with oxidizing substances, it is essential that the red or reddish-pink colour developing in the test should invariably be submitted to chloroform extraction. By this means the most important single fallacy—namely, a pink colour due to uroresin—can be excluded. If it is suspected that the substance giving rise to a pink colour soluble in chloroform is not urobilinogen (an exceptional finding if the reagents are properly prepared and if very weak delayed colour reactions are disregarded), then a saturated solution of sodium acetate should be added immediately after the aldehyde reagent to ensure the specificity of the test.

Conclusions

Ehrlich's aldehyde test is a simple and valuable clinical procedure for the detection of abnormal amounts of urobilinogen in the urine. The reaction is more sensitive if urines are tested in the fresh and warm state.

The following precautions should be rigidly observed: (1) The hydrochloric acid in the test reagent should be of analytical standard and used in appropriate amount. (2) The reagent should be put out for use in small drop-bottles, and contamination with pipettes, etc., should be avoided. (3) The reaction should be considered negative unless a definite reddish-pink colour develops within five minutes at room temperature or within one minute at 35° C. (4) Chloroform extraction should be undertaken in every urine giving a red or reddish-pink colour subsequent to the addition of aldehyde reagent. (5) Sodium acetate solution should be added immediately after the addition of Watson's reagent if Watson's test is employed. The addition of sodium acetate is unnecessary if Savory and Moore's reagent is employed in the amount used in these experiments. (6) The reagent should not contain alcohol, as this is unnecessary and more likely to produce false positive results with indole.

Further work is required to determine the optimal quantities of paradimethylaminobenzaldehyde and hydrochloric acid to be included in reagents used for qualitative estimation of urobilinogen and the relative amounts of reagent and urine to be employed in the test. Having been determined, these quantities should be strictly adhered to, as by this means the inhibition of specific urobilinogen colour reactions and the production of colour reactions due to indoles and other unknown substances will be reduced to a minimum.

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The Minister of Health has decided, after consultation with the Central National Health Service (Chemist-Contractors) Committee, that the use by contractors of envelopes or other paper containers for tablets, pills, capsules, pastilles, lozenges, and for bulk powders is undesirable, and that they should not be used for this purpose after May 1, 1949. The British Standards Institution is considering minimum standard requirements for cardboard or paperboard containers. Until the inclusion in the Drug Tariff of a reference to these requirements, boxes used for a small number of tablets, pills, etc., must be large enough to bear a label on which the directions can be clearly shown.

RETENTION OF URINE*

BY

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Among the many possible causes of inability to pass urine prostatic obstruction is the most frequent in everyday practice. Paralytic or neurogenic causes occupy second place, and stricture nowadays comes third because its principal cause, gonorrhoea, is more effectively treated. Retention from prostatic obstruction can be taken as the example for description, but the same principles of treatment are applicable to other cases.

Retention implies a full bladder from which either nothing can be passed, as in acute retention, or only a dribbling overflow escapes, leaving a large amount of residual urine, as in chronic retention. It must be distinguished from the more serious condition of suppression of urine in which the bladder is empty. It is therefore necessary at the outset to be able to recognize a full bladder, and to do it without having to pass a catheter, the method recommended in some gynaecological textbooks. It is generally easy by ordinary clinical methods. There is a rounded or irregular swelling arising from the pelvis, fixed below, dull on percussion, cystic, either tense or soft, and sometimes translucent from side to side. In cases of doubt examination with the foot of the bed raised will occasionally make it more evident. Sometimes, however, there are difficulties, especially in a fat patient, and particularly where there are no urinary complaints and the condition is not suspected.

A man of 64 went to his doctor complaining of general ill-health, with loss of weight, morning vomiting, and loss of taste. He had no urinary symptoms and did not have to get up at night to micturate. He was sent for a complete barium-meal examination, and the radiologist discovered a pelvic tumour, outside the bowel but pushing it up. The tumour was an enlarged bladder. The prostate was moderately enlarged and the blood urea was 84 mg. per 100 ml., the urine having a specific gravity of 1002. After the bladder had been gradually decompressed through a small suprapubic catheter his symptoms ceased, the blood urea fell to 30 mg. per 100 ml., and after prostatectomy he recovered.

