Metabolic Syndrome, Syndrome X: Syndrome X, Y, Z...?

by Stephen Holt, MD

Introduction

Metabolic syndrome, or “Syndrome X,” as it is often called, is the variable combination of obesity, hypercholesterolemia, and hypertension linked by an underlying resistance to insulin. This condition is often associated with excess insulin secretion. The syndrome was first described by Reaven in 1998, but its principal component of obesity was not initially emphasized. Retrospective data from the National Health Nutritional Survey for the period 1988 to 1994 implied that 47 million Americans had metabolic syndrome. The current prevalence of the syndrome may now be approximately one in every four adults in the United States population, or about 70 million individuals. So common and so pernicious are the negative health outcomes of metabolic syndrome X that it qualifies as the number one public health problem facing several Western societies.

Although the metabolic syndrome X is identified as a major cause of cardiovascular disease, it is less apparent that it increases deaths and disabilities from all causes and underlies female reproductive disorders, polycystic ovary syndrome (PCOS), non-alcoholic fatty-liver disease, non-alcoholic steatohepatitis, gestational diabetes mellitus, significant changes in body eicosanoid status, inflammatory disease, poor cognitive function, Alzheimer’s Disease, and certain cancers, to name a few diseases.

Rethinking the Management of Metabolic Syndrome

Excessive dietary intake of refined sugar, lack of exercise, poorly defined genetic tendencies, environmental toxins, and adverse lifestyles contribute variably to the pathogenesis of the metabolic syndrome. Current pharmaceutical and surgical approaches to management of the syndrome have many obvious disadvantages and limitations. It has been suggested by Federal government researchers that focused treatments of the individual components of the syndrome (hypercholesteremia, obesity, and hypertension) are unlikely to provide a better outcome than are “integrated” management strategies. This suggestion is consistent with dietary attempts to restrict refined, carbohydrate intake, and it helps to explain the short-term success of some low carbohydrate diets for weight control. The notion of “integrative” management strategies as first-line options for syndrome X opens the door for “alternative” management with dietary supplements.

First-Line Management Options for Metabolic Syndrome

Metabolic syndrome has variable clinical manifestations, which I have attempted to incorporate in a new, unifying concept of disease. This concept extends far beyond the existing definition of syndrome X as obesity, hypertension, and hypercholesterolemia, linked by underlying insulin resistance. In order to take account of this unifying concept, I have coined the term Syndrome X, Y, and Z...to incorporate many other diseases linked to insulin resistance (Figure 1).
Effective prevention and treatment of metabolic syndrome involves a multifaceted approach directed at all its cardinal components. Current allopathic treatments (drugs) for syndrome X have been too specifically focused on the individual components of metabolic syndrome (e.g., anti-hypertensive therapy, cholesterol-lowering drugs, etc.) While pharmaceutical interventions should be applied where necessary, they most often form a "back-up plan" for its management. In contrast, the natural techniques of lifestyle modification and nutritional or nutraceutical interventions, or both, may provide versatile and potent first-line options for the management of syndrome X.

Clear Benefits of Dietary Fiber in Syndrome X

Many types of soluble fiber may benefit individuals with metabolic syndrome, through their effects on appetite or satiety regulation, body weight, and blood cholesterol levels. Evolution of research into soluble components of dietary fiber has led to the discovery of fractions of oat soluble fiber (beta-glucans) that have been shown to effectively lower blood cholesterol, reduce postprandial blood glucose, induce satiety, and suppress appetite. Although the glucocorticoids that contain these beta-glucan fractions of oat fiber have physicochemical properties that modulate upper gastrointestinal motility by delaying gastric emptying, or by retarding or impeding the absorption of specific (macronutrients such as glucose and fats), they also have intrinsic metabolic effects (IMEF). These IMEF occur, in part, as a consequence of the prebiotic actions of fiber and fermentation of soluble fiber in the colon to yield short-chain fatty acids, including propionic, acetoacetic, and butyric acids. Of these, propionic acid can enter the portal circulation of the liver and may interfere with cholesterol synthesis by blocking the activity of hydroxyethylglutaryl coenzyme A (HMG CoA) reductase, a key enzyme in the synthetic pathway of cholesterol.

