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THE MEDICAL TREATMENT OF PEPTIC ULCER AND ITS COMPLICATIONS *

BY

E. MEULENGRACHT, LL.D., M.D.

Professor of Clinical Medicine, Copenhagen University

First of all I wish to thank the British Medical Association for the great honour it has done me by inviting me to open the discussion on the treatment of peptic ulcer and its complications. I feel that the distinction of being singled out from among so many others who have a better right than I has been bestowed upon me in view of the interest shown in the method of treatment I employ in cases of bleeding gastric ulcer—"treatment with food"—and that you desire to hear an account of it at first hand. I will therefore reverse the title of the address and begin by speaking about the treatment of the complication, haemorrhage, and then pass on to relate how my experiences of this have influenced my view of the general treatment of peptic ulcer.

Until 1931 I used, in common with all my fellow countrymen, and indeed everybody else, the current treatment for bleeding gastric ulcer—namely, absolute immobility, ice box, ice pills, inanition, milk in quite small and carefully increasing doses, and slow transition to a modified Lenhart diet. The principle was, "The more severe the haemorrhage was, or had been, the more stringent the inanition and the other measures taken." After some practical experiences I had had, and encouraged by certain lines of reasoning, into which there is hardly time to enter now but of which the main point was that it must be fundamentally wrong to withhold food and drink from patients in a condition which can only be described as post-haemorrhagic shock, I altered my treatment from 1931 in such a manner that in cases of fresh bleeding ulcer—that is, in haematemesis and melaena—the patients were given *something to eat, from the very first day—a varied and liberal diet, and ad libitum*. I have adopted this method of treatment automatically from 1931 until now.

I should mention that Lenhart already had the same principle in mind, and Sir Edmund I. Spriggs, who introduced the Lenhart treatment into Great Britain, gave to his communication published in 1909 the following title: "Remarks on the Treatment of Gastric Ulcer by Immediate Feeding." This freer principle seems, however, to have passed into oblivion, and I believe I can say that about the year 1931 the tendency in most places was exactly in the opposite direction.

My Regime

The treatment is as follows (Meulengracht, 1935): From the day of admission to the hospital all the patients are given a full purée diet, alkali, belladonna, and big doses of iron. The purée diet includes the following meals: 6 a.m.—tea, white bread and butter. 9 a.m.—oatmeal with milk, white bread and butter. 1 p.m.—dinner, including a variety of dishes. 3 p.m.—cocoa. 6 p.m.—white bread and butter, slices of meat, cheese, and tea. The patients are encouraged to eat *ad libitum*; water and milk are put on the table, and they should drink as much as they like.

With regard to the purée diet, I should like to say that at the time I instituted this treatment I chose the diet which we were using for slight indigestion, but I might just as well have chosen any other form of soft non-irritating food, because *it is not a question of a special diet but rather the adoption of a principle—namely, something to eat and drink, fluid and food; that is to say, water, salts, vitamins, calories*. We have also simplified the other part of the treatment. We have abandoned the customary immobility. From the very first day the patients are allowed to move freely in bed, and after about a fortnight they are permitted to get up to wash, shave, go to the w.c., etc. After about three weeks they are out of bed, and in four to five weeks they are discharged from hospital. Before they leave a test meal is given and an x-ray examination made, and they are ordered to continue taking the medicine for another four to six weeks and the purée diet for four to six months.

The Material

The experience I have gained with the free regime in the eight years since 1931 is based on an extensive material amounting, up till January 1, 1939, to a total of 491 cases of profusely bleeding ulcers. Haemorrhage from cancer of the digestive canal and from dilated vessels in cirrhosis of the liver has been excluded from the material, so far as it was possible, by clinical means and post-mortem examination. The material should therefore embrace only haemorrhage arising from acute and chronic peptic ulcers. With respect to the nature of the material I may say that the cases consist of gross

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haematemesis and gross macroscopic melaena. Occult melaena, which is demonstrable only by chemical examination of the faeces, is not included.

