Ketogenic Diet

The only other methods of treatment which deserve serious consideration are the ketogenic diet and its much more convenient offspring mandelic acid. There can be no doubt that in expert hands remarkably good results are obtained in a high proportion of cases. They are the only methods which successfully strike directly at the root of the evil by inhibiting the growth of the bacilli *in situ*. It is with no desire to belittle their value that I venture the following criticisms. Both acid and alkaline therapy call for some fortitude on the part of the patient, and scrupulous attention to detail is essential for success with either method. The most serious disadvantage of the "acid" methods is due to the impossibility of continuing treatment for sufficiently long periods to prevent relapses. The relapse rate is unfortunately high, and in fact many of the cases I have seen in the past two years have already had this treatment and have later relapsed. The method apparently offers little safeguard for the future. However, it is probable that a thorough urological investigation of these cases would have revealed mechanical conditions which are not amenable to this or any other form of medical treatment. It has already been stated that in the successful treatment of *B. coli* pyelitis the two essentials are correct reaction and adequate volume of the urine, and that the latter is by no means the least important. In treatment with "acids"—that is, ketogenic diet or mandelic acid—quite apart from the disputed question as to whether acids themselves in sufficient concentration, and over long enough periods, cause actual damage to the kidneys, it is necessary to induce a small volume of urine in order to obtain a sufficient concentration of acid to inhibit bacterial growth. This is effected by a rigid curtailment of the fluid intake. I believe that this in itself is harmful in these cases, and seriously militates against the success of these two methods of treatment. More hopeful would seem to be the use of some substance perhaps allied to mandelic acid but effective in an alkaline or neutral medium. So far as I am aware such a substance has not yet been found.

Conclusion

Alkaline therapy, on the other hand, possesses several distinct advantages, for it can be continued indefinitely without harm to the individual or serious interference with the activities of a normal existence; it permits of a normal diet being taken, and, above all, it confers protection against relapses so long as it is conscientiously carried out. Nevertheless it is of little use in cases with increasing urinary obstruction, as in the later stages of pregnancy, or in cases in which mechanical deformities of the renal pelvis or ureters cause stagnation of urine. It is of doubtful value, therefore, in cases with chronic ulceration and scarring of the renal pelvis, neuro-muscular incoordination, or congenital anatomical defects of the pelvis or ureters. Such cases can only be cured, if at all, by inhibiting the growth of the bacilli *in situ*, and it is in these cases, I believe, that the ketogenic diet or mandelic acid should be tried.

In conclusion, I would again emphasize the importance of adequate dosage and thorough and early urological investigation if medical treatment fails after, at most, two weeks' trial.

The method of treatment described was evolved during the course of investigations into the value of alkalis in the treatment of the various forms of Bright's disease, for which I received grants from the Medical Research Council and the Clinical Research Committee of Guy's Hospital. It is a pleasure to acknowledge my indebtedness to them.

CONTROL OF HAEMORRHAGE IN ENDOSCOPIC PROSTATIC RESECTION

WITH A NOTE ON CLOT RETENTION

BY

E. W. RICHES, M.C., M.S., F.R.C.S.

ASSISTANT SURGEON AND ASSISTANT UROLOGIST, MIDDLESEX HOSPITAL;
SURGEON, HOSPITAL OF ST. JOHN AND ST. ELIZABETH; CONSULTING
UROLOGIST TO THE LONDON COUNTY COUNCIL

Haemorrhage in connexion with endoscopic resection of the prostate may be primary, reactionary, or secondary; in this operation primary and secondary haemorrhages are of more practical importance.

Primary Haemorrhage

Bleeding at the time of the operation can be a source of trouble in several ways. It obscures the operative field, necessitating frequent stoppages for lavage or coagulation, and thereby prolonging the operation unduly, or it may be so great as to compel the operator to stop altogether and resort to multiple sessions. It is also the most fruitful cause of accidents or mistakes, as was pointed out by Walker.¹ The actual blood loss is of itself rarely sufficient to produce serious exsanguination.