Other types of soluble fiber are of value in blunting postprandial blood glucose responses, e.g., soy fiber, pectin, and guar gum. The "Glycemic Index" and the glycemic load of food are relevant to the dietary guidelines or nutritional support that may counteract exaggerated glycemic responses in the metabolic syndrome. In simple terms, the glycemic index is a way of describing the ability of different foods to cause a post-prandial rise in blood sugar. Foods laden with simple sugars can be expected to cause a rapid rise in blood glucose to high levels which, in turn, triggers insulin secretion from the pancreas. Such foods have a "High Glycemic Index." A major component of the glycemic index is related to altered rates of sugar absorption, at least after acute sugar intake. Upward swings in blood glucose are determined to a significant degree by rapid rates of transfer of glucose
to its site of maximal absorption in the small bowel, which is a function of the rate of gastric emptying.\textsuperscript{3,8,10} Speedy absorption of sugar pushes blood glucose levels to high ranges (a high glycemic response). In simple terms, repeated, rapid, roller-coaster swings in post-prandial blood glucose tend to "flog the pancreatic islet cell mass to death."\textsuperscript{9,10} The concept of glycemic index or load become more complex with mixed diets.\textsuperscript{3}

**Essential Fatty Acids and Metabolic Syndrome**

The influence of eicosanoids on glucose and insulin homeostasis

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### Table 1: Nutritional Factors for Syndrome X

Syndrome X nutritional factors are composed of nutrients, botanicals, herbs, and extracts that are of potential value in the nutritional management of Metabolic Syndrome X associated with obesity. Some listed substances may provide nutritional support for diets used in the management of diabetes mellitus. (Adapted from Holt S, Wright JV, Taylor TV, Holt F. Syndrome X Nutritional Factors. Little Falls, NJ: Wellness Publishing; 2003.)

<table>
<thead>
<tr>
<th>Factor</th>
<th>Therapeutic Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soluble fiber, e.g., oat beta glucan</td>
<td>Soluble fiber reduces post-prandial blood glucose, reduces blood cholesterol, improves glucose tolerance, regulates bowel function, primes the immune system, probably by a prebiotic effect. In addition, soluble fiber promotes satiety, and it has other intrinsic metabolic effects. Plays a pivotal role in nutritional management of syndrome X and weight control, especially in children.</td>
</tr>
<tr>
<td>Soy Protein (25 g/day)</td>
<td>Soy protein reduces blood cholesterol and its isoflavone content may reduce platelet &quot;stickiness&quot; and exert valuable antioxidant functions. Value of vegetable protein rotation in diets. Soy has many other health benefits and it is an ideal dietary substrate for use in diabetes mellitus and syndrome X. Soy is not toxic.</td>
</tr>
<tr>
<td>Omega 3 fatty acids (EPA)</td>
<td>Omega 3 fatty acids are best taken in fish oil concentrates, high in EPA, presented in enteric coated capsules for greater compliance and bioavailability. Plant precursors of omega 3 fatty acids (e.g., flaxseed oils, walnut oils, macadamia, etc. are not reliable sources of active fatty acids). Fish oil sensitizes insulin by acting on PPAR receptors, and it has multiple health benefits including: cardiovascular benefits, anti-inflammatory actions, etc.</td>
</tr>
<tr>
<td>Chromium</td>
<td>Several studies imply that chromium in various forms may assist in blood cholesterol reduction and weight control, and they may sensitize the actions of insulin.</td>
</tr>
<tr>
<td>Alpha lipoic acid</td>
<td>Alpha lipoic acid is a powerful antioxidant, which plays a specific role in combat against advanced glycation end-products (AGES), with possible reduction in tissue complications in states of dysglycemia. Has a specific insulin-sensitizing role, but should not be given by parenteral administration.</td>
</tr>
<tr>
<td>Vanadium</td>
<td>An insulin sensitizer of variable value</td>
</tr>
<tr>
<td>Antioxidants</td>
<td>Including but not limited to anthocyanadins, ellagic acid, turmeric, bioflavonoids, direct or indirect antioxidant vitamin,s or minerals, e.g., vitamins E, C, A, selenium, zinc, etc. Antioxidants are often misused and misformulated. Antioxidants should be given with REDOX balance to access all body tissues' hydrophilic and lipophilic properties. Single high-dose antioxidants are best avoided, especially by unopposed intravenous administration.</td>
</tr>
<tr>
<td>Starch blockers and fat blockers</td>
<td>White kidney bean extract, soluble fiber, chitin of variable value.</td>
</tr>
<tr>
<td>Cinnamon</td>
<td>An insulin mimic</td>
</tr>
<tr>
<td>Maitake</td>
<td>Weak insulin-sensitizing effect with both whole mushroom powder and fractions; \textit{not} a stand-alone weight control or syndrome X nutritional factor</td>
</tr>
<tr>
<td>Green coffee bean extract</td>
<td>Polyphenols, e.g., chlorogenic acid, assist in correction of dysglycemia, with specific effects on hepatic glucose synthesis.</td>
</tr>
<tr>
<td>Green tea</td>
<td>Very potent antioxidant with widespread health benefits, including effects on glucose metabolism; distinguished content of catechins, especially EGCG</td>
</tr>
<tr>
<td><em>Hoodia gordonii</em></td>
<td>Proposed as a non-stimulant appetite suppressant due to its content of steroidal glycosides</td>
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status where eicosanoid pathways are driven towards the production of prothrombotic and proinflammatory prostaglandins. This may occur, in part, as a consequence of common dietary deficiencies of certain essential fatty acids (omega 3 fatty acids) or alteration in the ratio of omega 6 and omega 3 essential fatty acid dietary intake. This shift towards “deviant” prostaglandins is aggravated by insulin resistance, ketoadidosis, and the diabetic diathesis.