The Results

What results have we obtained with this treatment? First, the purely immediate reaction, that *the patients feel well on it and like it*. There may be a few patients who, on account of nausea, find it difficult to eat and drink during the first twenty-four hours, but it has been found that the best remedy for the nausea, which is caused by an accumulation of blood in the stomach, is to introduce food and drink into the latter. The majority of the patients took their food with a good appetite and without misgivings, even those who had experienced the inanition treatment on previous occasions and who, mindful of the earlier directions, were perhaps at first afraid of eating and drinking *ad libitum*.

But it is of greater importance that by this treatment the patients escape the disagreeable and dangerous period of exhaustion which in old days was provoked or maintained by thirst, hunger, immobility, and all the tantalizing annoyances which made it difficult or impossible for them to regain their strength after the haemorrhage. The patients now make a rapid recovery from the post-haemorrhagic shock and soon regain their strength; they have, indeed, hardly had time to lose it. And so it goes on: it is almost impossible to keep the patients in bed. They feel so well that they soon ask to be allowed to get up, and when after two to three weeks they are out of bed their convalescence is very short, so that they feel completely recovered on discharge from hospital. I recall the old days; they are exemplified by an account of one of my patients. He had had haematemesis some thirty years previously, and had then lain immobile in bed for four weeks on 1 to 1½ litres of "dead-boiled" milk. After a month the physician on his round in the ward said to him: "Tomorrow we will start extra rations." The following day the eagerly waiting patient received his extra ration—it was a cup of oatmeal gruel! No wonder that the patients were exhausted and were avitaminotic convalescents for a long time after this earlier treatment.

Our treatment meant *an enormous simplification* of the work of doctors and nurses; for, as a nurse said to me: "In the old days we were afraid the patient might seize a chance to drink a glass of water, and we reported such an accident to the doctor with fear and trembling. Now we can freely quench his thirst and satisfy his hunger just as in the case of other patients."

With regard to the haemorrhage itself, it can be regarded as established long ago that *food in the stomach does not increase or protract the bleeding*; one may even form the impression that the opposite is the case. I will point out that the actual bleeding as a rule can only last a short time, perhaps only a few hours; the fact that a positive blood reaction (Gregersen's benzidine test) is demonstrable for so long a time—on an average eleven or twelve days, or four or five defaecations—does not mean that the haemorrhage lasts so long, but that it takes that length of time for the intestine to rid itself of blood, so that the faeces give a negative benzidine reaction. It is very important to have a clear conception of this fact, because a wrong interpretation has so largely contributed towards prolonging the fear of giving the patients something to eat. It used to be believed that they were still bleeding so long as blood was chemically demonstrable in faeces.

It is satisfactory, but not of vital importance, that *the lost blood is more quickly regenerated with the freer regime*, for as a rule the normal values for haemoglobin and the number of red blood corpuscles are approximately reached within four or five weeks. This is only what one would expect in the light of Whipple's experiments on the best regeneration conditions in experimental anaemia from loss of blood in dogs. The question of the regeneration of the blood in our patients has, moreover, been subjected to a closer study by my collaborator Schiödt, who has constructed the typical regeneration curves for the earlier insufficient diet (inanition and increasing ulcer cure) and for the present freer regime with a more sufficient diet.

Effect on Mortality Rate

But the decisive test of the merit of the treatment is the mortality. I will, without further preamble, give the figures. Of the 491 patients ten died. One of these died six days after admission from perforation with diffuse peritonitis. Four arrived in a highly anaemic condition and died shortly after admission without having begun any treatment, especially no "treatment with food." The others died from recurrent arterial haemorrhage two, six, seven, eight, and seventeen days respectively after admission. A post-mortem examination revealed chronic ulcers with erosion of arteries in all the nine cases. It can well be claimed that *the mortality rate has been between 1 and 2 per cent.* A lower one can hardly be expected: there must always be a certain basic death rate.

