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TREATMENT BEFORE AND AFTER LAPAROTOMY.

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ONE meets not infrequently with urgent cases demanding laparotomy which must be taken as they are and operated upon at once. The majority of cases, however, can be kept under observation long enough to obtain a clear idea of their characteristics. When the diagnosis of the local condition is made, the general state of the patient should be carefully examined into. The advantage accruing from acting on this principle was recently impressed upon my mind in a case of a large fibro-cystoma of the uterus which required removal. While under preparatory treatment the patient's temperature rose to 103.5° F., and there was much pain in the abdomen. Septic peritonitis was suspected, but the temperature came down and again went up, showing that the trouble was a zymotic one, and it yielded promptly to the use of quinine. Had I operated without knowing that she was disposed to this form of fever, I doubt if she would have recovered as promptly as she did.

The state or condition of the nervous system should be investigated, and, if found defective, should be corrected as far as possible. Many patients leave home to be under the care of the special surgeon, and this, together with the dread of the treatment, often deranges the nervous system. All this can be overcome, usually, while other preparatory treatment is instituted. Time should be given for the patient to become accustomed to her surroundings and to gain confidence in the nurse and surgeon. During this time the true state of her nervous system may be ascertained. If she is sleepless and depressed, relief should be given by nerve sedatives and tonics. Quite often the damaged state of the nervous system is due to impaired nutrition, and will be relieved by improving the digestion. Occasionally the nervous trouble is primary, and requires direct attention. Opium in small doses is most reliable in producing sleep and relieving depression, but it deranges digestion and nutrition in some cases, and on that account other remedies should be employed. Sulphonal does remarkably well as a sleep-producer, and is much preferable to bromide, chloral, or any combination of such remedies. It produces the desired result in the great majority of cases that are not kept from sleep by severe pain. This remedy is worthy of note as rather new, and is certainly one that will cause sleep with no other perceptible effect, good or bad.

To those restless, anxious patients who find the days very long even when they sleep at night, and with whom opium does not act well, I have given large doses of lupulin and small doses of cannabis indica. If these do not answer, opium should be tried.

One of the greatest advantages of this preparatory treatment is that the effect of opium on the case in hand can be observed, so that, if it becomes necessary to use it in the after-treatment, the surgeon knows how far to depend upon it and what effects may be expected.

The nutritive system often requires attention, and in the majority of cases nutrition is impaired because of derangement of the digestive organs. In others the general nutrition is good, while the digestive organs alone are at fault.

The time during which the trouble calling for surgical treatment has existed makes the difference in the general condition of the patients.

There are two classes of cases usually met in practice which require attention in regard to digestion and general nutrition: First, those who have not been long under the influence of the affection, and who need very little treatment, except to relieve constipation and perhaps subacute indigestion. Such cases are often left without any preparatory treatment except a cathartic the day before the operation. This may be safe enough, but in the majority of cases the tongue is coated, the bowels sluggish, the appetite variable, and the kidneys act imperfectly. These conditions can all be relieved by a few small doses of the mild chloride of mercury, followed by a saline laxative. If this does not clear the tongue, improve the state of the stomach, and increase the action of the kidneys, the treatment should be repeated in a few days. Second, the more advanced cases, which show general malnutrition as well as an impaired digestion. These require more care and for a longer time. It sounds well to say of such patients that, the cause being one of neoplasm, if this is removed the malnutrition will be cured; but the chance of the patient being able to stand the operation may be improved by overcoming the constitutional derangements as far as that is possible. Gastric sedatives, such as bismuth or cerium, may relieve the irritation and improve the appetite, and tonic laxatives, such as nux vomica, belladonna, and rhubarb, will relieve constipation far better than salines.

To empty the bowels in the best way immediately before the operation is of great importance. The routine dose of castor oil or some other cathartic the day before the operation may or may not answer the purpose. I think that, as a rule, it does about as much harm as good. If a cathartic is called for at all, it should be given two or three days before the operation, so that any intestinal disturbance that it may have caused will have time to subside.

