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Modern Trends in Therapeutic Dietetics

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In the time at my disposal it is impossible to do more than to review in the most superficial way modern trends in therapeutic dietetics. I can only hope that the dry flies I may cast will cause a discussion to rise.

The distinction between nutritional science and therapeutic dietetics is often forgotten. The former is complicated, the latter should be simple. Yet the fundamental principles of medical dietetics are only slowly emerging from an accumulation of scientific data on the one hand and a mass of traditional empiricism on the other. Just as the paramount importance of good nutrition in the maintenance of health has become more widely appreciated by medical men in recent years, so the prescription of complicated diet sheets has tended to recede into the background.

Present and past practice

Special diets. There can be few instances in dietetic out-patient departments in which the giving out of printed diet sheets is justifiable. Advice on diet should be individual and not done by routine mass-methods, and even in individual cases the actual writing out of detailed diet sheets should rarely be necessary, with a few obvious exceptions to which reference will be made. The primary object of a dietetic department should be to spread the gospel of sound nutrition among the population, and the dietetic treatment of various diseases usually only calls for very simple common-sense advice. Yet 15 years ago it was commonly believed by medical men that there was some specific dietetic treatment for a large number of disorders, for which detailed diet sheets were supposed to have an almost mystical therapeutic potentiality. We had diets for hypertension, Carrel diets for heart disease, diets for rheumatism, diets for every stage of Bright's disease, ketogenic diets for urinary infection, step-ladder diets of alarming complexity for diabetes, Gerson diets for pulmonary tuberculosis, elimination diets for asthma and allergic states and, of course, a bewildering number of diets for various types of dyspepsia to which we usually gave names: the Lenhartz diet; the Sippy diet and Hurst's modification of it; the Meulengracht diet and Witt's modification of it; Schmidt's

intestinal diet; the pulped-apple diet; Sprigg's lacto-vegetarian diet, and many others. We were apt to look upon these diets as entities in themselves, prescribing them rigidly to the bank clerk, the night watchman, the stockbroker and the miner. Simple scientific principles were often lost sight of, and fashion and tradition made numerous impositions, but particularly restrictions which were very often unjustifiable on any rational basis. Our diets were almost always inconvenient to the patient and often actually detrimental to him from the point of view of sound nutrition.

Peptic ulcer. Consider the monotonous white flaccidity of the Sippy diet, almost foreign to iron and, apart from its mashed potato, to vitamin C. Generations of dyspeptic women must have become more anaemic upon it, and I have known a conscientious young man, who did not like potatoes, stick to it in other respects so rigorously that he was rewarded for his pains by developing frank scurvy. Apart from the fact that patients on a Sippy diet fed frequently it is doubtful if the regimen did any good at all. It is difficult to neutralize hyperchlorhydric gastric contents throughout the 24 hr. by any medicinal or dietetic system apart from a continuous intra-gastric drip of diluted milk or an antacid—a procedure which lacks universality of application—but frequent small meals of ordinary well-mixed foodstuffs remain far longer in the stomach and thus have a better neutralizing effect than the pappy feeds recommended by Sippy, which pass out of the stomach very rapidly. I do not believe, however, that the vast modern problem of peptic ulceration is fundamentally a dietetic problem at all. Of course the condition can be exacerbated by hurried, irregular meals at snack counters, by long fasts, by the swallowing of crude spirits on an empty stomach, and by the consumption of mechanical irritants such as lumps of tough meat, the seeds and skins of fruit and raw salads—especially when these comestibles are insufficiently masticated. Simple advice on these points can easily be given without prescribing a detailed diet sheet, and the same applies to most forms of functional dyspepsia. These latter are much more often due to inadequate nutrition, psychological stresses and strains, alcoholism, poor mastication and intercurrent disease than to this or that article of food. I do not suggest that true cases of idiosyncrasy or allergy to foods do not occur, but only that they are much less frequent than is commonly supposed. The patient likes to rationalize and to find a scapegoat in some article of food he has eaten to explain his uncomfortable symptoms. The next time he eats the same food he is on the watch for symptoms and is not usually disappointed. A conditioned reflex is gradually established—and we all know the dyspeptic who ultimately develops deficiency disease because he has convinced himself of the poisonous quality of foodstuffs in general.