There is evidence that eicosanoid production can be altered by insulin lack or excess and hyperglycemia. Animal studies show increases in a circulating metabolites of PGE2 production after the experimental induction of diabetes with streptozotocin. This rise in PGE2 metabolites is also found in diabetic humans.

Thus, both the circumstances that contribute to the development of syndrome X and insulin resistance within the metabolic syndrome X can be expected to contribute to changes in the body eicosanoid status in a detrimental manner for health.

This metabolic change in eicosanoid status is manifested mainly as a quantitative difference in the types of eicosanoid (prostaglandins) produced. “Active” Omega-3 fatty acids (EPA and DHA), found in fish oil supplements, can assist in correcting “deviant” pathways of eicosanoid production. The dosage of fish oil required to induce a therapeutic effect in this context is higher than dosages that are most often used in clinical practice (greater than 2g/day).

Enteric-coated fish oil capsules are to be preferred for clinical use because they can provide up to three times the bioavailability of active Omega-3 fatty acids (EPA and DHA) compared with regular fish oil capsules or liquids. Powerful arguments can be made to reject the use of “regular” fish oil capsules because compliance becomes poor with dosages in excess of 2g/day, which may be required for a “therapeutic effect.”

Fish oil liquids are obsolete for use in professional practice because of their variable absorption, poor compliance, and tendency to spontaneously decompose and form damaging lipid peroxides.

Furthermore, it is known that among eicosanoid precursors, eicosapentanoic acid (EPA) can enhance insulin sensitivity, presumably through effects on PPAR-receptors, which regulate the actions of insulin. Natural clinicians must finally appreciate that Omega-3 fatty acid precursors, found in vegetable oils (e.g., flax, walnut, macadamia, etc.) are not reliable ways of achieving the desired influence of active Omega-3 fatty acids. Omega 3 precursor conversion rates to EPA may be often as little as two-percent conversion of the total precursor dose in a 24-hour period.