The objects attained in the management of the bowels are threefold: first, to clear out the canal; second, to establish as far as possible normal secretion; and, third, to remove the causes of flatulence, whatever they

may be. In the choice of a laxative or cathartic, one should be sought which will meet all these indications. In cases showing deranged secretion, indicated by the state of the tongue and appetite, an alterative dose of mercury should precede the cathartic, as already suggested. The mercury, being a reliable disinfectant, will also meet another indication, the relief of flatulence. The selection of a cathartic to be given just before the operation is important. Castor oil is the best in case there is constipation or a suspicion of fæcal impaction. The only difficulty is that many patients strongly object to it. When it can be taken, it should be given two nights before the operation. This gives time for the oil to act, and also gives the bowels a chance to become quiet. The rectum should be washed out the night before the operation or early in the morning. To feeble patients who require a cathartic and yet are not strong enough to stand its operation, I give half an ounce of castor oil and two drachms of oil of turpentine. This is a most valuable preparation, if the stomach will retain it. In fact, this is the only cathartic that will act thoroughly in weak, debilitated patients without causing depression. The dose of turpentine is large, but if less is given it will affect the kidneys and fail to some extent as a cathartic. This may be called a tonic or stimulant and cathartic. A similar effect may be obtained by giving six grains of rhubarb, one grain of compound extract of colocynth, one grain of camphor, and a tenth of a grain of extract of belladonna, in pills. There is a little depression following the action of this, and it is not so certain in its action as oil and turpentine.

To those who cannot take either oil or pills without having their stomachs upset I give one or two teaspoonfuls of calcined magnesia and half a teaspoonful of charcoal, followed in a few minutes by a glass of warm lemonade. This empties the bowels and relieves flatulence very thoroughly. This is given in the morning of the day before the operation, the object being to have the bowels quiet and empty at the time of operating.

The condition of the heart and kidneys should be carefully noticed, especially that of the kidneys. The urine should be thoroughly examined before giving an anæsthetic. I am satisfied that disease of the kidneys is the most important of the contra-indications to the use of anæsthetics. If any renal disease is found, it should be carefully treated and watched, and, if it proves to be acute or subacute, sufficient relief can in time be obtained to warrant the operation; but chloroform might be chosen in place of ether as the anæsthetic, and extra efforts should be made to shorten the time of operating. I have for a long time made it a rule always to examine the urine before giving an anæsthetic, and believe that it should be an invariable practice. I refer to that matter here because I have found many who do not think it necessary.

In regard to the state of the heart, I find that it is often deranged in its function from pressure or indigestion, and it nearly always improves under treatment. When there is time, I order muscular exercise as well as remedies to improve nutrition, and find that much improvement in the heart-

action follows. Organic heart-disease, other than extreme hypertrophy, dilatation, or aortic stenosis or insufficiency, does not deter me from giving an anæsthetic and operating. Many cases having disease of the mitral valve take ether very well.

The day and evening before the operating day call for certain attentions. The bath so generally given the night preceding the operation is not always advisable. If the patient is accustomed to daily or frequent bathing it may be safe to give it, but otherwise it is dangerous. The patient may get cold or become exhausted. The bathing should be done, in such cases, several days before, and then with great care. When there is marked debility, with weak heart, digitalis and nux vomica should be given the preceding day; especially is this necessary when the operation promises to be prolonged. I formerly gave quinine, believing that it was a good tonic and helped to prevent shock, but I am satisfied that digitalis and nux vomica are better. The number of doses should depend upon the effect. As soon as the heart-action is noticeably improved the drugs should be withheld.

The food should be of the most nourishing kind and at the same time easily digested, or else it should be artificially digested. Sterilized or peptonized milk, clear soups, tender beef, mutton, eggs, and raw oysters, either or all of these, according to the preference of the patient, may be used.

The time to operate is, as a general rule, midway between the menstrual periods. An exception should be made in cases of menorrhagia and dysmenorrhœa, in which there is an improvement in the strength towards the period of menstruation. Advantage should be taken of that temporary improvement by operating immediately before the menses.

The morning is by far the best time to operate. The patient is then at her best, and the stomach is empty,—a condition very necessary to the taking of an anæsthetic. This would not be referred to here were it not for the fact that a great many surgeons in this country operate late in the day. There are many disadvantages in so doing. The patient suffers from anxious anticipation, and becomes fatigued if food is not given; and if given, it is not, as a rule, either digested or absorbed, and the stomach acts badly during and after the anæsthesia under such circumstances.

There are certain points in the management of the patient during the operation which may be briefly mentioned.

I am led to dwell a moment on the general therapeutics of abdominal section, for the reason that my attention and that of my assistants has been so fully engrossed with the details of antisepsis and the technique of the operation that many important items in the general therapeutics have been at times overlooked. It is likely that a similar experience may fall to the lot of others.

