°.

The note of the following day says; 'The patient is delirious; vomits everything; heart-sounds fluttering; no pulse to be felt at wrist; suppression of urine for the last twenty-four hours; hot air bath ordered.

Died at 11:20 on the following morning. His temperature then was 107.8°. Mr. Dunn informs me that at the post mortem a false passage was found in a sloughy condition. There was commencing endocarditis and numerous petechiæ in the various synovial and serous sacs. The kidneys were congested.

In classifying this case I should put it under the heading of acute urethral fever caused by absorption or septic infection, though nerve irritation may have played some part in the tragedy.

It is to be noted that this is not a case of catheterism for the first time. The man had been in the habit of having instruments passed, yet in spite of this preparation he dies. I suspect the rough handling the urethra had before he came to the hospital had a good deal to do with the result.

CASE 2. Stricture of Urethra. Paralysis and Death Following the Passage of a Bougie.—E. Harris, æt. 65, by no means a robust man, came under my care at the West London Hospital with a history of stricture of nine years duration. He had been in the habit of passing a No. 7 French catheter.

As there was a contracted meatus, it was thought advisable in the first place to incise this, resting content with the passage of a small bougie into the bladder. After a few days interval, I was able to diagnose three other strictures by means of a bougie à boule, viz., first at 2½ inches, second, at 4 inches, and third in the sub-pubic region. Through this a small French bougie, No. 12, passed into the bladder, at the same time through the anterior strictures a No. 20 was passed. This instrumentation was a week after the meatotomy, and was followed by a rise of temperature (101.8°) but without a rigor.

Three days afterward the house surgeon attempted to pass a No. 14, but failing in this, passed No. 11. Two hours subsequently the patient had a rigor, and his temperature went up to 103°. He became restless, then delirious, and toward evening of the same day quite unconscious. At night the patient got worse, his right radial pulse was quite imperceptible and his left side became paralysed. The pupils were much contracted, and the urine and feces passed involuntarily. The patient remained in the same condition all next day and died on the following.

P. M. The bases of both lungs were in a state of hypostatic congestion. The liver was enlarged, pale and fatty; arteries atheromatous; kidneys injected; bladder healthy. The urethra was strictured at the membranous portion, at which point were two false passages.

Brain:—Vessels of pia mater distended. In the centre of the external capsule on the right side there was a patch of softening, the size of a three-penny piece, which was recent. The cerebral vessels were atheromatous.

In this case the penile urethra stood any amount of manipulation, but directly there was any disturbance of the sub-pubic stricture, a rise of temperature followed, thus illustrating a fact upon which I shall touch again, viz., that constitutional disturbance but rarely follows (and as far as I know, when present, is never severe,) instrumentation of the penile urethra. The rigor which ushered in the third and final rise of temperature followed an ineffectual attempt to pass a certain instrument, though a smaller one was passed afterwards.

I would classify this case with the previous one, viz., as one of acute urethral fever, for the three elevations of temperature followed and were distinctly due to instrumentation. But was this case of acute urethral fever caused in the same way as was the last? I think not, judging from the post mortem appearances. That, you may recollect, I put down to absorption looking to the septic appearances found after death. This, I should say, was set up by local irritation of the nerves supplying the membranous and prostatic urethra, causing dilatation of internal vessels by reflex action. This congestion of vessels already atheromatous proved too great a strain for those in the brain, hence the softening found in the corpus striatum.

CASE 3. *Stricture of Urethra. Internal Urethrotomy. Death from Septic Pleurisy and Pneumonia*.—John K., æt. 31, a warehouseman, was admitted to St. Peter's Hospital on December 29, 1885, with a dense and tight stricture $4\frac{1}{2}$ inches from the meatus, which only admitted a No. 8 French bougie. He had suffered from stricture and occasional retention for five or six years, and for which external urethrotomy had been performed in the German hospital three years previously. His urine was acid, 1015, with a slight mucous deposit, but no albumen.

On December 30th, without the aid of an anæsthetic I performed internal urethrotomy with Teevan's urethrotome. The stricture was a long one and much indurated, and considerable force was required to cut through it. A No. 12 silver catheter (English gauge) was afterwards passed, the water drawn off, and an iodoform solution injected into the bladder. I also inserted an iodoform bougie into the urethra at the site of incision, hoping thereby to protect and antisepticise the wound and so prevent rigors.

The patient was sick after passing water for the first time; this was at 11 p. m. Sickness recurred twice during the night after micturition, though the patient had no rigor.

On January 1st, the temperature was normal and a French bougie, No. 20, was passed with ease. Evening temperature 100.6° .

On January 2d, the third day after the operation, No. 21 was passed. Herpes appeared on the lips. On the three following days the patient had chills with one distinct rigor. Temperature going up to 104° ; for this Warburg's tincture was given (a medicine most potent for good in these cases). On the seventh day sickness recurred and persisted off and on for some days; a mustard leaf and blister to the epigastrium relieved it. Nutrient enemata were given. On the eleventh day the patient complained of much pain in the right chest, where a well marked friction sound was heard.

