Today's Treatment

Diseases of the alimentary system

Obesity

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Persuading fat people to lose weight is a task that most doctors have to undertake but few relish and none find easy. Yet it must not be shirked, for obesity affects an increasing proportion of the population and its ravages show in mortality figures for abdominal surgery, in orthopaedic clinics, in deaths from degenerative heart disease, and in bulging diabetic clinics. Actuaries are not people to be swayed by emotion, but they have demonstrated the increased mortality of fat people for many years. Now, if it is so common and so dangerous yet so obviously related to such a simple biological function as eating, why are we so poor at treating and reversing it?

Origin of obesity

Recent research points to the ominous likelihood that the obesity of many, perhaps most, fat adults is founded on faulty nutrition in childhood. Compounded by the vicious spiral of obesity itself leading to weight gain, the formidability of the problem becomes more evident and should encourage us to take a less casual approach to our fat patients.

Adipose tissue—The "adipose organ" is diffuse but large in volume and weighs 10-20 kg in most normal adults (10 times heavier than the liver). In obese people it may be 10 times heavier again. It is not an inert mass of fat: the triglyceride content is constantly mobilised and laid down in response to control factors that are not well understood but probably include growth hormone, noradrenaline, and other hormones.

Fat cells—Fat cells (adipocytes) are distributed throughout our bodies subcutaneously and in deeper layers, and in obesity there is an increase in their size or their number, or both. About 20% of patients fall into the first category, 10% into the second, and 70% into the last. The number of adipose cells is fairly constant in the neonate and increases steadily up to puberty. Overfeeding in neonatal life produces a more rapid increase in cell numbers, and it seems likely that the same may happen at puberty. It also seems that adipocytes do not disappear; if their number is increased, it stays large.

Two conclusions stem from these findings: firstly, that *prevention* of obesity is more important than was previously realised; and, secondly, that fat patients who were obese in childhood or adolescence will be harder to treat than those with a later onset.

Fat production—Fat is formed from triglycerides absorbed from the intestine. The amount laid down in adipocytes partly depends on the availability of carbohydrate. Carbohydrate is additionally a source of fat for deposition under the control of insulin. Thus carbohydrate

has two roles in the laying down of adipose tissue, which explains why it is possible to lose weight while eating fat, provided carbohydrate sources are severely restricted.

Fat mobilisation—The adipose organ serves not only as insulation but as an energy store. Fat provides about 38 kJ (9 kcal) of energy per gram; this is consumed in about two minutes of gardening or one minute of dancing or running. That means that eight hours' running is needed to work off half a kilogram of fat; so if people are to slim it is not enough to take "a little more exercise." Nevertheless, the balance between calorie intake and energy expenditure is so fine that while exercise alone cannot be the major factor in slimming it is an important element in weight control.

Food intake

It is a truism that the balance between food intake and energy expenditure determines the amount available for storage as fat, but many patients fail to comprehend it; some seem to believe that photosynthesis is possible in man. In our relatively affluent Western civilisation the following important factors govern food intake.

Habit—Social and family custom rather than need govern what meals we take, when we take them, and what they contain. In the industrial North it is traditional to eat high tea providing plenty of baked carbohydrates. Businessmen and politicians are increasingly exposed to large meals with alcohol. Some housewives and lorry drivers fortify themselves with multiple mugs of heavily sweetened tea. Dietary custom is the common explanation of familial obesity, though genetic factors do have an influence.

Economic—Cost comes second to habit in determining the composition of the diet. A filling and palatable meal may be prepared conveniently from carbohydrate more cheaply than from protein and vegetable, though with care the difference is small. Sometimes, therefore, obesity is a form of malnutrition, and slimming may be regarded as an expensive luxury by those on limited incomes.

Psychological—The psychological drives to eat are poorly understood, but it may easily be recognised that certain psychological and emotional states predispose to disordered eating patterns. These are unpredictable and subject to modification by circumstances. Depression may thus lead to anorexia and weight loss but equally may lead to overeating. Boredom may be relieved by eating, and food may be a form of gratification for the emotionally or sexually deprived. In all these cases altered food intake is likely to be combined with low energy expenditure.