The patient should be kept warm, but the room should be cool, not over 70° F. A very warm room has been advised, and there are many surgeons who still prefer it, believing that there is danger of chilling the patient by exposing the abdominal organs to cool air. This can be obviated in other

ways, by keeping the patient's head and feet warm by hot water if need be, and protecting the trunk with rubber cloth. Chilling the peritoneum is avoided by the use of warm sponges. One large sponge should be placed in the wound as soon as the tumor is removed. This prevents the escape of the intestines, and protects the peritoneum from the air. The sponges are held at the proper temperature by being kept in an empty pail which is placed in a larger pail filled with hot water. The sponges are thus kept dry, while the water in the chamber around the inner pail keeps up the warmth. In case the operation is a long one, the water surrounding the sponge-pail can be renewed.

Warm ether is also of value in avoiding shock and chilling the patient. This is obtained by using my ether-inhaler, in which the ether is vaporized in a reservoir and conveyed to the patient through a rubber tube. This warms the ether sufficiently to make it agreeable and safe. I have on former occasions spoken of the advantages of this ether-inhaler, by which the anæsthetic can be given pure, or diluted with pure air to any degree, and without the reinspiration of the expired air. I may add here that experience only tends to confirm my confidence in that method of using an anæsthetic such as sulphuric ether.

Regarding the after-treatment, the bed in which the patient is placed should be warmed to about the normal surface temperature. This can be done by hot-water bags under the bedclothes. The bags should be moved about, so that the heating shall be uniform. The patient's head should be covered with a soft woollen shawl or soft blanket. The hands should be kept under the bed-covers and not disturbed. The pulse should be watched at the temporal artery. A hot-water bag may be placed near the feet, but not in contact with them. I have repeatedly seen the feet burned by placing a hot-water bag close to the skin. This will not occur when the bag is wrapped in flannel. The air in the room should be kept at about 70° F., and ventilation secured without having the patient in a draught. For a number of hours ether is thrown off with the expired air, and it is difficult to keep the air in the room agreeable. It is fortunate if the patient sleeps after the operation, and no effort should be made to awaken her, as is frequently done, to find out how she feels.

During the first twenty-four hours or more, the more rest that can be obtained the better. Absolutely nothing should be given in the way of food or medicine unless there is some urgent demand for either. Nausea and vomiting, which occasionally occur, should be counteracted with sips of hot water if the patient is anxious to have something to drink,—not otherwise.

Keith usually gives a hypodermic dose of morphine immediately after the operation, to control the restlessness which supervenes when the patient comes out of the anæsthesia. This is not always necessary. I wait and see if there is much restlessness or pain, and if there is, the morphine is given. Especially is this necessary if there be pain. Nervous restlessness

alone can often be controlled by the efforts of a judicious, experienced nurse. When this fails, morphine should be given; but if the patient can be controlled until night, it is better to withhold the morphine until then.

This expectant treatment should be continued until the stomach has become reliable and gas has passed from the bowels; and it will be found in many cases that nothing else is required during the first forty-eight hours. I am sure that great harm is done by giving nourishment and medicines when there is no demand for either. I certainly have seen more harm come from doing too much at first than from doing too little. There are exceptions to this rule of doing nothing. In case the vomiting continues, and is not relieved by hot water, I use the following: Magnesiæ carb., ʒij; magnesiæ sulph., ʒiij; aquæ menth. pip., ʒiij. Of this, a teaspoonful may be given every one, two, or three hours in a dessertspoonful of water. This prescription is used in the Samaritan Hospital in London.

A mustard plaster to the pit of the stomach is also useful. When these remedies fail, and the patient complains of burning in the stomach, dessertspoonful doses of iced water may be used. When the patient is depressed, ten drops of whiskey in a teaspoonful of water every few minutes will be of service. In desperate cases I have given a large quantity, as much as the patient could drink, of lukewarm water and a little table salt. This is thrown off promptly, and sometimes gives relief. It should not be repeated. If relief is obtained and the nausea returns, the stomach should be washed out in the usual way.

When the vomiting is attended with abdominal pain, morphine hypodermically will give relief in many cases.

The foregoing treatment has reference to guarding the patient from shock.

There remain for consideration peritonitis and septicæmia, which may occur after laparotomy.

From recent reports in the literature of medicine it appears that a new departure has been taken in the after-treatment of cases of ovariotomy and similar operations. In place of giving opium and keeping the bowels at rest for several days, the bowels are moved early, and opium is withheld. Cases which show signs of septicæmia or peritonitis are given saline cathartics. It is claimed that free action of the bowels effects a kind of drainage which arrests the tendency to inflammation of the peritoneum, and also favors the elimination of septic material. This appears rational on theoretical grounds, especially in view of the fact that in well-marked septicæmia there is frequently a spontaneous serous diarrhœa, which occasionally is followed by a lowering of the temperature for a time. It is seldom, however, that permanent improvement occurs after elimination by purgation. Whatever theories or facts may be advanced in favor of this plan of treatment, one should gladly accept it, or any other which might prove better than the old ways of managing such cases. But I have failed to see that this new treatment has many advantages.