Excessive bleeding is to be expected from the resection of a large glandular prostate, especially one which has already given rise to haematuria, and if it were possible always to practise the operation which appears to be the best as judged by the local condition of the prostate these cases would be treated by suprapubic prostatectomy with closure, after the Harris technique. In discussing the selection of cases suitable for perurethral treatment the importance of the local condition of the prostate has been stressed by several writers.^{2 3 4} On the other hand, we cannot always practise what would be the ideal operation on local grounds, because there are many patients in whom the general condition makes prostatectomy extremely hazardous, or even entirely out of the question. To be able to include, safely and adequately, the "bad risk" case within the scope of the operation of endoscopic resection we must have some means of controlling the primary haemorrhage, whatever the local condition of the prostate may be.

Method of Control

Just as bleeding from an abdominal incision can be lessened by infiltration with a local anaesthetic containing adrenaline, so the same effect can be produced in the prostate. The only special instrument required is the long needle* illustrated in Fig. 1, which has been made for me by the Genito-Urinary Manufacturing Company. This is introduced through the channel in the electrotome designed for the coagulating electrode or through a separate mounting. A mixture of local anaesthetic and adrenaline is prepared beforehand. After experimenting with various concentrations I now use 0.5 c.cm. of adrenaline (1 in 1,000) added to 9 c.cm. of percarine (1 in 1,000); this is distributed under vision into the lateral and middle lobes of the prostate. In a considerable number of cases 1 c.cm. of adrenaline was used, but observations on a series showed that this produced a considerable rise of blood pressure, accompanied by tachycardia and pallor, though the blood pressure always fell again within a few minutes of the start of actual resection. When 0.5 c.cm. is used the rise in blood pressure is much less and the other effects are not so

* The instrument has recently been modified by the substitution of a detachable needle of the Schimmel type for the fixed point illustrated.

marked, while there is no appreciable difference in the haemostasis produced.

The operation can be started at once, for the solution diffuses readily through the glandular tissue, and as resection proceeds it will be seen that the cut surface is blanched and bleeding is usually negligible. Any vessel which spurts can be readily coagulated, because it is not obscured by a general ooze from the surrounding tissue. The time spent in carrying out the infiltration is more than saved subsequently, as there is no delay between the cuts, and, what is more important, an adequate amount of tissue can be removed. This is probably the most potent factor in ensuring the success of the operation both in respect of the immediate relief of symptoms and in the permanence of the result.

I have now used this method of local infiltration more than fifty times, and the average weight of tissue removed per resection has been 6.9 grams; in the previous fifty operations without infiltration the average weight removed was 2.9 grams; in the last thirty cases with infiltration the average has been 7.7 grams. The fragments are weighed dry immediately after the operation; the addition of a fixative such as formal-saline increases their weight. The fact that the average weight has been more than doubled is an indication that it has been possible to increase the scope of the operation by dealing with larger prostates by resection when desirable, and the immediate and complete relief of symptoms associated with a more adequate removal of tissue has been most striking. In five cases a second resection has been necessary. In one of these it was recognized that more than one resection would be required; the patient was a feeble old man of 80 with auricular fibrillation, poor renal function, and a very large prostate; there was 18 ounces of residual urine, grossly infected, and a stone in the bladder. After preliminary cystotomy an amount of 14.2 grams was resected, and four weeks later a further 10.4 grams, making a total of 24.6 grams. The suprapubic wound healed and he was restored to urinary comfort.

No chloroform must be used as anaesthetic if adrenaline is being injected.

Reactionary Haemorrhage

In many cases there is a slight increase in the amount of bleeding after the patient has returned to bed; it is controlled by frequent irrigations, or occasionally by continuous irrigation through a two-way catheter as advocated by Loughnane. It has usually ceased by the second day, and haemorrhage starting on the second or third day is rare, despite the use of a low spinal anaesthetic, which has been condemned by some writers as predisposing to reactionary haemorrhage.⁵ Low spinal anaesthesia after the technique described by Hasler⁶ is simple, rapid, certain, of adequate duration, and has been remarkably free from complications. In over a hundred resections where this anaesthetic has been used there has been only one case of real reactionary haemorrhage.

A man of 56 developed acute retention of urine whilst coming from South Africa for the Jubilee celebrations. He had a moderate degree of glandular prostatic enlargement affecting mainly the middle lobe. Although not a true haemophilic he came from a family of bleeders, and for this

reason declined to consider prostatectomy. After catheter drainage resection was carried out under low spinal anaesthesia. Local infiltration of 4 c.cm. of 1 in 1,000 percarine with 1 c.cm. of adrenaline was used; bleeding was slight during the operation and 9.1 grams of tissue were removed. After forty-eight hours there was severe haemorrhage leading to clot retention; this was relieved in the manner to be described, and subsequent progress was uneventful. He went out on the twelfth day with less than an ounce of residual urine.