Stomach operation. Consider also the postoperative diets imposed by most surgeons 15 years ago on patients who had had a gastro-enterostomy or other operation on the stomach. Nothing but a few sips of sterile water was given for the first 2 days (why sterile it is hard to imagine) and thereafter the diet was built up by painfully slow and exiguous additions, so that it took at least a fortnight before a patient was being adequately nourished. Quite apart from the suffering imposed by starvation, this old-fashioned regimen must have seriously retarded the recovery of many and killed not a few by exaggerating the katabolic phase and negative nitrogen balance inseparable

from major surgical procedures. We now realize that unless a surgeon can make his anastomosis milk-proof and water-proof a patient will not live to take a diet at all, but if the surgeon is successful in this respect there is no reason why the patient should not be taking an adequate diet within a few days of operation. Further, we have come to appreciate the paramount importance of preoperative measures to ensure adequate nutrition in preparation for the postoperative katabolic phase, to which Dr Cuthbertson (1950) refers in his paper to-day. I remember as a house surgeon the hideous eighteenth-century purgations and starvation which we inflicted on our patients in preparation for abdominal surgery and chloroform anaesthesia, and how surprised we were that emergency cases, which had not had the benefit of our eliminative ministrations, progressed so relatively well after operation.

Importance of a nourishing diet. The difference in our attitude to medical dietetics between now and 15 years ago is the difference between the new and the old testaments, thou shalt, rather than thou shalt not. We are much more interested in seeing that the patient eats a sufficiency than in forbidding him this or that article of diet. 'Avoid butcher's meat' was the cry of the older physician to the chronic nephritic, the hypertensive and the dyspeptic; now there is hardly a single chronic disorder in which we do not encourage our patients to eat their full ration of meat or, indeed, in which we are not tempted to sign certificates for him to get a more generous supply. Confronted with a patient who had just had a haematemesis, the physician of 15 years ago said 'Don't give him anything to eat at all', and then mocked him in his agony of thirst by giving him 6 oz. saline *per rectum*, so that he, wiser than they, was driven to surreptitious drinks from flower vases and hot water bottles. Now, Meulengracht advocates stuffing down minced meat and sieved vegetables when the blood from a recent haematemesis is still drying on the patient's lips, a ludicrously exaggerated, if salutary, *volte-face*, for patients who have just been very sick don't want minced meat and sieved vegetables, but rather a simple fluid regimen for a day or so. 'Avoid fats' advised the ancients to the jaundiced sufferer from hepatitis. 'Take plenty of glucose and a sufficiency of sulphur-containing amino-acids' rejoin the moderns. Even in alcoholic cirrhosis it would seem that the patient can go on taking his alcohol if he mixes plenty of choline with it! The tradition of excluding foods rich in cholesterol from the diets of patients suffering from cholecystitis and cholelithiasis rests upon no sure clinical or experimental evidence. Indeed the value of fat in augmenting drainage of the biliary system is well established. There is no correlation in the human being between the intake of cholesterol in the food and the level of cholesterol in the plasma or bile, nor is the incidence of gall-bladder disease increased in conditions characterized by a high blood cholesterol such as diabetes, myxoedema and lipoid nephrosis. Lastly, some modern workers suggest that gout is entirely a disturbance of endogenous metabolism and that exogenous foodstuffs have no influence upon it at all. I confess to be an old-fashioned clinical impressionist in this respect, and from my experience of certain old boys with Chancellor's gout I absolutely refuse to believe that sweetbreads and vintage port are good for them. On the whole, though, a good cook with common sense is more important in the management of sick people than a diet sheet.

Dietetic restrictions in modern practice

To what extent, in addition to gout, are dietetic restrictions still justifiable? Certainly a detailed restrictive sub-caloric diet sheet, carefully written out, is necessary in the treatment of obesity, and is one of the most valuable therapeutic measures in medicine, too often forgotten by physicians and surgeons in their management of flat foot, varicose veins, ventral hernia, osteo-arthritis of the knees and hips, gall-stones, diabetes, heart disease, hypertension and bronchitis; fat should be restricted in the steatorrhoeas, about which we shall hear more from Dr Girdwood (1950), and other high-residue foodstuffs in diarrhoea. In this latter connexion it is worth noting that the milky farinaceous diet, which is so commonly prescribed in diarrhoea, though bland, is not very low in residue, and that the foods which both clinically and experimentally have been found to leave the least residue are jellies, dextrose, rusks and fairy toast, meat soups, shredded beef with obvious fat removed, and pounded fish. Salt should be restricted in the oedema of cardiac failure, and very drastically in the nephrotic syndrome. In this latter instance I believe that such a restriction is of much more importance than the giving of a diet very high in protein, which such patients are often unable to tolerate, and which has no specific effect in raising the plasma proteins in nephrosis as it has in famine oedema, though of course it is infinitely preferable to the diets very low in protein which we used to use and which resulted in undernutrition in addition to the nephrotic nephritis.

Hypertension. I am convinced that in the treatment of hypertension the drastic restriction of salt has an important part to play to which I should like to refer in a little more detail. There is, of course, nothing new in the treatment of hypertension by a low-salt diet. It has been advocated by Ambard in France, Allen and Sherril in America and Volhard in Germany. These observers ascribed any beneficial effects produced to chloride restriction and did not appreciate the significance of the sodium ion.