Clinical Types of Retention

Acute Retention.—There is often no sharp dividing-line between acute and chronic retention, and while the amount of residual urine is generally large in chronic retention this factor alone does not give a complete definition. Acute retention is of sudden onset and is painful. It follows congestion and is brought about by cold, wet, and alcoholic, dietary, or sexual excess. Brodie in 1822 said: "The exciting cause is sometimes cold. One gentleman will be affected after drinking punch, another after drinking more wine than usual. One gentleman I knew was seized after two or three days' costiveness. The cause is often too minute to be detected." Other potent causes of acute retention are enforced holding of urine when the call comes and confinement to bed for some intercurrent disease such as bronchitis, pneumonia, or heart failure. A painful acute retention may be superimposed on a degree of chronic retention. The clinical picture of acute retention is unmistakable: there is a constant urge to micturate, but inability to expel more than a few bloody drops, with severe pain in the penis and lower abdomen, restless changes

*Based on a lecture given to the Leeds Branch of the British Medical Association on Feb. 9.

of posture, sweating, and apprehension. The relief when the bladder is emptied is dramatic.

Chronic Retention.—By contrast chronic retention is relatively painless, although there is sometimes a history of loin pain, and the patient may have no idea that he has an abdominal swelling. The term "chronic" denotes that the condition has been present for a long time; the bladder has become gradually distended and is decompensated; it can be detected on clinical examination, and other symptoms such as have been mentioned will probably be present; loss of weight and alteration in the sense of taste are frequent signs of uraemia. Chronic retention is the more dangerous state of the two.

Treatment of Acute Retention

From the general practitioner's point of view the treatment of acute retention consists in relieving the pain of retention and sending the patient into hospital. The retention, and the consequent pain, can be relieved in more than one way.

A hot bath and a morphine suppository ($\frac{1}{2}$ gr.—32 mg.).—This is not always possible, and is seldom successful in prostatic cases. It is more likely to succeed in retention from stricture, where the congestive element plays a large part.

Catheter.—This is the time-honoured method, and it is still correct provided that gentleness and strict asepsis are maintained. A gum-elastic bicoudé catheter is more likely to pass easily than a soft rubber one; the silver prostatic catheter should not be used. A fairly stiff rubber catheter of the Tiemann type is effective, and it can be boiled.

Aspiration.—A serum or lumbar-puncture needle is inserted under local analgesia through the abdominal wall into the bladder and the urine withdrawn by a syringe. The needle should be inserted well above the symphysis pubis and should be directed obliquely downwards and backwards (Fig. 1). This procedure can be repeated if absolutely necessary, but the needle should be inserted in a slightly different spot and the bladder should not be allowed to fill up as much as before. Aspiration is less likely to introduce infection than is the passage of a catheter. The danger lies in repeated catheterization, and even when sulphonamides are given,

FIG. 1.—In emptying a distended bladder by aspiration the needle is directed downwards and backwards.

as they should be, catheterization under home conditions is almost certainly followed by infection if continued for more than two days. An indwelling catheter increases the certainty of infection, which in a closed bladder may cost the patient his life.

Carbachol is unlikely to relieve retention when there is mechanical obstruction.

After the relief of acute retention micturition approaching the normal may be re-established, but the patient should still be sent into hospital. One attack of acute retention is the precursor of others and is an indication for prostatectomy before the condition becomes chronic. If micturition is not re-established the condition is more urgent and the man who has had repeated catheterization becomes a bad subject for prostatectomy.

Treatment of Chronic Retention

It is of fundamental importance to realize that the bladder should not be emptied just because it is found to be full.

Although it may be done with impunity on many occasions, there is always the risk of producing renal haematuria and suppression of urine, even if infection is not introduced. The patient should be sent into hospital without undue delay; the condition has probably been present for some time, and a day or two more may make little difference, but the sooner treatment is instituted the better. Under proper surroundings the surgeon is faced with the decision of draining the bladder first or of doing an "immediate" prostatectomy after a minimum of time in assessing renal function and preparing the patient. The important principles to be followed in drainage are to avoid sudden decompression, to avoid urethral trauma, to prevent infection, especially ascending infection, and to plan ahead. I am a firm believer in preliminary drainage in chronic cases provided it is carried out in such a way as not to prejudice the subsequent prostatectomy.

There has recently been a tendency to make light of the dangers of sudden emptying of the bladder in chronic retention, but cases of suppression of urine from this cause still appear only too often. If there is hydronephrosis and hydroureter the release of pressure affects the upper urinary tract as well as the lower. The renal blood vessels have become adapted to an increase of pressure, and when it is suddenly released intrarenal haemorrhage may follow, leading to tubular blocking.