In comparing this mortality with those associated with other forms of treatment one is confronted with the difficulty that the material corresponding to the different forms clearly varies in character. The mortality given in the different publications from Great Britain varies extraordinarily, and it is evident that the material of the various investigations must be heterogeneous and that the high death rate in some of the sets of statistics is due to the fact that only the most severe cases are taken into hospital. I understand that this is to a certain extent the case in London. I would point out with regard to my own material that on account of the particular hospital conditions in Copenhagen, with the great facilities for admission, practically every case of haematemesis or of diagnosed melaena is taken into hospital, so that it is possible that on the whole my cases are of a somewhat milder character than the hospital cases in England. Direct comparison with English material is therefore difficult, but when the comparison is made with other Danish and Scandinavian material, which should be on a par with my own, and where the old treatment was used, it appears that the mortality is given as from 7 per cent. to 10 per cent., which corresponds with my earlier figures. It must be stated, however, that, irrespective of which treatment is employed, the mortality rate seems to have had rather a downward tendency during the last decades. This is apparently connected with the curious shift in the distribution of ulcer that has taken place during the same period. This latter fact has been closely investigated by my collaborator Alsted, who has published a book in English on the subject. It appears that, at any rate with us in Denmark, ulcer has become rarer in women and commoner in men, while at the same time it has moved down towards the duodenum. Haemorrhage has simultaneously become more frequent, but possibly less severe. This may to some extent influence my figures.

All things considered, I venture to assert that the introduction of the freer regime has meant a decided decrease in the mortality—a decrease so definite that I do not consider it justifiable to continue with the old principles of treatment. But to those who might wish to go over to the new regime with free feeding I should like to say that if they begin the treatment they must go the whole length and not proceed with hesitation and caution, especially in the severe cases. The motto logically must be: "The more severe the haemorrhage is or has been, and the more the patient is exhausted, the more he needs the support of fluid and food."

With regard to the effect of the freer regime on the healing of ulcer (ulcer disease), I shall return to this subject later, but I will make a brief remark here about the operative treatment of the bleeding ulcer with a view to haemostasis. My attitude towards this question is theoretical, because I have never referred any patient with bleeding ulcer for operation. I consider that a mortality of from 1 to 2 per cent. makes this question unreal for me and relieves me of the responsibility of having to decide in an individual case whether operation is advisable or not. Of the nine patients who died from haemorrhage, three were over 70 years old, one had chronic nephritis and cardiac insufficiency, while the rest were cases of profuse arterial bleeding with death rapidly supervening. How could one possibly sort out these few cases before it was too late? No; I leave it to Providence with a calm conscience, and only when the condition is threatening do I resort to blood transfusion.

The views regarding the treatment of bleeding ulcer which I have sponsored have begun gradually to win approval in various countries, including, I understand, England, and I am particularly glad that Professor Witts (1937) and Dr. Lazarus have added their support.

Treatment of the Non-bleeding Gastric Ulcer

The experience I have gained from the treatment of haematemesis and melaena could not fail to influence my outlook on the medical treatment of the ordinary non-bleeding gastric ulcer. The immediate therapeutic indication, it is true, is different here, because the patients seek medical aid for the *pain*—cardialgia—whether it is a case of acute or of chronic ulcer; and the immediate indication for treatment is therefore the pain, while the indirect indication is again the healing of the ulcer. The old Leube treatment was to some extent a hunger cure, which, according to our present knowledge of nutritional needs, was both quantitatively and qualitatively absolutely insufficient. The Lenhartz treatment, with its abundant allowance of eggs and milk, was quantitatively and qualitatively a more adequate diet, although not absolutely so; but it had other drawbacks, and in its strict form is now hardly employed at all. It has been modified and changed, and one may perhaps say that the ordinary treatment of ulcer at the present time is largely in the melting-pot in many parts of the world. Some use a restricted hunger cure in the hope of "protecting the stomach," as it is called; but in various places entirely opposite principles are coming to the fore—that is to say, the ulcer treatment is planned in the form of a freer, varied, and more abundant diet, which is, so far as possible, quantitatively and qualitatively sufficient.