Endocrine—Glandular trouble as the cause of obesity is a hopeful rationalisation beloved of the fat patient. Rarely is it the true reason. The occasional patient with Cushing's syndrome, hypothyroidism, gonadal failure, hypothalamic syndrome, and so forth should not long escape detection if a relatively simple history is taken and physical examination is performed.

Prevention

Since the number of adipocytes partly determines future body weight and their number is dependent on childhood and adolescent feeding there is much scope for preventing obesity—and this must

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start early. This is an educational task, but much can be done in the frequent contacts between mother and baby and doctor and nurse.

Breast-feeding carries many advantages, but the excessive weight gain of many bottle-fed babies is particularly to be deplored. In baby clinics the overweight baby is just as serious a problem as the underweight one, and compliments to the mothers of chubby babies should be kept to a minimum. The introduction of solids should be delayed until the baby is at least 3 months old.

Adolescence is the other danger period, but medical contacts are likely to be fewer. Any opportunity to diminish the excessive weight that accompanies the frequent carbohydrate ingestion at this age is to be encouraged.

The fat patient

As in so many conditions, time devoted to the patient, particularly in the early stages, produces better results. We all have too little time, and inducing weight loss is often tedious and unappealing, so frequently we condemn ourselves (and our patients) to failure by a poor initial consultation.

Some patients will come to seek advice on slimming. They will already have tried (possibly many times) unsuccessfully, so a quick answer and a standard diet sheet will not help them.

The limited assessment suggested below serves two purposes. It will help the doctor, at least in estimating the prognosis. It will also help to impress the patient that slimming is medically important and not just another fashionable trend, such as sun-tan.

ASSESSMENT

Family history—Patients from fat families feel their obesity is inevitable. Try to establish how much is caused by family eating habits and explain the small contribution of inheritance.

Early life—Was the patient overweight as a baby, as a child, as an adolescent? If so the prognosis is less good and the task greater. It helps if patient and doctor both understand that.

Precipitating factors—Was the weight gain rapid, suggesting a specific cause—change of job, an emotional problem, reduced circumstances?

REASONS FOR SEEKING TREATMENT

The most difficult part of treating the obese is convincing them that they need to become thinner. Time spent doing so is worth while, though constant reminders will be needed. Some patients come already motivated; they have become aware of their obesity (friends or relatives may have helped) and chiefly want advice on techniques. Even this group, though, will be helped by reminders of the virtue of weight reduction.

The others will appear because of medical problems associated with obesity—diabetes, arthritis, cardiovascular disease, reflux oesophagitis—or perhaps having been “loaded” by a life assurance company. The need for them to slim has to be explained carefully, not simply emphasising the immediate medical need but using parallel arguments such as the attractiveness of slimmer people, less difficulty in finding clothes, etc.

Many patients from both groups will have made more or less serious attempts to lose weight. The reasons for failure should be explained. Poor advice on diet and failure to persist are the usual explanations.

MEDICAL SCREENING

A relatively elaborate programme of physical examination and special tests has the effect of emphasising the importance of the patients' obesity; some become highly motivated after experiencing one of the commercial “screening” programmes.

For the average patient in the standard busy practice a complicated programme is unjustified, but as a basis, the following are important.

Dietary history—There is no purpose in giving advice on diet if the advice is not based on a detailed knowledge of the patient's existing habits. Treatment begins here, for undesirable content in the diet can be pointed out.

Menstrual history—Major disturbances may point to an endocrine abnormality.

Brief psychiatric history—This should be taken, particularly to pick up depression, boredom, etc.

Brief physical examination—This should include blood pressure, urine test, and examination of thyroid gland, hair distribution, and testicular size (as pointers to endocrine disease).

If this screening shows any abnormalities some or all of the following procedures may be desirable: x-ray examinations of chest and skull, electrocardiography, thyroid function test, blood sugar estimation or glucose tolerance test or both, and measurement of serum lipids and cortisol levels.

Treatment

MILD SLIMMING

Mild slimming is suitable for patients with a weight 20% or less above normal and with a good prognosis—that is, no family history and no early-life obesity. Put simply, it amounts to those with “middle-aged spread.” They must understand that obesity will readily recur and that adjustments in the diet must be permanent.

For the intelligent and well-motivated quite simple advice, directed at moderate reductions in carbohydrate intake (including alcohol), is enough. Others will need a diet sheet (perhaps 4 MJ (1000 kcal)), but this must be explained verbally as well. Between-meal snacks (at home and on social occasions) are a major hazard and must be forbidden.