Secondary Haemorrhage

Bleeding occurring from the fourth to the tenth day is usually secondary, and due to infection. Its danger lies not in the blood loss but in the possibility of clot retention, of which an excellent description has been given by Doyle and Feggetter.⁷ The liability to secondary haemorrhage does not appear to be increased by the use of local infiltration, for in fifty resections in which this method has been used it occurred six times, whilst in the previous fifty cases without infiltration it occurred eight times. It should be treated by hot lavage and

the administration of haemoplastin, and morphine where this is not otherwise contraindicated, combined with complete rest. I prefer to use sodium citrate, 2 per cent., for lavage, in order to prevent clot formation.

Clot Retention

This is one of the most serious complications of the operation.

In the series quoted by Doyle and Feggetter it occurred in seven cases out of 150, and was the cause of death in six of them. Millin⁸ reports having to open the bladder for clot retention in six cases out of nearly 250. I had six cases of clot retention in 100 resections, with one death which was largely due to it. It may follow primary, reactionary, or secondary haemorrhage, and its prevention demands adequate control of bleeding at the time of operation, rest and lavage in the immediate post-operative period, and the prevention of infection throughout. Inadequate removal of tissue leads to incomplete emptying of the bladder after the catheter is removed; this aggravates any existing infection, so that secondary haemorrhage is more likely. Oedema of the bladder neck is inoperative as a cause of incomplete emptying if sufficient tissue has been removed. Atony of the bladder is occasionally a cause of incomplete emptying, and I have had one case in which secondary haemorrhage and clot retention followed such a condition.

The accepted methods of treatment once the condition of clot retention is established are:

- (a) Evacuation of the clot with an aspirator, with or without the preliminary use of a lithotrite to break it up.
- (b) Suprapubic cystotomy.

It is essential to empty the bladder, when its contraction will do much to stop the bleeding. The first method involves repeated instrumentation, which the patient may be ill fitted to withstand, and the second involves another operation and the prolongation of convalescence associated with an open bladder. There is a third method, which was first suggested to me by Mr. W. Sampson Handley; it is to break up the clot by the injection through the catheter of pepsin and hydrochloric acid, and it can be remarkably successful. Various amounts and concentrations have been tried, and the best results have followed

FIG. 1.—Long needle.

FIG. 2.—Syringe.

the injection of one ounce of glycerin of pepsin* (full strength); the catheter is closed and left so for half an hour. When the spigot is removed the blood-stained fluid usually flows out, and any remaining clots can be withdrawn by suction with an efficient bladder syringe. The type of syringe is important; it should have a properly fitting plunger and a glass barrel. The Genito-Urinary Manufacturing Company have copied for me a French pattern, which is illustrated in Fig 2. The piston is made of virgin silver and the barrel of pyrex glass, and with this syringe it is possible to apply very strong suction and to see its results in the shape of pieces of clot mixed with the withdrawn fluid. A cheaper model with a fixed nozzle is made for ward use as a routine bladder syringe, and is equally effective. It is sometimes necessary to repeat the injection of pepsin, but once the bladder is empty the bleeding can usually be controlled by hot irrigations and the administration of morphine and haemoplastin.

* Glycerin of pepsin, 1914 B.P., contains 10 per cent. of pepsin and 1.15 per cent. of HCl.

INDICATIONS FOR SURGERY IN SEVERE BELL'S PALSY

BY

A. TUMARKIN, F.R.C.S.Ed.

Permanent deformity after Bell's palsy is generally believed to be rare. This is unfortunately not so. Duell¹ states that fully 20 per cent. of cases do not recover completely, and there can be no doubt that his view is correct. Naturally the degree of residual palsy varies, but the most superficial examination of a group of cases will convince any investigator that some deformity persists in a considerable percentage of cases. Permanent facial palsy in a working-man may not be a very serious matter, but in a sensitive young woman its effects may be serious. Nerve grafting in the late stages of such a case is not likely to be a satisfactory procedure, for obvious reasons. It is far better to decompress the nerve in the early stages.