When in 1931 I reversed my treatment of bleeding ulcer and gave the patients abundant and varied food, I did it as an experiment, but I continued at that time the current treatment for the ordinary non-bleeding ulcer, which was a greatly modified Lenhartz cure. But gradually

I also made the diet more liberal and varied in non-bleeding ulcer, and my treatment of painful ulcer now approximates to that of bleeding ulcer. I maintain that the results are improved by it: the pain disappears just as well, and relapses do not seem to be more frequent. The treatment is supplemented with alkalis and belladonna.

In the course of time it has dawned on me, as on so many others, that factors other than food play a determining part in ulcer disease. It is not the "good eaters" who develop ulcer, but rather the "starvers"; it is men—lean men, busy men, overactive men—who do not give themselves proper time to eat, and when busy prefer to smoke a cigarette rather than take a snack between meals.

But not until I came across an excellent paper by two of your countrymen, Davies and Macbeth Wilson (1937), did the scales fall from my eyes, and the significance of these factors become clear to me in all their bearing. Hurst, Ryle, and others had previously given expression to similar ideas, but it is Davies and Macbeth Wilson's work—you all undoubtedly know it: "Observations in the Life History of Chronic Peptic Ulcer"—which so forcibly and convincingly describes the part played by the nervous element in the development and persistence of gastric ulcer, both the nervous constitution of the patient and the external events in life which may influence it: "the soil and the seed." I entirely agree with the authors mentioned, that the patient with gastric ulcer is a characteristic type of man, of whom Davies and Macbeth Wilson give such an excellent psychological description, even including a characteristic "ulcer face." A well-known portrait artist, who himself had an ulcer, volunteered the remark to me: "I can see in a man's face, when I pass him, whether he has a gastric ulcer."

I will not discuss here in what way a definitely nervous constitution, accentuated by the external events of life, can be imagined to assume such a localized expression as acid gastritis with ulcer, but it is my conviction that it must be reckoned with as a factor when planning the medical treatment of gastric ulcer. I hold the view, confirmed by my experience of the last few years, that the fundamental principles of the medical treatment of ulcer must be: rest, relaxation, food—a soft non-irritating food but plenty of it—*adequate quantitatively and qualitatively and taken at frequent meals. The ulcer diet "must not lack anything"—that is to say, it must be sufficient not only quantitatively but also qualitatively and must contain the necessary amount of vitamins and salts.* In comparison with these factors—rest, relaxation, frequent feeding—it is of less interest to me whether alkali in some form or other, perhaps supplemented by belladonna, is given as medicine. I use both these drugs, and believe that they are of value, but to me they are not a matter of prime importance.

Those who have not become used to these basic ideas will mostly feel constrained to continue to restrict the diet and to deny their patients food—nay, even to look upon food as something harmful; and they will find it difficult to believe that the cardialgia disappears just as easily or even better with rest, relaxation, and food than with strict dietetic instructions. If in the medical treatment of ulcer these basic principles are carried into effect, I believe that every country will gain by varying the details of the treatment according to individual, local, and national circumstances and customs. The details of an ulcer cure ought hardly to be the same in, for example, France and England. When, therefore, I now outline

my own ulcer treatment it merely implies that this is the way in which we manage it in Denmark, at Bispebjerg Hospital, in my department. It consists of rest in bed, though not absolute, for four to five weeks, a soft non-irritating diet with increasing variety during the same period, frequent meals—that is to say, every second or third hour—alkali, and belladonna; tobacco is forbidden. How much importance attaches to the last restriction I shall not go into. We endeavour to make the diet qualitatively sufficient, but I must admit that in certain ways it perhaps leaves something to be desired, and it is conceivable that we ought to pay more attention to remedying possible vitamin deficiencies.

On discharge from the hospital the patients are urged to avoid the most irritating kinds of food for six months, to continue taking frequent meals, to restrict the use of tobacco and not to let "a smoke" take the place of a snack between meals, and also to try to adopt a calmer attitude towards life and its incidents.

Summary

The treatment of bleeding ulcer is first discussed because experience with a free diet has influenced the outlook on ulcer treatment in general.

The results of treating 491 cases of profusely bleeding ulcer are given.

The conclusion drawn is that the more severe the bleeding the more the need for fluid and food. Operative treatment with a view to haemostasis is not advised.