Diets intended to combat syndrome X should have more liberal contents of omega-3 and, where appropriate, omega-6 fatty acids, in the correct balance with one another, together with a strictly controlled intake of refined carbohydrates, a restricted salt intake, an increased intake of fiber intake, and an increased proportion of vegetable sources of protein. Refined carbohydrate-controlled diets require facilitation to make them more effective in the long term (by attempts to overcome insulin resistance). This usually equates to the effective

Table 2: Elements of Syndrome X (Metabolic Syndrome) and Nutritional Factors That May Counteract Them

| Insulin resistance: | Chromium polynicotinate, vanadium, maitake, green tea polyphenols, mixed berry antioxidants, and alpha lipoic acid may assist insulin function. Beta-glucan fractions of oat soluble fiber may lower blood glucose levels after sugar intake. Green coffee bean extracts alter hepatic glucose metabolism. Cinnamon is an insulin mimic. |
| Abnormal blood lipids: | Antioxidants and chromium with biotin may exert favorable effects on blood cholesterol. Oat beta-glucan may reduce blood levels of low-density lipoprotein (LDL) cholesterol and triglycerides and may variably increase high-density lipoprotein (HDL) cholesterol. |
| Obesity: | Starch-blockers may inhibit sugar absorption. Oat beta-glucan may produce a sensation of satiety when taken before meals, and thereby assist in controlling calorie intake. Delayed appetite suppressant effects of fiber occur and smoothing out blood glucose responses may help to stop “sugar craving.” |
| Hypertension: | Variable but small reductions in blood pressure result from weight control and lifestyle changes, e.g., exercise, avoidance of substance abuse (alcohol, caffeine, and smoking). Soluble fiber may have modest independent blood pressure-lowering effects. |
| Oxidative stress and advanced glycation end products: | This may be reduced by bioflavonoids, ellagic acid, anthocyanidins, alpha lipoic acid, and other antioxidants. |
| Homocysteine: | Vitamins B6 and B12, and folic acid may reduce blood homocysteine levels. Homocysteine and hyperuricemia must not be overlooked in the metabolic syndrome X. Beware of hyperuricemia. |
management of the constellation of problems found within syndrome X (cholesterol, blood pressure, and insulin resistance). Table 1 presents a number of dietary components and supplements that can help prevent and manage metabolic syndrome, accepting that dietary supplements are not to be used to diagnose, prevent, or treat any disease (by law).

"Obesitis": More Than a Novel Concept!

Obesity and excess body fat can be classified as inflammatory conditions, and inflammation is a key factor in the pathophysiology of metabolic syndrome X. Not only does obesity raise the level of proinflammatory messenger molecules in the body, it precipitates or contributes to several disorders of inflammation, including cardiovascular disease, cancer, arthritis, Alzheimer’s disease, liver disease, and asthma. This inflammatory disease “link” with obesity further explains the undesirable effects of insulin resistance, introducing the novel term “obesitis.”

The hallmarks of metabolic syndrome X and many cases of pre-type 2, or early type 2, diabetes mellitus often involve the presence of insulin resistance. Insulin acts by specific receptor binding, which precipitates many intracellular events. Current evidence suggests that insulin resistance is determined partially by chemical mediators that are released from immune competent cells or fat cells. For example, elevated levels of the inflammatory cytokine tumor necrosis factor-alpha (TNF-alpha) are associated with over-nutrition, and reduction of TNF-alpha activity is associated with weight loss and improvements in insulin resistance. Many factors that link inflammation and tissue damage have come from recent studies of non-alcoholic, fatty liver disease, which is a common component of metabolic syndrome X. I believe that metabolic syndrome X is a major cause of “cryptogenic” cirrhosis.

While the underlying biochemical basis of the relationships between obesity or metabolic syndrome X and inflammatory disease remains under-explored, these circumstances permit me to coin the term “obesitis” and propose that “anti-inflammatory” approaches should not be overlooked as an important part of obesity management.

Up to one-third of blood levels of the inflammatory cytokine IL-6 may emanate from adipose tissue, and weight loss is often associated with reduction in blood markers of inflammation, e.g., C-reactive protein (CRP), IL-18. Popular health care authors have attempted to link inflammation with many common diseases, but their interpretation of this important association is limited or naïve, because only changes in eicosanoid status are emphasized (e.g., The Zone). While correcting eicosanoid precursor pathways with Omega 3 fatty acids is an important anti-inflammatory and insulin-sensitizing maneuver, it is not the whole story.