Exercise must be strongly recommended unless there are clear medical reasons against it. This is as useful in relieving boredom as it is in expending calories.

MODERATE OBESITY

Most moderately obese patients will have a long (often lifelong) history of obesity, many of them with a strong family history too. They will often be pessimistic about weight reduction, even resigned to its impossibility.

An important element in the philosophy with these difficult patients is to set realistic targets. If their obesity is relatively recent and not familial they may be able to get close to “ideal” weight (as in life-assurance tables), but the rest are unlikely to. Often a target mid-way between present weight and ideal weight is reasonable, provided it can be maintained. Flexibility is desirable if rapport is to continue, and even if the patient fails to reach the agreed target any weight loss is advantageous provided it is permanent.

DIET

A diet must be selected that will suit the patient's social, economic, and industrial status. There is no point in advocating expensive protein foods to the poor, or advising a standard three-course lunch for a man who has to carry it to work. Nevertheless, there is much room for intelligent advice; many families are dietetically unadventurous, and the substitution of an airtight plastic container of salad for the conventional box of sandwiches might not occur to them.

There are two goals in advice on diets: one is to reduce calorie intake and induce weight loss, and the other is to change the patient's diet permanently for the better. Thus the patient who “doesn't eat a thing until teatime” (they all nibble) must be brought round to eating three standard meals. A diet sheet without explanation will be unsuccessful; so will spoken advice without a detailed written sheet for revision. By writing modifications into the diet sheet as he discusses it the doctor ensures that it fits in with the patient's needs; this also forges a closer link with the patient, who sees that the doctor cares. Initially 4 MJ (1000 kcal) is desirable, but if weight is not lost despite adhering to it 3.8 MJ (900 kcal) should be tried.

Frequent and regular assessment is vital; this need not be time-consuming. The patient should use the same machine to record his weight (not daily, because it is so variable), but the doctor should see the patient as often as progress indicates the need. Weekly visits are desirable at first, but if weight is not lost initially it never will be—and disillusionment has to be postponed as long as possible. Early weight loss will be followed by static periods, which need to be discussed. These revisits may become boring for patient and doctor alike, so different topics should be chosen for successive visits: “nibbling and its dangers,” “exercise,” “how to cope with eating out,” “how to deal with the rest of the family,” and so forth.

A useful exercise is for patients to write down in a diary exactly what they eat and drink each day, as this inhibits nibbling.

GROUP THERAPY

As in other behavioural disorders group therapy may be helpful. Doctors have rarely applied this to obesity but commercial organisations have done so successfully. Weight Watchers, *Slimming*, and other ideas may help those who can afford it and who might enjoy and benefit from social contact. Relapse is unfortunately frequent, once the patient ceases to attend. Some imitators have set up organisations that are expensive but less successful.

There is no reason why doctors should not set up their own slimming group in a group practice, with weekly meetings guided by a dietetically trained nurse.

HYPNOSIS AND PSYCHOTHERAPY

Some suggestible patients feel they might benefit from hypnosis or psychotherapy. Results are generally disappointing, particularly in the long term.

HEALTH FARMS

Like any other form of temporary treatment the short-term success of expensive starvation is not well maintained.

HORMONES

The use of thyroxine or sex hormones is dangerous and unhelpful.

ANORECTIC DRUGS

People do not become fat because they have abnormal hunger, and treatment based on induced anorexia is unlikely to be beneficial. Amphetamines are dangerous because of addiction (and most amphetamine-habituated patients remain fat). Their successors (fenfluramine, diethylpropion) are more acceptable but their overall value is small because of the high risk of relapse once they are stopped. The importance of a conscious and permanent change of diet cannot be overemphasised, and these drugs fail to achieve it.

DIURETICS

Obesity is not caused by abnormal water retention, though fat people may have mild oedema. This will disappear as fat is lost. Diuretics give artificial weight reduction in the early stages, but when weight loss ceases after one or two weeks the disappointment is increased. Diuretics should not be used in treating obesity.

BULK SUBSTANCES

Methylcellulose, as a tablet or in proprietary slimming foods, fills up the stomach and intestine by absorbing water. It makes the patient feel bloated and may relieve constipation but it does not alter his appetite. It is a harmless placebo for the patient who might be satisfied by "a pill" but is not a helpful contribution to weight loss.