In non-bleeding ulcer it is maintained that use of a freer diet gives improved results; treatment is supplemented with alkalis and belladonna.

The view is held that the basic principles of the general medical treatment of ulcer should be rest, relaxation, and adequate food taken at frequent meals.

REFERENCES

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Public Social Services is the title of a handbook produced by the National Council of Social Service with the assistance and approval of various Government Departments, describing in a simple and understandable form the many Acts and Regulations which provide State services affecting the well-being of the general public, their method of administration, and the names and addresses of the respective authorities to whom inquiries and appeals may be addressed. This handbook was first published as a pamphlet in 1917, and it has been revised and enlarged several times since then. The principal differences of administration in Scotland are noted, and information as to how the many social enactments apply to that country has been prepared in co-operation with the various departments of the Scottish Office. Sir Ronald Davison writes on the part played by voluntary organizations and voluntary social workers in the administration of the public services. The chapter on public health deals with infectious diseases, housing, town and country planning, abatement of nuisances, maternity and child welfare, mental deficiency, the welfare of the blind, and the prevention of blindness. The National Health Insurance and Pensions Acts are fully explained. The chapter on the Public Education Services includes sections on elementary and higher education and school medical services, and special reference to neglected and delinquent children. Copies of *Public Social Services* may be obtained through any bookseller or direct from the National Council of Social Service, 26, Bedford Square, W.C.1, price 2s. post free.

FOOD CONSERVATION IN RELATION TO NATIONAL FOOD SUPPLY*

BY

SIR JOSEPH BARCROFT, F.R.S.

Late Professor of Physiology, University of Cambridge

In this paper I deal with the ways in which food conservation can help the nation in times of emergency. With matters of policy I have no concern. How much of this or that the Government has seen fit to store is not my affair: what I can do is to say something about how science has increased the selection of food at their disposal.

In my own mind foodstuffs for the present purpose fall into three classes: (1) those which can be kept indefinitely—in practice, say ten years; (2) those which can be kept for a season, say ten months; (3) those which can be kept on any ordinary voyage, say two months or less.

Foods that can possibly be Kept Over Ten Years

The first food in this group to occur to anyone would be wheat. Has wheat any valid title to come into this class? The storage of wheat as against emergencies is as old as the book of Genesis. You remember that Joseph had his seven-year plan, which of course was really a fourteen-year plan. This fourteen-year plan is just a little interesting, because not all wheat will keep for fourteen years—in fact, not all wheat will keep for ten years; and, remember, Joseph kept the wheat in Egypt, as we would say under tropical conditions. The higher the temperature at which the food is kept the more difficult it is to store. Speaking generally, most chemical changes are doubled in velocity, or more than doubled, for every 10° rise in temperature. That law, perhaps, does not apply rigidly to a live foodstuff like wheat. Thus, if we, on the one hand, can store without refrigeration at 12° C., and Joseph, on the other hand, had to compete with 42° C., we should be able to keep our stocks eight times as long as Joseph. If he could keep wheat ten years, we should be able to keep the same wheat eighty years; or if he could keep something one year, we should be able without refrigeration to keep it eight years or, by reducing it to two, sixteen years. I mention this not as an idle speculation, but because these considerations are the basis of what we call accelerated tests. If you ask me how I know that a particular sample of food can be kept eight years when it has never actually been kept that length of time, the answer is: I cannot say positively, but if it can be kept one year at 42° C. the chance is sufficiently in favour of our being able to store it for eight years at 12° C. (53° F.) to make that chance worth taking. We are not absolved from the duty of carrying out tests over long periods of time, but meanwhile we have a good deal to go upon by the performance of such accelerated tests as I have described. But to return to Joseph and his wheat. If he was handicapped by the temperature at which he had to store the wheat he had another factor very much in his favour—namely, the dryness of the atmosphere in which the wheat was stored. Not all wheat keeps indefinitely: the critical characteristic appears to be the water content. In the best wheats the water content is low and the wheat will keep. Fortunately some of the best-keeping wheats from this point of view are grown in one of the Dominions. The problem of growing wheat of high keeping property in this country is primarily

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