Big trouble in little Britain

The recent 20th Annual Medical and Scientific Meeting of H·E·A·R·T UK focussed on obesity, cardiovascular disease and diet. Here Helen Rivas-Toro, a lipid clinic sister at the Chelsea and Westminster Hospital, London, reports on the highlights of the meeting from Canterbury.

The packed auditorium at the Canterbury meeting

Location, location, location!

Fat, it seems, is very much a central issue; fat and its distribution was the main talking point at this year's conference.

We have moved, remarked Professor Ian Macdonald (University of Nottingham), from our hunter-gatherer status of 'feast or famine', to one of 'feast and feast' and an environment replete with high-fat, high glycaemic index (GI) and high-energy foods. Obesity is therefore not a disease but a normal response to the pathology of our 'obesogenic' environment.

Levels of obesity began to climb in the 1960s and 1970s and there has been a three-fold increase in the prevalence of obesity in the last 20 years. It is debatable whether it is the reduction in our physical activity or the increase in our food consumption that plays the greatest part but it is quite clear that a substantial section of the population in UK and North America eat to excess. We are generally unreliable witnesses when it comes to our food intake, as many clinicians will testify, and there is a clear, recorded discrepancy between what we say we eat and what food manufacturers say they sell. Neither is the body a good judge of how many calories it is consuming. A high-fat meal, for example, can lead to a passive over-consumption of energy and the appetite regulatory systems appear to have difficulty in identifying sugar within drinks.

Increased use of fast food restaurants is one marker of our lifestyle which, amongst other things, engenders erratic and chaotic eating patterns, adding to disruption in food regulation and contributing to over- eating and difficulties in weight management. Many dietary approaches encourage a fixed number of eating occasions as there are direct metabolic consequences associated with eating pattern and timing. Regular eating appears to confer a positive metabolic effect, as does the inclusion of breakfast.

As a result of over-consumption accompanied by an increasing waistline:

- the body is placed in a constant anabolic state
- there is loss of insulin sensitivity and adrenergic tone
- the adipose tissue becomes metabolically dysfunctional.

Approximately 50% of those with abdominal obesity go on to develop metabolic syndrome and insulin resistance, with which there is a five to six times increased risk of type 2 diabetes. On the positive side, metabolic syndrome can be an opportunity to intervene with lifestyle since successful management of obesity can reverse practically all the complications associated with it.

Waist matter

Professor John Wilding (University Hospital Aintree, Liverpool) confirmed central obesity as an integral component of cardiometabolic risk and emphasised the importance of weight loss in obese patients with cardiovascular disease and type 2 diabetes. The number of years of life lost through overweight and obesity is greater than for that through smoking and evidence from the Framingham data points to waist circumference as a better marker of cardiovascular disease risk than body mass index (BMI) and type 2 diabetes. A 5–10% loss of body weight significantly lowers morbidity from cardiovascular disease.

Drug therapy (orlistat, sibutramine and the newly licensed rimonabant) and surgery can be important when diet and lifestyle are insufficient, with surgical intervention having a particular place in morbid obesity. Professor Wilding stressed that although weight loss is key to the management of cardiometabolic disease, risk factors should be treated without waiting for weight loss.

Professor Sudhesh Kumar (Warwick Medical School, University of Warwick) agreed that BMI does not always give accurate insight into cardiovascular disease risk. The distribution of ectopic fat has a significant impact on the development of disease, with visceral and epicardial fat being much more significant in this regard than gluteofemoral fat. Visceral fat is a metabolically active tissue that contributes to the development of multiple metabolic disorders. Apart from producing fatty acids and interfering with insulin sensitivity and secretion, it also produces more than 50 other substances, which can spill out into the circulation leading to disease.

The pattern of disease in our society has changed in response to obesity and its associated factors.