Preliminary decompression and drainage may be carried out by urethral catheter, by urethrostomy, by suprapubic cystostomy, or by suprapubic catheterization.

Urethral Catheter

This is the simplest method of drainage and allows of slow decompression. If it could be forecast with certainty that it would not be required for more than two days it would be relatively safe. A rapid estimation of renal function is necessary before it is used; the blood urea figure does not show minor degrees of renal impairment, but a high value—for example, over 80 mg. per 100 ml.—is an indication of renal damage and generally means that a longer period of drainage will be necessary before prostatectomy. A persistent specific gravity of the urine of about 1010 is also an index of severe renal insufficiency. These are the tests of most practical value when time is a factor. Even a short period of catheterization, however, is followed by urethritis, and this may lead to prostatitis, cystitis, and finally to pyelonephritis from ascending lymphatic infection.

Wilson Hey (1945), who has done so much to make urologists conscious of the dangers of infection, is opposed to any form of urethral instrumentation before prostatectomy. The added danger of urethral trauma is also present. If a urethral catheter is used it must be of good rubber and must be small enough to allow of free drainage around it; even a catheter of suitable size may produce a meatal stricture.

Urethrostomy

Sandrey (1949) has drawn attention to the value of drainage by a catheter inserted from the bulb of the urethra, and he finds great advantages in the dependent drainage achieved over the uphill drainage of suprapubic cystostomy. In a series of 58 poor-risk cases there was a mortality of 8.6% and there were no deaths from urinary infection. The method has obvious advantages, but it still leaves one-third of the urethra exposed to the friction of a catheter. It is not so easy to keep the patient ambulant—an important feature during the period of drainage—and there is a leak lasting from four to five days after removal of the catheter. There are also possible nursing difficulties.

Suprapubic Cystostomy

While drainage is effective, the decompression by this operation is not always gradual. The main disadvantages, however, are in the frequent leakage around the catheter and in the scarring of the operation field for the prostatectomy; this is especially so when the tube is placed low on the abdominal wall, as is so often the case. The low suprapubic tube, entering

just above the symphysis and passing horizontally into the bladder from the lower end of a long vertical incision, is something which should be banned from modern surgery. It leaks, it smells, and it makes a clean prostatectomy impossible (Fig. 2).

FIG. 2.—Low suprapubic cystostomy.

Suprapubic cystostomy as a first stage of prostatectomy has a high mortality. Rees (1947) reported 30 deaths in 106 cases so treated—a mortality of 28%, of which more than one-half were infective. He also recorded 18 deaths during gradual decompression by urethral catheter.

Suprapubic Catheterization

The method devised originally for cases of spinal injury with bladder paralysis (Riches, 1943) has now been used extensively for decompression and drainage of the bladder in chronic retention. A small rubber suprapubic catheter (16 F.) is inserted by a special trocar, the catheter itself acting as the cannula. It gives a watertight fit and can be advanced to the base of the bladder by an internally expanding advancer (Fig. 3). It is inserted obliquely downwards and backwards,

FIG. 3.—(a) The suprapubic catheter introducer. (b) The catheter stretched on the introducer. (c) The advancer.

starting from the highest point of bladder dullness or the mid-point between the umbilicus and the symphysis, whichever is the lower. If there is any doubt about the fullness of the bladder a small incision is made at the same point and the instrument and catheter are inserted under direct vision. The catheter is held in place by a loop stitch through the skin, the ends of which pass twice around the catheter (Fig. 4); a

FIG. 4.—Suprapubic catheter in position.

small rubber shield held on by a strapping corset serves to retain a dressing around it and prevent movement. Kidd's U-tube has been found the most effective method of decompression, which is completed in 12 hours, after which the patient can get up if other conditions permit. The danger of injury to the peritoneum is minimal if the bladder is distended, as is the case when the operation is needed, and as an added safeguard the foot of the bed or operating table is raised during the insertion. When the bladder contains $\frac{1}{2}$ pint (425 ml.) there is usually a bare area devoid of peritoneum for 3 in. (7.5 cm.) above the symphysis.