So far as I can learn, the results, on the whole, do not compare well with those of other surgeons who give opium and let the bowels and the stomach rest until the first dangers are past. Furthermore, I have found in my own practice that as soon as there are evidences of peritonitis or sepsis the stomach is disturbed and will not retain saline cathartics, or anything else, for that matter. To state this in another way: as soon as the indications for cathartics appear, it is impossible to have the patient retain them, in the great majority of cases.

Perhaps the advocates of this treatment may be able to anticipate the coming storm, and, by giving salines, ward it off; but I have not been able to do so.

Regarding the use of opium, or rather the discarding of it, in the after-treatment of laparotomy cases I am still more conservative. While there are a number of reasons why it should be used, I have not yet heard of any good reason why it should not be, in certain cases.

That there are patients who do not need opium, and others with whom it does not agree, must be admitted; but the majority require it to relieve pain, produce sleep, and, above all, to secure rest and quiet, which are so necessary to recovery after major operations. These effects of opium, it may be claimed, simply contribute to the comfort of the patient, but do not secure safety or aid in recovery. Granting that such may be the case, the humane surgeon will find in this good reason for the use of opium; but I am confident that opium has a therapeutic value in addition to that of relieving suffering.

The danger from shock which arises from major operations is, I am sure, controlled by opium better than by any other drug. So also is the depression from anæmia resulting from hemorrhage. All careful observers have noticed that the rapid, feeble pulse has become fuller, slower, and steadier under the influence of opium. The anxious, pinched face also changes to a better expression. This has led me to look upon opium as the most reliable of all heart tonics in the depression which follows these operations. When the organic nervous system is tottering under the oppression of severe injuries to the abdominal and pelvic viscera, opium is the greatest sustaining agent. Alcohol, no doubt, will bridge over a moment of extreme and immediate danger, but its effects must almost always be supplemented with opium in order to obtain a continuous sustaining effect.

Perhaps more important still is the question, Does opium have the power of preventing peritonitis and septicæmia, or of controlling their fatal tendencies? To judge fairly of the therapeutic effects of opium in surgery, it is necessary to keep in mind the fact that after an operation there are injured or damaged tissues left that must be repaired. These tissues may or may not be affected with septic material, but in either case the safety of the patient depends upon these wounded tissues being speedily closed in by reparative material, which restores continuity of tissue and at the same time protects the normal surrounding tissue from inflammation and the patient from general septicæmia. Now this process, by which the general

system is protected from the dangerous effects of local injuries, requires time,—less time than is required to restore the injured tissue or heal the wounds; but it is the most important time, because upon the completion of this protection depends to a great extent the safety of the patient. Wounds may do badly, but, if an exudation has been thrown around them which protects from septicæmia, recovery may be expected. Of course, the modern surgeon protects his cases from sepsis by his cleanly operating; but in spite of his best efforts there may be trouble occasionally, and then the great point is to gain time for this natural protective process, which comes, or should come, first in the order of restoration. The principal condition necessary to secure the protective factor in the general process of repair is repose or quietude of the nervous and circulatory systems, and opium is the most potential agent in effecting this condition. The process of repair is arrested when the nervous system is in turmoil and the circulation is running wild, and opium should be used to give the necessary rest. It is a fatal mistake to wait until there is evidence of inflammation or septicæmia. It should be given to control the nervous excitation which generally precedes these complications. Opium fails to do all that it is capable of doing if it is not given in time, and it is therefore condemned as useless when the fault lies in the mode of using it.

The time to give it, then, is an important question. Some of the most successful surgeons give it immediately after the operation, and that is best when the case is bad and there is shock. In easy cases I prefer to wait until the other effects pass off to some extent; and if there is distress or pain present, then is the time to give opium, and the effect should be kept up until there is no danger of complications, so far as the condition of the patient indicates.

The way of giving it is of some importance, no doubt. I prefer to give it at first hypodermically, and keep up the effect in that way, or by rectal injections of opium and warm water.

Having advocated the use of opium and objected to the use of purgatives early in the treatment of this class of surgical cases, the question which follows is: When shall the opium be withdrawn and cathartics resorted to? Opium should be withdrawn gradually, as the constitutional and local evidences of inflammation subside, and then cathartics or laxatives should be given. To state this in another way: opium should only be given when there are indications for its use, and it should be abandoned so soon as these indications subside. The bowels should rest until the time for peritonitis is past, or, if there has been inflammation or sepsis, when the acute symptoms and signs of these have subsided.