Professor Kumar looked at obesity, ethnicity and car-

diovascular disease in the UK and specifically at the challenge that faces the Asian community. Ethnicity is an important consideration in treating patients as it is clear that the expression of central obesity differs between ethnic groups – a BMI of 23 kg/m^2, for example, would indicate obesity in a South Asian compared to a BMI of 30 in a white Caucasian. Lifestyle, and lifestyle change, is inextricably linked to ethnicity. When treating different ethnic groups, interpretation of the illness experience and acceptability of treatment will vary, as will response to drugs. It is important to understand and respect the logic and rationality of another system of thought if we are to treat patients successfully.

The Canadian aboriginal experience

The annual Myant Lecture at the conference turned to Canada to consider the dynamic tension between the genetic core and the environment that can lead to either health or disease. Professor Robert Hegele (University of Western Ontario, Ontario, Canada) headed the Sandy Lake Complications Prevalence and Risk Factor Study in an isolated aboriginal (Oji-Cree) Canadian population to investigate a possible role for a gene polymorphism with peripheral arterial disease in subjects with type 2 diabetes.

It is only in recent years that there has been a sharp increase in cardiovascular disease in these peoples, illustrated by a huge increase in admission to hospital for acute coronary syndrome and myocardial infarction. The prevalence of type 2 diabetes in the Oji-Cree population of Northern Ontario is among the highest of any population in the world.

The original lifestyle of the Oji-Cree people has been subject to significant changes in diet and lifestyle during the last 50 years. Prior to this, their diet and lifestyle had remained unchanged for centuries. Through interventional programmes using the medicine wheel and appropriate cultural references, the Oji-Cree people are now working to reinstate their traditional diet and increase their exercise in an attempt to reverse the trend towards type 2 diabetes and cardiovascular disease. Although genetic factors undoubtedly have a significant effect on the current epidemic of metabolic syndrome and type 2 diabetes, the environmental factors appear even more powerful.

Referring to the criteria for metabolic syndrome, Professor Hegele reaffirmed central obesity as the most crucial, with a highly predictive value of future cardiovascular events. He highlighted the critical role of environment in the growing epidemic of metabolic syndrome, citing increase in portion size as a major culprit.

Cutting edge

Mr Alberic Fiennes (St George's Hospital NHS Trust, London) pointed out that morbid obesity is qualitatively different to moderate overweight. He advised that the morbidly obese are not able to stop eating and are victims of a biological drive to eat that has evolved to prevent the human race from dying of starvation. This drive is now mismatched with the increased availability of food. He suggested we need to consider more rational treatments to address the problem, arguing that dietetic counselling addresses neither the drive to eat nor the access to food. There are various types of surgery available currently which restrict access to food, with various levels of success. These include:

- gastric banding
- gastric bypass, and
- duodenal switch.

There is, however, limited availability of surgery because of cost and the associated mortality risks. Mr Fiennes proposed that bariatric surgery can lead to substantial weight reduction, resolve diabetes, metabolic syndrome and sleep apnoea, and lead to a reduction in lipids.

Professor Andrew Neil, Chairman of H·E·A·R·T UK (left), with this year's Myant Lecturer, Professor Robert Hegele

Portion size

Professor Tom Sanders (King's College, London) reiterated the importance of dietary patterns in maintaining optimum body weight. Echoing Dr Hegele, he looked at the increase in portion sizes in recent years and pointed out that plate size is a simple but important determinant of portion size. Using small plates, bowls and glasses decreases food intake but, as with medication, compliance is the problem. Undoubtedly, reducing energy intake leads to weight loss, just as reducing salt generally leads to a reduction in blood pressure. The difficulty is in patients adhering to lifestyle change.

There is ongoing dispute as to optimum diet composition. Is it the quantity of saturated fat, sugar and the GI index that exert greater influence on insulin sensitivity or is it meal size and frequency? There is some evidence that small amounts of food, often, are preferable, and that fat consumption should be distributed over the course of the day. One high-fat meal containing more than 30 g fat will result in post-prandial lipaemia, which in turn will lead to factor VII

Table 1. Factors contributing to a decreased cardiovascular risk with high-protein diets

- increase in total cholesterol not significant at six months
- no effect on low-density lipoprotein cholesterol
- increase in high-density lipoprotein cholesterol
- increase in low-density lipoprotein particle size
- systolic and diastolic blood pressure reduced at six months (not mentioned in any data at 12 months)
- increase in insulin sensitivity
- reduction in waist circumference at six and 12 months
- no evidence of adverse affects on renal or liver function
- no evidence of bone demineralisation

activation, impairment of endothelial function and contribute to atherosclerosis.