This method fulfils all the suggested principles of treatment: decompression is slow; there is no urethral instrumentation; ascending infection is avoided, as there is no direct lymphatic pathway from the track of the catheter to the kidney; and the field for the second operation is left intact. It can be done safely under a local anaesthetic however ill the patient, it is leak-proof, and it can be prolonged as long as necessary. If the drainage has to be maintained for more than two weeks the catheter is changed on the fourteenth day. The old one is removed, and an open-end rubber catheter of the same or a larger size is immediately passed along the track. There must be no delay about this, as the fistula closes rapidly owing to its obliquity; after prostatectomy it closes spontaneously in a few hours, and it is exceptional for it to leak. There has been no apparent disadvantage from the "uphill" drainage, and the bladder urine has often remained sterile for a fortnight. Where renal function can recover it will do so, and the improvement in appetite and general well-being is often remarkable. The blood chemistry gives an indication of the need and type of intravenous fluids.

During the five years 1943-8 I have used this method for the drainage of chronic retention in prostatic obstruction in 227 cases; there were 12 deaths—a mortality of 5.2%—and none were from urinary infection. If three cases in which the drainage was purely palliative—in patients dying from heart failure or advanced carcinoma—are excluded the mortality was 4%, and if those who had never been catheterized or cystoscoped could be excluded it would be 2.6%. There will always be a mortality in dealing with these patients by whatever method, and it is remarkable how they get along so well until they are subjected to surgical intervention.

Immediate Prostatectomy

There is no doubt that the benefits of preliminary drainage have in the past made surgeons too cautious about prostatectomy in one stage; there are still those who practise a two-stage operation in every case. Their results in terms of mortality are excellent, but in playing for safety they lose many advantages. The modern dry prostatectomy, by whatever route, is a vastly different procedure from the two-stage Freyer from which it has developed. There need be no suprapubic leak, the patient can be up on the second day, and the convalescence is smooth and relatively painless. The horrors and discomforts of the older operations are still vividly recalled, and have made the operation one which men dread and in consequence defer until something has to be done.

The work of Wilson Hey (1945) in stressing the importance of asepsis has done much to reduce the number of two-stage operations. He himself advises a one-stage operation, following his own technique in every case, whether retention is acute or chronic; his figures are instructive, showing a total mortality of 6% in all cases. Where the blood urea was below 80 mg. per 100 ml. it was only 3.4%; with a value between 80 and 200 mg. it rose to 16.1%, and over 200 mg. it was four out of six cases (66.6%). It is evident that whilst a one-stage aseptic operation is applicable to many cases there are also a number of bad-risk cases that will not survive it. Some of these cases with chronic retention and considerable renal damage can be saved by preliminary drainage.

In one patient with a blood urea of 420 mg. per 100 ml. suprapubic catheterization with slow decompression brought it down to 38 mg. after eight weeks' drainage, and he came safely through a Harris prostatectomy and made a good recovery; I do not think he would have survived a one-stage operation. His wound was dry on the day after the suprapubic catheter was removed and his convalescence was both comfortable and uneventful. By contrast a man with a blood urea of only 20 mg. per 100 ml. but with a chronic retention of 46 oz. (1.3 litres) died from uraemia

on the ninth day after a one-stage prostatectomy (retro-pubic), with a blood urea of 300 mg. I am therefore not a convert to a universal one-stage operation although I practise it whenever it seems safe to do so.

In an uncomplicated case the convalescence after a retro-pubic prostatectomy (Millin, 1945), or a Harris operation with closure, or a Wilson Hey prostatectomy can be as uneventful as that after an interval appendicectomy, and the mortality should not exceed 5%. When there is chronic retention of urine or much renal damage or gross infection preliminary drainage will give the patient a better chance of survival. Drainage by the small suprapubic catheter has proved a safe and satisfactory method, and it does not interfere with the full exposure required for any of the modern methods of prostatectomy.

If endoscopic resection is to be done the presence of the suprapubic catheter makes the operation much simpler, as continuous lavage can be employed to keep the field clear of blood. Where intercurrent cardiac, pulmonary, or other disease makes a long period of drainage necessary it gives the greatest chance of getting the patient fit for operation. In cases of bladder paralysis it allows for adequate drainage during the critical period and does nothing to prevent the return of voluntary micturition or the establishment of automatic micturition. Its main advantages lie in the high insertion of the catheter, the oblique track, and the absence of leakage.

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OGILVIE'S SYNDROME OF FALSE COLONIC OBSTRUCTION

A CASE WITH POST-MORTEM FINDINGS

BY

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A syndrome of large-bowel colic thought to be due to sympathetic deprivation was recently described by Sir Heneage Ogilvie (1948), with a report of two cases, including laparotomy findings but without the possibility of full confirmation of the suggested anatomical diagnosis by post-mortem examination. The case now reported had been operated on before the first description of Ogilvie's syndrome, and its striking similarity to the original two cases (particularly to Case 2) was immediately apparent. When the disease had run its inevitable and very short course a full and careful post-mortem examination was performed. This third case may therefore be considered worth recording.