Brandy and quinine enemata. Chest painted with tincture of iodine.

On the twelfth day the sputum was rusty. Friction over both lungs; crepitation at bases, dulness and bronchial breathing; was unconscious at night, but took plenty of nourishment. A day or two afterwards the belly became distended, and he sank on the fifteenth day, the lungs getting very clogged.

Post mortem ten hours after death. Weather cold. Body emaciated; yellowish tinge of skin. Rigor mortis present. Heart healthy—small amount of clot and some dark fluid blood.

Pleura—The visceral layer on both sides covered with recent phlegmonous lymph.

Lungs—The base of both was pneumonic, and at the posterior part were several small gangrenous abscess cavities containing sanious pus.

Liver—Large and vascular. Tissue healthy.

Spleen—Large, soft and friable.

Kidneys—More than normally vascular—a large congested patch in one.

Bladder—Somewhat dilated, but showed no signs of inflammation.

Urethra—At the upper part along the membranous portion is the mark of the urethrotomy. The incision is gaping and there is no inflammation around. Just beyond and leading from it towards the bladder is a pouch, the cavity of which might contain a large hazel nut, blind externally and communicating with the urethra below by an open mouth. No signs of inflammatory action appear here either, but on dissection the veins leading from the prostate to the internal iliac are found to be plugged. There was no peritonitis nor pus in the joints. (For this account of the post mortem I am indebted to our House Surgeon, Mr. Thornton). The specimen is before you, consisting of the kidneys, bladder, urethra and posterior part of urethra. The ureters are dilated and one contains a small calculus.

This case, I am afraid, must be put down to pyæmia. The patient appeared a healthy though not a robust man. His urine was normal. It will be noticed that in the account of the operation mention is made of some difficulty in cutting through the stricture owing to its density. I have found that where this is the case, or where one has a difficulty in passing a catheter after the withdrawal of the urethrotome, one may expect a rigor.

I endeavored to anticipate this in the case just related by leaving in the bladder a solution of iodoform, and inserting an iodoform bougie into the urethra. The temperature chart shows that the patient had no rigor, after first passing water, and his temperature only went up to 101°.

He felt well enough to get up on the second day, but this was followed by a chill and temperature 104°. Eventually plenisy and pneumonia supervened. To what was this due? Was it to septic infection? If so, it is curious that there was no sign of unhealthy action about the lesion in the urethra, though I look upon the plugging of the veins as more than

suspicious; also it is remarkable that this, the first death after internal urethrotomy I have had, should have occurred after the unusual precautions I employed.

Such, then, is the history of these three fatal cases. I will now relate a case of urethral fever, which at the time (now over a year ago) caused me a good deal of anxiety, but which had a happier ending.

CASE 4. Multiple Stricture of the Urethra, treated Firstly by Dilatation, Secondly by Dilating Urethrotomy, and Thirdly by Internal Urethrotomy. The Latter Followed by Fever and Suppression.—E. S., æt. 38, a sergeant in a regiment of lancers, was admitted into the West London Hospital on December 4th, 1884. There was a two year's history of stricture which came on after gonorrhœa. He was a tall, well-developed, muscular man, and had been sheep-farming in Texas and Mexico. No history of any previous illness, with the exception of rheumatism when young. On examination three strictures were detected, two penile and one sub-pubic, the latter being very hard and only admitting the smallest filiform bougie.

On the following day, under ether, I used Harrison's dilator, screwed on to a filiform guide bougie; eight successive bolts were used, after which I was able to pass a 22 catheter with ease. Beyond a little scalding on micturition no inconvenience resulted. Two days after, i. e., on the 7th, 20 bougie passed, on the 9th, 14 with difficulty. On the 16th, or seven days afterward, as re-contraction to a considerable extent had taken place, I divided the two anterior strictures by Otis' urethrotome to 30 mm., but did not interfere with the deep stricture. This was done without ether. No constitutional disturbance followed. After the lapse of a week, as the sub-pubic stricture showed no signs of dilating, I performed internal urethrotomy by means of Teevan's instrument, the patient being in bed and without the aid of an anæsthetic. Considerable difficulty was encountered in cutting through the stricture, so hard and resisting was it, in fact, I had to use both hands to force the blade through, (a thing I have never had to do before nor since). There was pretty free bleeding afterwards.

The following morning the urine was drawn off, as patient complained of great pain during micturition. The same afternoon a rigor lasting 25 minutes took place; temperature 103°. He vomited and was delirious in the night.

The following day was Christmas day, and towards night the patient

got worse. The vomiting, which had ceased, returned. Pulse was dicrotic and easily compressible. Delirium. Skin hot and dry; temperature 102.4°. Has only passed 3 ounces of urine in the last 28 hours. No distention of the bladder. Hot air bath for one hour which caused free diaphoresis and gave great relief.