Atkins RIP – or not

Much has been said and written about the Atkins diet in recent years but if the audience were under the impression that Atkins would be put to rest at the meeting then they were mistaken.

Ketogenic diets are recorded as being first used in ancient Egypt for 'sweet water disease' or diabetes, and more recently in the treatment of diabetes mellitus prior to the advent of insulin therapy.

Professor Iain Broom (Robert Gordon University, Aberdeen) proposed that a low-carbohydrate diet might be appropriate for certain individuals, although he emphasised that it was inappropriate for a population approach since, in the vast majority of people, fat and sugar are the main culprits in weight gain. Suggesting that patients with diabetes are resistant to traditional weight loss methods, and that diets with a 50–60% carbohydrate content are even detrimental to metabolic syndrome, he stressed the importance of considering phenotype when choosing methods of weight loss. High-protein diets appear to promote adipolysis, have a role in satiety and appetite suppression and may be useful in treating certain obese individuals who are normotensive and have:

- a BMI > 40 kg/m^2
- cholesterol in the lowest 10th percentile
- a preference for carbohydrate in the absence of high-fat intake
- high insulin requirements if sufferers of type 2 diabetes.

One of the biggest criticisms of the high-protein diet has been concern about lipid changes and the increase in cardiovascular risk. Available evidence, however, suggests a decrease in cardiovascular risk (see table 1).

There is, however, an increase in uric acid, an obvious problem for those with a tendency to gout, and there is also a question mark over whether uric acid is an independent risk factor for cardiovascular disease.

Induced ketosis from a high-protein diet is not a diabetic keto-acidosis and there is no change in pH with starvation. The fat in these instances is being used as a primary fuel to survive, a perfectly normal response. Further investigation is required into the effects of ketosis; it is possible that ketosis is essential to weight loss. He concluded that there is insufficient evidence for either the support or censure of high-protein diets. These diets, he said, could not be dismissed summarily.

Summary

By the end of the meeting it was clear to see that obesity and its successful management is highly complex. There is no panacea. There are various approaches to its management, with some suiting some patients better than others. The approach needs to be tailored to the individual and may be time-intensive. Education is vital but so is intervention. Patients need structure, follow-up and support. How, and in what setting, those elements are to be delivered is debatable. A reduction in societal access to food through changes in advertising, availability and cost may be branded by some as the nanny state gone too far, while others will see it as inevitable and necessary.

Patient compliance and personal responsibility are essential in dealing with obesity, the root of a multitude of modern diseases. Although we will continue to treat the consequences of obesity, perhaps the time really has come to launch a cohesive assault on the condition itself, which up until this point, has been fragmented and dissipated.

Key messages

- Erratic and chaotic eating patterns disrupt food regulation and contribute to over-eating and weight gain. A fixed number of eating occasions, regular eating, family meals and breakfast all contribute in conferring positive metabolic effects
- Central obesity is an integral component of cardiometabolic risk and the number of years of life lost through overweight and obesity is greater than for that through smoking
- Waist circumference is a better marker of cardiovascular disease (CVD) risk than body mass index (BMI) and type 2 diabetes. A 5–10% loss of body weight significantly lowers morbidity from CVD
- Interpretation of the illness experience, acceptability of treatment and response to drugs vary with different ethnic groups. It is important to understand and respect the logic and rationality of another system of thought if we are to treat patients successfully
- A reduction in societal access to food through changes in advertising, availability and cost may be one measure that will need to be implemented if we are to tackle the problem of obesity from all sides, despite shouts of 'nanny state' from the gallery