PRACTICAL THERAPEUTIC DIETETICS

IV: MODIFICATION OF FIBRE

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I. LOW-RESIDUE DIETS

Until some years ago, various bland diets were available for different disorders of the digestive tract. Diet therapy played a major role in the life of the patient with an ulcer, and deviations from these diets were sternly reprimanded. This era was followed by a period when diet was disregarded and considered an irrelevant aspect of the ulcer regime. Today moderate restrictions are generally applied, many of which are based on tradition. Although there is not much conclusive evidence to substantiate the

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use of low-residue diets, there would appear to be little doubt of beneficial effects in selected gastro-intestinal disorders. The very fact that these are still in use in most teaching hospitals supports this contention.

However, it has frequently been shown that there is a lack of correlation between the physical nature of a food and its effects on the alimentary tract; e.g. milk, which would seem to be a soothing food suitable for patients with diarrhoea, is often contraindicated.

A further difficulty in assessing the value of low-residue diets is the inability to estimate accurately the gas-producing qualities of the food. The residue during digestion is affected by such factors as the age of the fruit or vegetable when picked, the method of preparation, and the size of the swallowed particle. It is therefore extremely difficult to classify foods conclusively according to their gas-forming properties.

The following has been stated by the Joint Committee on Diet as Related to Gastro-intestinal Function of the American Dietetic and Medical Associations in 1961: 'The sparse and at times negative nature of available evidence suggests that much popular dietotherapy should be recognized as traditional, that apparent "success" of a dietary maneuver may be the result of a chance variation or placebo effect, that adherence to the dicta of dietotherapy should not be insisted on vigorously, and that such dietotherapy should be readily abandoned if indications exist that it may be psychologically or physically harmful'.[3]

The following diets have been compiled with this in mind:

A. DIET IN DUODENAL AND GASTRIC ULCER

General Objectives

1. Small, easily digestible feeds at frequent intervals to prevent the stomach remaining empty for any length of time, i.e. 3 meals and 3 snacks to be taken each day.

2. Mechanically irritating foods (e.g. cabbage, etc.), chemically irritating foods (curry, etc.), and foods which cause excess stimulation of acid, such as strong black coffee and tea, should be avoided.

3. Alcohol in any form should not be taken by patients with gastric ulcers, and while this is not so important for the patient with a duodenal ulcer, an excess of alcohol should be avoided.

4. While it is not always feasible to enforce rigid avoidance of cigarettes, patients should be advised to smoke only after meals and to cut down their previous number by at least half.

The Bleeding Ulcer

For the first 24 hours the patient presenting with a bleeding ulcer should be given only fluids, and only when this is feasible. Milk will form the basis of the diet. However, sometimes foods such as those included in the bland diet given below will be tolerated from the start.

For the next 3 days a diet consisting of small helpings of the following foods, at 2-hourly intervals, is given:

Meat—minced chicken only
Fish—steamed or baked white fish
Cereals—strained porridge, gruel, toast or bread, plain biscuits, rice
Dairy products — boiled, poached, or scrambled eggs, milk, butter
Vegetables—boiled or mashed potato only
Fruit—banana only
Puddings—egg, milk, and cereal puddings (e.g. rice pudding)
Soup—strained milk soup

After 4 - 5 days the diet may become more liberal with regard to the kind and amount of food. Feeds should continue to be given at frequent intervals. These foods may be added: Minced vegetables and pureed fruits; minced meat and tender poultry; mild cheese.

In the absence of contraindications the patient may progress to the low-residue diet, set out below, after 9 - 10 days.

Low-residue Diet

Allowed:

Cereals—refined cereals, e.g. pearl barley, rice, cornflour, macaroni, spaghetti, egg noodles, mealie meal

Bread—white bread, white flour, plain cakes, biscuits, rusks

Dairy products—milk (in moderation), butter, cream, eggs, mild cheese, e.g. sweetmilk, mild cheddar

Meat—all tender meat and poultry (except as under *'avoid'* below)

Fish—all fish (except as under *'avoid'* below), plain tinned fish, e.g. pilchards, salmon

Vegetables—soft vegetables (steamed, boiled or baked), e.g. potatoes, young carrots, beetroot, marrow, squash, cauliflower tops, parsnips

Fruit—soft, raw and stewed fruits, e.g. ripe apple, pear, banana, pawpaw, peach, avocado pear, all strained fruit juices and sieved cooked fruit