Recent studies have confirmed the anti-inflammatory actions of certain substances that are found in fat tissue. These substances have been referred to as adipocytokines that include leptin, adiponectin, and visfatin. Adiponectin is manufactured by fat cells, and blood levels of this protein are reduced in states of obesity, insulin resistance, type 2 diabetes mellitus, and atheroma. Adiponectin exhibits potent anti-inflammatory effects by suppressing TNF-alpha synthesis and promoting the availability of anti-inflammatory cytokines.
Table 3: A Holistic Management Plan for Obesity, with Relevance to the Concepts of “Obesitis” and Syndrome X, Y and Z...

**Proposed by Stephen Holt, MD**

<table>
<thead>
<tr>
<th>Factors to Address</th>
<th>Actions</th>
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<tbody>
<tr>
<td>Mutual acceptance of weight status, required commitments, and targets for weight and health management</td>
<td>Weight assessment, BMI measurement, Fat distribution, Define realistic weight loss targets with health focus, Avoid unrealistic weight loss expectations</td>
</tr>
<tr>
<td>Identify and exclude specific secondary causes of obesity</td>
<td>Congenital disorder, thyroid disease, Cushing's syndrome, psychiatric disease, drugs, surgery, metabolism and insulin resistance syndrome, metabolic syndrome X, etc.</td>
</tr>
<tr>
<td>Is metabolic syndrome X present?</td>
<td>The overweight person with syndrome X has increased risk of many diseases (syndrome X, Y, Z...). Failure to address insulin resistance syndrome in the presence of obesity is incomplete medical management.</td>
</tr>
<tr>
<td>Diet</td>
<td>Tailored to specific weight control targets and objectives. Short-term accelerated weight loss with low carbohydrate approach, Long term maintenance with balanced diets includes restricted simple sugar, trans-fatty acids, and saturated fats; moderate protein intake (1g/Kg) with vegetable protein inclusion; moderate salt intake. Planning is required for special circumstances of liver disease, diabetes mellitus, hypertension and, again, beware of syndrome X.</td>
</tr>
<tr>
<td>“Obesitis” obesity is an inflammatory disorder</td>
<td>All factors that may suppress inflammation are worthy interventions. The common pathway of inflammation often involves oxidative stress. Various nutraceuticals may suppress inflammation and/or independently or simultaneously sensitize the actions of insulin, e.g., alpha-lipoic acid, hydrophilic and lipophilic antioxidants, and the versatility and power of eicosapentanoic acid (EPA), given in enteric-coated capsules for compliance and bioavailability.</td>
</tr>
<tr>
<td>Correct Biorhythm</td>
<td>Reductions in sleep duration and quality promote weight gain, abnormal glucose metabolism, and insulin resistance. Without healthy sleep, weight loss cannot be sustained and eating disorders emerge, especially nocturnal “fridge-raiding.”</td>
</tr>
<tr>
<td>Behavior Modification</td>
<td>Many approaches, but altered attitudes to food and removal of positive reinforcements to overeating; frequent social gluttony.</td>
</tr>
<tr>
<td>Exercise</td>
<td>Movement is an absolute prerequisite for weight control. Energy into the body must be balance by energy expenditure. Aerobic exercise must be matched to physical fitness levels. Panacea benefits from exercise are apparent.</td>
</tr>
<tr>
<td>Adjunctive Approach</td>
<td>Dietary supplements for weight control are often associated with illegal treatment claims for obesity and many have a poor scientific basis for their use. Stimulant weight loss supplements should be avoided in the mature, obese person. Reductions in net calorie intake are the goal, but modern nutraceutical technology has combined appetite suppression with attempts to alter metabolic changes associated with obesity e.g. dysglycemia and insulin resistance syndrome, the hallmark of metabolic syndrome X. Drugs used in weight control have onerous side effects. <em>Hoodia gordonii</em> shows promise for non-stimulant appetite suppression, and it can be combined with natural substances that alter dysglycemia, e.g., green tea and chlorogenic acid (found in green coffee bean), etc.</td>
</tr>
<tr>
<td>?Surgical Intervention?</td>
<td>A variety of approaches with contemporary interests in non-invasive surgery, e.g., gastric banding. Surgery for obesity results in a circumstance of forced malnutrition. The clinical course and natural history of the post-obesity surgery patient has not been evaluated in the long-term. The nutritional status of the post-surgical obese individual is often mismanaged. A big question mark exists with obesity surgery in children and teenagers. Careful selection required for surgery, but holistic care of these patients must occur to decrease post-surgical morbidity and mortality. Surgery should be “the last ditch.”</td>
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</table>
e.g., interleukin-10 or interleukin-1 receptor antagonist.\textsuperscript{15,24} The plot thickens in "obesitis," where imbalances of proinflammatory and anti-inflammatory cytokines exist. These issues are closely linked to immune dysfunction that is common in obesity, syndrome X, and type 2 diabetes mellitus.\textsuperscript{3} The natural clinician can reverse these circumstances, at least partially, with holistic natural interventions.