Twenty-sixth, much improvement, though still prostrate. Has passed $\bar{5}$ iv of water, chocolate color and very thick; was ordered Inf. digitalis $\bar{5}$ ss every two hours. At noon a vapor bath for 45 minutes, after which patient perspired freely.

At 5:30 he passed $\bar{5}$ vi of urine and slept. For the last twenty-four hours has been delirious, but is now quite sensible. Digitalis every four hours. (This note was made at 11 p. m.)

Henceforth the patient passed water very freely and it soon ceased to be colored, though containing a trace of albumen.

During the following ten days, bougies increasing in size from 18 to 23 were passed with ease.

On the 10th of January he complained of various muscular pains, chiefly about the hips and thighs, which were severe enough to prevent the patient walking. He eventually left the hospital passing 23 for himself, but walked with difficulty owing to stiffness about the thigh.

This, which might be called a case of acute transient urethral fever offers several points for our consideration. In the first place rapid dilatation, although followed by the loss of a few drops of blood (showing a lesion of the mucous membrane), gave rise to no constitutional disturbance; neither did the division of the anterior strictures, although freely cut, and this fully accords with my experience, for I have never known rigors and fever follow meatotomy and division of anterior strictures where the deep or fixed urethra was left untouched.

Henry Morris, however, in his recently published work on diseases of the kidney says he has seen urinary fever follow on cancer of the penis opening into the urethra, causing a fistula just behind the glans; a rigor following the passage of urine through this fistula. Also in two cases of stricture of the urethra situated, one at $1\frac{1}{2}$ inches and the other at 3 inches. With regard to the cancer case, it is conceivable that the irritation caused by the flow of urine over a foul and ulcerating surface might cause a rigor; concerning the two other cases,

it is probable that the bougie or catheter was passed not only through the stricture, but through the entire length of the canal, and so might have irritated the deep urethra. I have already mentioned the fact that where the urethra is subjected to prolonged instrumentation or to unusual violence, necessitated as in the last case by the density of the neoplastic tissue to be cut through, one may expect constitutional disturbance to follow.

Sir Andrew Clark asks whether the administration of an anæsthetic would not avert these rigors and pyrexia, and Victor Horsley, in his lecture on urethral fever at the Brown Institute, is of opinion that it does, and argues from this that the fever is therefore due to nerve irritation and not to absorption.

On looking through the records of cases of stricture operated upon at St. Peter's Hospital during the past three years, whether by external or internal urethrotomy, or by both combined, or treated by dilatation, and in which an anæsthetic was given, one or more rigors followed in exactly 50 per cent. of the cases. In fifty-nine cases where no anæsthetic was employed, rigors only followed in eighteen cases. Again, taking uncomplicated cases of internal urethrotomy, anæsthetics were given forty-seven times, followed in twenty cases by rigors. The operation was done without anæsthetics also forty-seven times, and rigors only followed in nineteen cases.

Where no mention is made as to the administration of chloroform or ether, out of seventy-four cases rigors followed in thirty-three.

From these statistics it would appear that rigors follow operative interference with the urethra in not quite half the cases, and anæsthetics do not seem to lessen the tendency to urethral fever but rather the reverse, though it must be borne in mind, that as a rule, it was only in the simpler cases, i. e., where one did not expect to meet with any difficulty or hitch in the performance of the operation, or where the patient himself preferred having it done without and was therefore not of a nervous temperament, that the administration was omitted.

The next point in case 4 is suppression which lasted twenty-eight hours. This is a grave symptom and points to renal congestion as does also the urine which is first passed after the

operation, which is always blood stained, loaded with urates and albumen. Out of ninety-four cases of internal urethrotomy, suppression occurred seven times, lasting in the most severe case for fifty-five hours. I find that the operation has been performed with the aid of an anæsthetic in three cases where this symptom was most prolonged. It is worthy of mention that all these cases ultimately recovered.

The treatment which I have found most successful for this is the hot air bath to induce copious diaphoresis, together with 5ss doses of infusion of digitalis every two hours. Turpentine enemata are also useful where constipation exists.

In conclusion, let me draw your attention to the fact that some patients with stricture are liable to periodic shiverings which they lose when their stricture has been fully dilated or cured. Again stricture patients in whom the passage of a bougie occasions rigors may after an internal urethrotomy get well without the occurrence of any further rigors. These rigors then can hardly be due to absorption.

It is pretty clear that when, after an internal urethrotomy a rigor follows the first act of micturition, it is due either to absorption of urine or to its irritating effect upon the wound. It therefore behoves us to prevent, if possible, this contact of the urine with the wound, and for this purpose I would suggest (it is merely a suggestion, for I have not tried it) a temporary rectal or prostatic puncture for the purpose of carrying off the urine until such a time as it is thought safe to allow the patient to micturate naturally.