Sweets, jams and sugar—jelly, jam from stone fruits, marmalade, honey, syrup, sugar, plain sweets, plain chocolate

Miscellaneous—strained and pureed soups, salt, nutmeg, stick cinnamon, whole cloves and onions for flavouring

Avoid:

Cereals—whole wheat, bran and coarse cereals, e.g. mealie-rice, barley, Grapenuts and other bran breakfast foods

Bread—whole-wheat bread and biscuits, rich cakes, pastries and fruit cakes

Dairy products— strong and overcooked cheese, e.g. roquefort

Meat—tough overcooked meat, highly seasoned and made-up dishes, e.g. curried and pickled meats, sausages, pork, tinned meats, and fried and roast meats

Fish—fried fish, smoked fatty fish, e.g. smoked snoek and kippers, highly seasoned fish dishes

Vegetables—cabbage, cauliflower stalks, onions (except for flavouring), dried peas, beans and lentils, green mealies, raw salads, e.g. cucumber, tomatoes, celery

Fruit—fibrous fruit (raw, stewed, or tinned), e.g. pineapple, plums, guavas, grapes, oranges, figs

Sweets, jams, and sugar—whole-fruit and berry jams, sweets containing nuts and coarse ingredients, candied peel

Miscellaneous—strong condiments, e.g. pepper, mustard, chillies, horse radish, highly seasoned sauces and pickles, chutney

Sample Menu

Breakfast
- Any cereal except bran or coarse products
- Egg or fish—not fried
- Toast or bread with butter
- Jam, marmalade or honey
- Weak, milky tea

Mid-morning snack
- Weak, milky tea
- Sandwich or biscuits

Dinner
- Meat or fish—not fried
- Vegetables such as potato, carrots, cauliflower tops
- Pudding, e.g. stewed fruit (excluding guavas) or milk pudding

Mid-afternoon Snack
- Weak, milky tea
- Sandwich, biscuits, or plain cake

Supper
- Soup
- Meat or fish—not fried
- Rice or potato
- Salads, such as young beetroot or grated carrot, avocado pear
- Fruit — excluding grapes, guavas

Bedtime Snack
- As at mid-afternoon.

Note: Milk may be required instead of other beverages if the patient is underweight.

Calories: Approximately 2,100.

In general, for many ulcer patients the diet can be more liberal than that set down above, and only condiments, very fibrous foods, fries and alcohol will have to be avoided; frequency of feeding will be a feature. However, these feeds should be small—the patient should not become overweight.

It is important that *patients* exclude all foods that they feel upset them.

B. DIET IN DIVERTICULOSIS

The principle of dietotherapy for patients with diverticulosis is the omission of all foods which leave rough undigested particles in the bowel. Patients frequently require a low-residue diet indefinitely (modified from that for ulcer patients given above), since acute episodes of diverticulitis may be precipitated by dietary indiscretion. During these episodes non-residue fluids and foods are given.

The patient with diverticulitis and constipation presents a special problem, and each case should be treated on its own merits. Prune juice, liquid paraffin or bulk purgatives (see under 'high-residue diet'), or even a departure from the low-residue diet may be required.

C. DIET IN ULCERATIVE COLITIS

Most patients with this condition are underweight and many are anorexic. A low-residue diet (modified from that for ulcer patients given above) is advised, with protein foods, such as meat, fish, eggs and cheese, playing a major role. Foods should be prepared and served as attractively as possible and every effort made to tempt the patient's appetite. A high-calorie diet is normally required. A regime of frequent small meals with intermittent snacks such as cheese or peanut-butter sandwiches, avocado pear or baked custards, should be given.

When dealing with these patients, it is often necessary to remember the work of Childrey *et al.*,[2] which indicated that nutrients are equally well assimilated whether the food is taken by force-feeding or eaten with an appetite.

A trial of milk withdrawal may be useful, since Truelove[3] has shown that there is a high incidence of milk allergy in these patients.

D. DIET IN SPASTIC (IRRITABLE) COLON

The diet should be adjusted to the sensitivity of the bowel in each case. There are often specific foods to which individuals are intolerant, and fats or milk may need to be omitted from the diet. The patient with hard, dry stools is advised to eat a liberal serving of fibrous fruit or vegetables at each meal; patients with constipation are encouraged to take more.

For patients unable to tolerate normal amounts of non-irritating roughage, a low-residue diet (modified from that for ulcer patients given above) is advised.