The final common pathway of tissue damage in obesity or syndrome X often involves oxidative damage due to the generation of free radicals, perhaps exacerbated by a reduction in antioxidant defenses in the body.\textsuperscript{15,16} Of course, the progression of the complications of obesity and diabetes mellitus is related to oxidative tissue stress, with the development of advanced glycation end products (AGES).\textsuperscript{3} Therefore, the treatment of obesity-related disease seems quite incomplete without supporting antioxidant body functions in the clinical management of the obese or overweight person (Tables 1 and 2), especially in the presence of coexisting syndrome X.

**Circadian Biorhythms, Sleep, Obesity, and Metabolic Syndrome X**

Sleep deprivation, overweight status, and metabolic syndrome X appear to be inextricably linked in many people. The mechanisms of this association are not fully understood. Reduction in sleep duration in healthy young men is associated with major changes in hormonal levels of substances (ghrelin and leptin) that increase hunger and appetite, thereby promoting weight gain.\textsuperscript{25} An established association between short sleep duration and obesity has led to the proposition that more sleep is necessary to prevent obesity.\textsuperscript{25-28} Sometimes, restoring sleep patterns alone can promote weight loss.\textsuperscript{26,28}

Chronic lack of sleep increases an individual's susceptibility to the metabolic syndrome X, and it is known that "forced" sleep deprivation in healthy young adults appears to be "diabetogenic," as evidenced by detectable alterations of glucose metabolism.\textsuperscript{25,27} The diabetogenic effects of sleep deprivation may be hormonally mediated.\textsuperscript{25} Sleeplessness has been associated with decreases in the normal nocturnal surge of thyrotropin or growth hormone and increases in corticosteroid secretion.\textsuperscript{36,27} These hormonal changes are often present in the elderly, reinforcing the notion of a potential causal relationship among sleeplessness and/or obesity and premature aging.\textsuperscript{25-28}

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most notably the stress-responsive hypocretin/orixin cells in the hypothalamus. Daily stresses may act on the hypothalamus, resulting in sustained stimulation of hypocretin/orixin cells, which could precipitate insomnia and overeating. One may now postulate a link between obesity and other conditions such as fasting, periodic hypoglycemia, and peri-menopause, which are "stressors" that could all serve to excite hypothalamic neurons.

The restoration of sleep patterns of optimum quality and duration can be expected to improve the management of obesity, but stress management appears to be a very important additional factor in obesity management, because of its beneficial effect on sleep patterns or body metabolism that favors weight control. It has been suggested that common weight gain around menopause is due to hormonal changes. I reject this hypothesis and propose that this peri-menopausal weight gain is more likely to be due to sleep deprivation, which often accompanies the transition of menopause. Failure to restore sleep biorhythms in the menopausal female thwarts all attempts to control unpleasant transitional symptomatology.