PATENT DIETS

Proprietary formula diets are best avoided. Their ability to enable the patient to lose weight if rigidly adhered to is undoubted, but they are boring, so that deviations usually occur. Moreover, they cannot be maintained permanently.

More pernicious are forms of standard food alleged to be "suitable for slimmers"; the advertising often subtly implies that the more they are eaten the thinner the eater becomes. Patent breads, drinks, and biscuits fall into this range. They are expensive and confusing to the dieter. Low-calorie fruit juices and other drinks are permissible, but many so-called "diabetic foods"—some jams, marmalades, etc—

are to be avoided because of their high sorbitol content. Care must be taken if sugar substitutes are used; only those containing pure saccharin should be advised.

READING MATTER

Literate patients may be helped by reading the *Which Slimming Guide* (Consumers Association, £1.75) or *Slim and Enjoy It* (Family Doctor Publications, 25p).

Severe obesity

When patients are approaching double their ideal weight or more the problem is serious, because life-threatening complications may occur. If the measures outlined above fail to achieve adequate and sustained weight reduction radical treatment may be justified.

STARVATION

A nil-calorie intake will induce weight loss even in the inactive, insulated, grossly obese patient. It can be achieved only under inpatient hospital supervision to ensure careful physiological and biochemical monitoring. It is hazardous, for many patients feel ill, experience severe biochemical upsets (particularly ketosis and hypokalaemia), and some die. Provided the patients' motivation is adequate, then periods of 60 to 120 days of starvation (with an occasional low-calorie meal) will reduce their weight effectively. The danger, as with all slimming, is of relapse, particularly in the severely obese group. If weight is brought to within 25% above the ideal and subsequent outpatient supervision is maintained the prognosis is quite good.

The disadvantages, apart from the dangers listed above, are economic. The patient has to stop work and occupy an increasingly expensive hospital bed. Diversions have to be provided too. It is a form of treatment to be restricted to suitable and deserving cases only.

Surgery

Surgical measures to aid weight reduction include panniculectomy, dieting enforced by dental splintage, gastric bypass or gastroplasty, and small-bowel bypass.

PANNICULECTOMY

Removal of the pendulous pannicles of fat from the abdominal wall is more commonly known as "apronectomy." This and similar procedures on the breasts, arms, thighs, and legs are mainly cosmetic exercises of psychological benefit in improving the patient's own body image. Apronectomy additionally has the advantage of removing several pounds of weight, which, situated in front of the body's centre of gravity, may be a cause of backache. Otherwise, in terms of actual weight reduction, panniculectomy has little to offer.

DENTAL SPLINTAGE

Conventional diets usually fail when provocative stresses evoke depressive mood changes resulting in a return to compulsive or episodic overeating. The depression is worsened by the consequent regain in weight or failure to achieve further reduction. Dental splintage provides a means of preventing overeating at such times of stress.

Suitable patients must have an adequate natural dentition to be able to have cap splints or interdental wires. Often preliminary dental treatment is required. The splint wires that secure the cap splints have to be removed for a few hours each month to allow jaw movements and thus prevent trismus, and the dental caps must be removed after three months for dental hygiene. A fluid diet based on milk or soups with vitamin and iron supplements and providing 3.5-4 MJ (800-1000 kcal) is continued throughout.

For those patients who last the course good weight reduction can be achieved. A controlled diet should be continued when the splints are finally removed, for otherwise lapse occurs.

About half the patients find that they cannot tolerate the fixation of their jaws or take advantage of accidental or deliberate fracture of

the wires or splints to break the regimen. Thus they do not achieve the desired weight reduction and are failures.

The technique of dental splintage, though by no means inexpensive, is cheaper than therapeutic starvation, as inpatient care is avoided and minimum time is lost from work.

GASTRIC BYPASS

Polya partial gastrectomy can cause substantial weight loss by drastically reducing the gastric reservoir and by causing "dumping." These complications have been used to treat massively obese patients by 90%, gastric exclusion using either transection with gastrojejunostomy or gastroplasty. The results in two series have been satisfactory but it is technically more difficult in these huge patients than small-bowel bypass and thus is less popular with surgeons.