Recovery after Decompression

Recovery after such an early decompression is not a matter of months or even weeks. Improvement can be detected within a few hours of operation, and may be complete in a few days. Tempea,² who operates under local anaesthesia, states that the patient may actually feel the improvement on the operating table. One of my own cases showed definite improvement within thirty-six hours, and was completely cured in three days. I need not stress how gratifying such a dramatic recovery can be. Nevertheless, the operation of facial decompression is not lightly to be undertaken. To recommend it as a routine procedure in the early stage of Bell's palsy would be fantastic. Thus the problem arises: Is there a criterion whereby we may decide in the early stage that a given case is unlikely to recover?

In an attempt to discover such a criterion the problem was approached from a statistical standpoint. We sent out a questionnaire to 133 patients for information as to their early symptoms, degree of recovery, and so forth. We received sixty-seven replies, of which only fifty-one related to true Bell's palsy. Of these no fewer than twenty-six said they were not completely cured. Let us admit that most of those who did not reply were cured. Let us exclude another eight failures that were of less than eighteen months' standing. There still remain eighteen failures in a series of about 100 cases.

Summary

1. Excessive primary haemorrhage is the chief source of difficulty in endoscopic resection of the prostate, and leads to inadequate removal of tissue. It can be minimized by the local infiltration of the prostate with a solution containing adrenaline.
2. Secondary haemorrhage from infection is likely to follow incomplete emptying of the bladder due to inadequate removal of tissue; it may lead to clot retention.
3. In the event of clot retention an attempt should be made to break up the clot by the injection of pepsin. Only if this fails is it necessary to open the bladder.

REFERENCES

- ¹ Walker, K.: *British Medical Journal*, 1935, i, 226.
- ² Everidge, J.: *Proc. Roy. Soc. Med. (Urol.)*, 1933, xxvi, 1464.
- ³ Hammond, T. E.: *Ibid.*, 1933, xxvi, 1468.
- ⁴ Riches, E. W.: *Ibid.*, 1933, xxvi, 1472.
- ⁵ Doyle, R. W., and Fegetter, George Y.: *British Medical Journal*, 1935, i, 147.
- ⁶ Hasler, J. K.: *Lancet*, 1932, i, 80.
- ⁷ Doyle, R. W., and Fegetter, George Y.: *Loc. cit.*
- ⁸ Millin, T.: *British Medical Journal*, 1935, i, 330.

Analysis of Symptoms

An analysis of the symptoms in these cases showed that pain and loss of taste were of grave prognostic significance. Vertigo, hyperacusis, rash, pyrexia, and so on were of much less importance. The following comparison between the twenty-five cures and the eighteen failures will make this clear.

Cases	No Pain, No Loss of Taste	Pain, but No Loss of Taste	No Pain, but Loss of Taste	Pain and Loss of Taste
25 Cures ...	18=72 per cent.	4=16 per cent.	2=8 per cent.	1=4 per cent.
18 Failures	2=11 ..	6=33 ..	4=22 ..	6=33 ..

Stated simply it may be said that if the patient has both pain and loss of taste the chances are 2 to 1 that he will not recover; but if he has neither of these symptoms the chances are 25 to 1 that he will recover. Less importance is to be attached to the presence of only one of these symptoms.

The site of the pain varied considerably, as did also its severity; it was rarely a true otalgia. More commonly it was referred vaguely to around the ear, or to the vertex, or even down the shoulder. The loss of taste was very marked. One patient accused his wife of poisoning him, as all his food tasted oily. It is very desirable that these investigations should be repeated, and in particular patients should be under close observation from the outset, so that the progress of their nerve reactions can be watched. If confirmation of the above figures is obtainable I believe we shall have gone far towards the solution of this problem.

Nerve Viability

The potential value of such a rule as I have stated is well brought out by two cases described by Sanders,⁸ in which the inexorable progress of the paralysis compelled him to operate. Each patient spontaneously complained of pain and loss of taste. Thus the application of the rule would have justified him in operating much earlier than he did. The value of early operation should need no stressing. An interesting point, however, arises out of one of Sanders's case histories. He states that this patient had a definite reaction of degeneration for four days before he operated. Nevertheless improvement was apparent within six hours of the operation. If this is correct we must believe that the nerve is still viable even in the