Inducing sleep by the use of certain hypnotic drugs has to be seriously questioned in the management of the overweight individual, and it may be quite undesirable in certain circumstances. For reasons that remain unclear, drugs such as Ambien® (Sanofi-Aventis) may cause weight gain, binge eating, and bizarre behavior. Clearly, natural ways to healthy sleep are preferred over pharmaceutical interventions. Comprehensive plans to engage in positive lifestyle change, together with the use of synergistic dietary supplements, are attractive first-line management options for common sleep disorders. Sleeping naturally has been described in programs that involve lifestyle change and the use of nutritional support for sleep with dietary supplements. Sleep is a major area for intervention with natural health care.

**Implications for Effective Management of Obesity: A Summary**

Integrative medicine can offer the optimal pathway to the management of an overweight status and/or syndrome X, if the modern science of allopathic medicine is complemented or replaced by holistic care (Table 3.) Many people can shed a few pounds of body weight in the short term, but sustained weight control involves many management principles, other than diet, drugs, or supplements alone.

The last thing that is required in the new millennium is another diet promise for weight loss. That said, carbohydrate restriction in the short term can result in apparently safe, effective, accelerated weight loss. However, long-term restriction of carbohydrate intake is probably neither safe nor effective, and compliance is a problem. Low-carbohydrate diets result often in rebound weight gain, largely because of lack of compliance and the documented failure of carbohydrate restriction alone to overcome insulin resistance (syndrome X).

Without positive lifestyle change, there cannot be a health benefit from any weight control program. I have great reservations about the increasing use of surgery for weight control, even though recent studies imply that laparoscopic, gastric-banding techniques are reported to be more effective than diet and lifestyle interventions for weight control. Furthermore, improvements in some components of syndrome X and obesity are to be expected as a consequence of certain surgical procedures, and short-term quality of life measures may improve.

Some recent comparative studies of obesity surgery have involved patients who would not normally receive surgery for obesity. However, obesity surgery comes with complications, and its outcome is often related to the existing health of the patient and the skill of the surgeon. There may be a tendency to overestimate the value and safety of bariatric surgery, and its use in teenagers poses worrisome issues because of lack of long-term follow-up studies. It is not known exactly when the risk-benefit ratio of surgery is most favorable, and non-invasive obesity management must always be perceived as the first-line option. Surgery has been proposed as able to reverse several components of syndrome X, but the presence of syndrome X, per se, cannot be considered an indication for surgery.

Drugs for weight control are often undesirable interventions because of side effect profiles. Nutritional approaches are often safe, and they are assumed to be cost-effective when used in an appropriate manner. Unfortunately, dietary supplements used for weight control are purveyed often with weak evidence of efficacy. Natural substances that reduce appetite by stimulant mechanisms may compound cardiovascular risks in the obese individual who may already have hypertension and cardiovascular risk factors (metabolic syndrome X). The removal of Ephedra (Mahuang) as
a dietary supplement for weight control was appropriate because of the misuse of this otherwise useful dietary supplement.33

The US Federal Trade Commission has taken a strong position that dietary supplements cannot carry a weight loss claim that is regarded as a “drug claim.”

Recent studies with putative, non-stimulant appetite suppressants such as Hoodia gordoni and Caralluma fimbriata extract or wall are very promising because controlled intake of calories is the key initiative in weight control.33,34

Summary

Changes in lifestyle – and nutritional interventions with condition-specific dietary supplements39 – may have more to offer for the prevention and treatment of metabolic syndrome or obesity than do existing allopathic management strategies (Table 3).3,10 Combating the specific components of syndrome X has become one of the most important public health initiatives in Western society.3,10 This initiative continues to be often ignored. In particular, the increasingly global initiative for achievement of a healthy body weight must be comprehensive in its tactics3,10 and weight control diets require modification and facilitation with revised dietary guidelines and the help of lifestyle changes used with key dietary supplements or functional foods.3,10,31,33

Notes


Disclosure: Stephen Holt, MD, is a healthcare consultant, and he derives economic benefit from the sale of dietary supplements and books. He is affiliated directly with Natures Benefit, Inc.

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