Moderate restriction of sodium fails to influence hypertension, and the employment of moderate, rather than drastic, restriction has been the reason why this line of treatment has hitherto been largely unsuccessful. The low-salt diet commonly prescribed in cases of cardiac and nephrotic oedema contains daily about 3 g. sodium chloride, and such a diet has little or no effect on hypertension.

In 1944 Kempner published his first report on the therapeutic use of rice in hypertension. The average patient can eat about 10 oz. rice a day, which provides 1050 Cal., and 1000 more can be obtained by the liberal use of sugar and fresh or preserved fruit and fruit juices. The 2000 Cal. diet obtained in this way, made up of 20 g. protein, 5 g. fat and 460 g. carbohydrate, contains only 0.3 g. sodium chloride. Vitamin and iron supplements are given.

Using this regimen Kempner (1944) reported a gratifying subjective improvement in a high proportion of his hypertensive patients in association with a very marked fall in their blood pressures. Their hearts became smaller, and there was retrogression in retinopathy and papilloedema. He claimed that the patients kept in nitrogenous equilibrium in spite of the very low protein content of the diet owing to the protein-sparing effect of the high carbohydrate intake. Lastly, he reported favourable effects on

kidney function and claimed that patients could with benefit be maintained on this diet for an indefinite time.

During the last 18 months a group of workers in different centres, of which I was one, have treated a considerable number of hypertensive patients under carefully controlled conditions along the exact lines recommended by Kempner. Our results leave us in no doubt whatever that his regimen will produce remarkable hypotensive effects. The blood pressures of the majority of our patients fell far below the levels noted in them during deep sleep under a hypnotic. Subjective and other objective improvement often occurred, and the nitrogen balance was either maintained or only became very slightly negative. That the effects produced were due to sodium restriction could be seen from the fact that the addition of only very small amounts of sodium, but not potassium, chloride to the diet immediately antagonized its hypotensive effects. At the end of 6 weeks on the rice diet our patients were given a diet moderately low in sodium containing about 3 g./day salt, and on this regimen their blood pressures rapidly rose again to hypertensive levels.

Our results then substantiate Kempner's claims except in two respects. The kidney function of our patients as estimated by urea, inulin and diodone clearances did not improve, but retrogressed, on the rice diet and recovered when it was stopped. Moreover, the great majority of patients could be induced only with some difficulty to persevere with the diet for as long as 6 weeks, and only a very few would have consented to continue with it for longer. As we say in Scotland, they were completely 'scunnered' by it and usually developed marked anorexia. The diet is, therefore, an impracticable one. I think it possible, however, by a rigid selection of foodstuffs and by using salt-free bread and margarine to devise a diet which would be more practicable, give a reasonable protein intake and yet contain less than 1 g./day sodium chloride. Such a diet, an example of which I have given in Table 1, may well have a part to play in the future in the control of hypertension.

Diabetes. Lastly, dietetic restrictions are necessary in certain types of diabetes, certainly in all obese diabetics and in those mild cases, usually elderly people, who can be controlled so easily by a moderate restriction in calories and carbohydrate without the necessity of resorting to insulin. It is sometimes not appreciated how high a proportion of the total number of diabetics does not need insulin. At least 50 % of the patients attending our large dietetic out-patient department here do not require insulin except in emergencies. There is, however, an increasing body of opinion that, if the patient is not overweight and provided his diabetes is sufficiently severe to require insulin, carbohydrate and calories need not be restricted provided their intake is relatively constant from day to day so as to match the dose of insulin. The protagonists of this view claim that if insulin is required at all it does not very much matter to the patient whether the dose is 30 or 50 units/day, whereas it does matter to him a great deal that he should be able to take a normal sort of diet—that each meal, which should be an elegant satisfaction of appetite, should not degenerate into a problem in arithmetic and a trial of self-abnegation. It is to this matter that I wish to devote the few minutes which remain to me.

During the last 3½ years we have observed fifty-five diabetic patients who have been

given a full ordinary diet, their diabetes being controlled by insulin so as to avoid thirst, nocturia, acetonuria and loss of weight on the one hand and hypoglycaemia on the other. Glycosuria has been largely disregarded. I have no time to discuss the results in detail, but there is little doubt that one or two things have emerged. On the whole, the

Table 1. *An example of a low-sodium diet for control of hypertension*

(Protein 67 g., sodium 0.45 g., calcium 0.6 g., Cal. 1850)