SMALL-BOWEL BYPASS

Massive small-bowel resection after mesenteric vascular catastrophe is compatible with survival, albeit with a variable amount of nutritional support. A modification of this surgical emergency has been applied to the management of gross refractory obesity in the form of small-bowel bypass without resection. The duodenum and upper jejunum are retained "in circuit" for the absorption of iron, folate, and carbohydrate, and the terminal ileum for vitamin B₁₂ and bile salt absorption. The absorption of fat and, to a less extent protein, is reduced by excluding much of the jejunum and most of the ileum.

Weight reduction after bypass amounts, on average, to about 36% of the original body weight. Some have lost as much as half their weight and a few very little. The latter may be caused by early resumption of voracious eating habits, slow small-bowel transit time, or insufficient bypass. Patients under 30 lose more weight than those over 50, and men lose more than women.

As this is a major operation in patients who are by definition bad risks, it might be expected that there would be a high operative or late mortality. The operative death rate is, however, surprisingly low—in the region of 1-1.5%. The late mortality, attributable largely to the metabolic effects of malabsorption, is 3-4%. There are additional risks, which all obese patients carry, of myocardial infarction and thrombo-

embolic disease, which would occur whether or not any operation was performed.

About half the patients have some form of long-term morbidity. Diarrhoea initially is troublesome but may be adequately controlled with codeine phosphate after a few weeks or months. During this period haemorrhoids may be a nuisance. Foul flatus affects some and may be embarrassing; it is usually readily controlled with metronidazole or tetracycline in short courses repeated as necessary. Abdominal distension after meals is also not uncommon and is due to gaseous pseudo-obstruction of the colon. It too can usually be controlled with the same antibiotics.

During the first months, nausea and vomiting may be a problem requiring antiemetics. It usually settles spontaneously, but when accompanied by excessive diarrhoea may require admission to hospital for two or three days of intravenous fluid and electrolyte repletion.

A puzzling complication in a few cases has been polyarthralgia, often affecting the small joints, and polymyalgia. In our experience these problems often settle with co-trimoxazole treatment but in two patients it has been necessary to reverse the operation because they proved resistant to all treatment. The restoration of normal bowel circuitry instantly eliminated the symptoms.

The main complication, and the only serious one, is fatty liver. Ninety per cent of these patients have fatty infiltration of the liver preoperatively, but in almost half this may increase during the first year or two before regressing. During this period a few develop symptoms and signs of fatty liver (anorexia, nausea, and profound lethargy together with enlargement of the liver). Such patients require admission to hospital for parenteral nutrition and elemental diet. Failure to respond may necessitate reversal of the bypass, for this complication is the main cause of death. There is also a low incidence of cirrhosis.

The morbidity of small-bowel bypass has been stressed to emphasise that this procedure should not be considered lightly as the easy way out or as "the answer to the fatties' prayer." Equally, it must be recognised that most patients do extremely well, benefiting physically, psychiatrically, socially, and economically. The hazards mentioned may be reduced by better case selection, eliminating all patients with known heart disease, low intelligence, severe psychiatric disturbance, and alcoholism. But as the operation still remains to be evaluated in the long term it should be performed only on those who are in danger of succumbing to the complications of obesity.

Copies of diet sheets are available on request from Dr Bennett.

Letter from . . . Denmark

After the dispute

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Six months ago¹ I wrote about how general practitioners in Denmark took the unusual step of resigning from our health service. Traditionally, renewal of the contract between the GPs and the service has been considered more or less routine, but, to general consternation, things went wrong during the negotiations last autumn—remuneration and the doctor:patient ratio being the most contentious issues.

The dispute became official from 1 December, but, though this could be described as "industrial action" on the part of the doctors, it had nothing in common with a strike. Patients and doctors continued their time-honoured symbiosis much the same as before. Patients paid fees, but were later fully reimbursed by the health service. Many of the older patients stayed away, probably because they were uncertain about the new (and temporary) conditions and preferred to wait and see. It seems, as always, that it is the weak and innocent who suffer when major disagreements arise between groups in society.

The dispute lasted for four months: on 1 April a new contract came into effect and work in the surgery returned to normal. Disputes such as these are not only irritating but also seem unreasonable and pointless among civilised people. All the same, these slightly uncivilised conditions for a time may have been useful shock treatment for all concerned. We have all learnt that

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