Case Report

The patient, a tall lean fitter aged 56, had long suffered from constipation, but had otherwise been in good health and free from pain until three months before his admission to hospital. Since that time he had noticed that his constipation was becoming more and more stubborn, and he suffered repeated attacks of colicky lower abdominal pain without diarrhoea or vomiting. These symptoms became increasingly severe and were attended by a progressive loss of weight, which he could ill afford, until, after four days' absolute constipation and a day's vomiting, on Sept. 8, 1948, he was sent into hospital as a case of chronic large-bowel obstruction due to carcinoma, becoming acute.

Examination on admission showed a very thin, ill-looking man with an unhealthy muddy complexion, in obvious spas-

modic pain. The abdomen was not at all distended generally, and the wall relaxed normally. There was a tender fullness corresponding to a distended caecum and transverse colon, but no lumps could be made out through the abdominal or rectal walls. Peristaltic sounds were exaggerated. The only other significant positive finding was a small area of consolidation at the base of the left lung. The speech was slow, slurry, perhaps slightly dysarthric, but otherwise the nervous system seemed normal. This examination made it clear that any obstruction was not complete, and an enema produced a constipated result and flatus, with relief of pain. On the following days the symptoms recurred, and, although distension was never present and flatus was passed spontaneously, defaecation could be induced only by enemata.

Plain radiographs of the abdomen and chest showed some increase in normal colonic gas shadows not amounting to a picture of true obstruction, an area of collapse at the base of the left lung, and an enlarged lower mediastinal shadow, interpreted as being due to a primary or secondary neoplasm obstructing the left lower bronchus, with secondary mediastinal glands. After some days in hospital the patient complained of dysphagia, which he said had been present for a few weeks, but very mildly, and was now becoming more noticeable. A barium swallow and x-ray screening showed some hold-up in the lower thoracic oesophagus, again thought to be due to a mediastinal new growth.

Follow-up of this barium seemed to indicate a complete hold-up in the pelvic colon, with gross colonic distension proximally. However, on further screening the radiologist reported that he did not think there was an organic obstruction at this level, and suggested a barium enema. Meanwhile the general condition and the morale of the patient were deteriorating, the severe pains continued, the bowels remained immovable, and there were repeated requests for any operation which offered a chance of relieving his symptoms. It was felt that even with a negative barium enema laparotomy would eventually be forced by these facts, although, in view of the chest condition, at best a very temporary palliation was all that could be hoped for.

Laparotomy was performed on Sept. 21 through a midline incision. Below the level of the gastro-hepatic omentum the whole abdomen was normal. The colon showed neither distension nor spasm. The liver was studded with secondary growths, and an apparently carcinomatous mass was palpable in the pre-aortic region about the level of the coeliac axis. A small piece of liver secondary was excised for microscopy and the abdomen closed. After operation the patient became more and more cachectic, a terminal chest infection appeared, and he died on Oct. 21, one month after operation.

Post-mortem Examination.—The primary lesion was found to be an extensive carcinoma of the left lower bronchus, with secondary glands in the mediastinum invading the oesophagus, a large secondary in the right lobe of the thyroid, multiple secondaries in the liver, and some secondaries in the pre-aortic region. The apex of the left and base of the right lung showed an acute tuberculous process, which presumably had hastened the end. Microscopically the growth was highly anaplastic, and consisted of sheets and cords of spherical cells with round pyknotic nuclei and very little cytoplasm. The splanchnic nerves were very carefully dissected throughout, and were found to be entirely free from any involvement in growth in their pre-ganglionic course. On tracing down the connexions of the semi-lunar ganglion distally the mat of efferent nerve fibres leaving the left side of the ganglion passed direct into a carcinomatous mass, presumably deriving from an affected pre-aortic gland. After fixation this relation was even more striking and definite. The left vagus was probably involved by growth in the thorax, although visible as a normal nerve uninvolved by carcinoma below this level; the right was uninvolved throughout its course. The brain and meninges were normal.

Discussion

The similarity of this case to those in the original description needs no emphasis. After laparotomy in my case two explanations seemed possible: (1) colonic muscle imbalance caused by interruption of sympathetic pathways (stated thus vaguely, with none of Sir Heneage's precision), or (2) that