Menu	Carbo- hydrate (g.)	Protein (g.)	Fat (g.)	Sodium (mg.)	Calcium (mg.)
Breakfast					
Fruit, 100 g.	10	—	—	1.3	12.2
'Saltless' bread, 50 g.	25	4.5	0.75	25	30
'Saltless' margarine, 10 g.	—	—	8.5	8	0.4
Marmalade, 10 g.	8	—	—	1.8	3.4
Milk, 25 ml.; tea, 105 ml.	1.25	0.8	1	12.5	30
Sugar, 10 g.	10	—	—	—	—
Mid-morning					
Fruit juice 100 ml.	10	—	—	1.3	3
Glucose, 10 g.	10	—	—	—	—
Lunch					
Meat, 75 g.	—	18.75	12	45.35	5
Vegetable, 120 g.	5.4	1.8	—	23.3	48.8
Potato, 60 g.	12	1.2	—	2	2.58
Fruit, 100 g. with glucose, 10 g.	20	—	—	1.3	12.2
Milk, 150 ml., as cereal pudding	29.25	7.4	9	117.7	271.5
Cereal, 1/3 oz.; sugar, 10 g.					
Milk, 75 ml.					
Tea					
Egg (1), 50 g.	—	6	6	67.5	28
'Saltless' bread, 50 g.	25	4.5	0.75	25	30
'Saltless' margarine 10 g.	—	—	8.5	8	0.4
Jam or jelly, 10 g.	8	—	—	1.4	1.8
Milk, 25 ml.; tea, 150 ml.	1.25	0.8	1	12.5	30
Sugar, 10 g.	10	—	—	—	—
Supper					
Meat, 60 g.	—	15	9.6	36.28	4
Vegetable, 60 g.	3.6	0.9	—	16.9	23.2
'Saltless' bread, 50 g.	25	4.9	0.75	25	30
'Saltless' margarine, 10 g.	—	—	8.5	8	0.4
Milk, 25 ml.; tea, 150 ml.	1.25	0.8	1	12.5	30
Sugar, 10 g.	10	—	—	—	—
9 p.m.					
Fruit juice plus glucose, 100 ml.	20	—	—	1.3	3
Total	245	67.35	67.35	453.93	599.88

patients, with certain exceptions, were more positively well than our ordinary diabetics—brighter, cheerier and more energetic. Intercurrent infections such as staphylococcal infections and tuberculosis were not more numerous than usual, nor were diabetic coma and hypoglycaemia more frequently encountered. Growth and development were very satisfactory in the young patients and there was a high incidence of pregnancy in the married women. Eleven of the fifty-five patients did badly on this free regimen, and had to revert to a controlled diet with restricted calories and carbohydrate

for the following reasons: the sugar tolerance of five young people of puberty age and two adults steadily retrogressed on this regimen; another patient became uncontrollable, swinging rapidly from extreme hyperglycaemia on the one hand to alarming hypoglycaemic reactions on the other; another suffered from intractable pruritus and two women with histories of precursory obesity had to be changed to restricted diets because of a renewed tendency in this direction. The remaining forty-four patients are still doing well after $3\frac{1}{2}$ years on this regimen. They require, on the whole, larger and more frequent doses of insulin than similar patients on more controlled diets, and in spite of this glycosuria and hyperglycaemia are more marked.

Perhaps, however, emphasis in diabetes should be placed not so much on a sugar-free urine with a normal blood sugar as on adequate carbohydrate utilization. A normal blood sugar concentration may exist when subcaloric diets are used in the presence of inadequate quantities of liver and muscle glycogen. Hyperglycaemia, on the other hand, by no means necessarily implies inadequate stores, unless there is an associated ketosis.

It is important to distinguish the hyperglycaemia which is endogenous in origin owing to breakdown of glycogen stores and tissue protein, an expression of poor carbohydrate utilization and usually accompanied by ketosis, from the hyperglycaemia of exogenous origin resulting from an abundant carbohydrate intake, with which, however, carbohydrate utilization as the result of insulin therapy is adequate and there is no associated ketosis. This distinction is rarely made, and the evil effects of uncontrolled diabetes are often blamed on the hyperglycaemia rather than on the poor utilization of carbohydrate. No one, of course, would question the undesirability of hyperglycaemia of endogenous origin, but considerable controversy exists on the harmfulness of exogenous hyperglycaemia. For example, do we believe that exogenous hyperglycaemia *per se* is an aetiological factor in the retinal, vascular, nephritic, neuritic and pregnancy complications of diabetes, or are these due to inadequate utilization of carbohydrate (that is, poor diabetic control), or to something inherent in the diabetic state? I have no doubt at all that the high foetal mortality and complications of diabetic pregnancy are due to something inherent in the diabetic state and not to hyperglycaemia or poor diabetic control, since diabetic women before they become diabetic have equally complicated obstetrical histories. Nor am I convinced that any correlation exists between hyperglycaemia and the onset of retinitis, peripheral vascular and renal disease. From a prolonged study of my case records they seem to me to occur with equal frequency in the hyperglycaemic and normoglycaemic, in the mild and in the severe diabetic.

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