2. HIGH-RESIDUE DIET

The high-residue diet discussed below is advised for patients with constipation, except where a spastic colon is the cause, when a low-residue diet is often advisable.

The normal mixed diet contains approximately 5 - 6 G. of fibre, whereas the diet used in the treatment of constipation should contain 10 G. or more daily.

The Drinking of Water

The consumption of large amounts of water is often recommended in the treatment of constipation. Although drinking of 1 - 2 glasses of water on arising stimulates the gastro-colic reflex and may cause a bowel movement, the consumption of 6 - 8 glasses more than the usual intake each day does not appear to increase the faecal water content proportionally. Fibre absorbs water, and while it is advisable to take an adequate amount of liquid when consuming bulk to increase the stool size, excess water will be excreted by the urinary tract.

Food Laxatives

It is not within the scope of this article to discuss the available pharmaceutical purgatives. There are, however, certain useful food laxatives which should always be tried before resorting to potentially harmful laxatives.

Prunes and prune juice: The purgative action of this fruit is not entirely due to emollient and colloidal properties; the principle has been identified as diphenyl isatin. The consumption of prunes by constipated individuals as a regular practice is frequently advisable.

Mineral oils: These compounds have relatively recently entered the field of dietetics—from the time they were used as an oil replacement for culinary purposes during World War II and their subsequent availability as a 'low-calorie oil'. While there seems to be little danger of vitamin-A depletion when these are taken infrequently, it is undesirable to drink mineral oils as a laxative habit or to include them as a regular dietary component.

Bran: The value of bran as a laxative has been substantiated. Its action appears to accelerate evacuation where there is retarded caecal emptying,[4] but bran does not change the normal rate to any extent. Hoppert and Clark[5] have demonstrated that the optimum intake of prepared bran is approximately 1 oz. per day; there is no added benefit in consuming more.

Principles of High-residue Diet

Patients requiring a high-residue diet are advised to take a full diet, with emphasis on the following foods:

(*i*) Vegetables such as cabbage, lettuce, string beans, tomatoes, peas. Two salads should be included daily.

(*ii*) Raw, baked or stewed fruit with edible skin or pips, e.g. grapes, plums, figs, apples, peaches, guavas.

(*iii*) Dried fruit, such as raisins, dates, stewed dried prunes or apricots.

(*iv*) Cereals—whole-grain bread and biscuits made from brown or whole-wheat flour; rolled oats; ready-to-eat coarse cereals such as All-Bran, Grapenuts and Weetbix.

(*v*) Preserves and jam with pips and skins in them.

Note: The patient should avoid spoiling the appetite by eating large helpings of foods with little or no fibre.

Sample Menu

7 a.m.
2 cups of tea or coffee

Breakfast
Stewed prunes
Grapenuts, milk and sugar
Poached egg and sweet-corn
1 slice of whole-wheat bread, butter and fig preserve
Coffee or tea

11 a.m.
1 glass of prune juice

Lunch
Grilled steak and onions
Boiled potato and spinach
Grated carrot and lettuce
Fruit salad and custard

4 p.m.
Tea or coffee

Dinner
Vegetable soup
Fish baked with tomato slices
Cabbage salad
1 slice of brown bread, butter, jam
Orange
Tea or coffee

Bedtime
Tea or coffee

Calories: Approximately 2,000.

CONCLUSION

In conclusion, it is emphasized that disorders of the gastro-intestinal tract—as well as many other conditions—cannot be successfully treated by merely giving the patient a printed diet sheet to follow. An individualized regime, which takes the post-prandial symptoms, eating habits and background of the patient into consideration, is one of the essentials of treatment.

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REFERENCES

1. Joint Committee on Diet as Related to Gastro-intestinal Function of the American Dietetic Association and the American Medical Association (1961): J. Amer. Diet. Assoc., **38**, 425.
2. Childrey, J. H., Alvarez, W. and Mann, F. (1930): Arch. Intern. Med., **46**, 361.
3. Truelove, S. C. (1961): Brit. Med. J., **1**, 154.
4. Fantus, B., Kopstein, G. and Schmidt, H. (1940): J. Amer. Med. Assoc., **114**, 404.
5. Hoppert, C. A. and Clark, A. J. (1945): J. Amer. Diet. Assoc., **21**, 157.

In addition to these references a dietetic bibliography will appear with the last article in this series.