SA Study Shows Obesity to be a Major Health Risk for Children

Obesity has become a global health problem, affecting more than 1.3 billion adults in both developed and developing countries. Children are also not being spared in what is fast becoming a global pandemic.

A study funded conducted by the Medical Research Unit for Exercise Science and Sports Medicine at the University of Cape Town, indicates that South African children show relatively high levels of being overweight and obese.

Another of the study’s findings was that obesity in black girls increased from 11.9% at six years to 21.8% at 13 years. In contrast, 25.4% of white girls were obese at six years, dropping to 14.5% at 13 years.

It has been postulated that these patterns may in part result from cultural differences. According to the research findings, black girls indicate a desire to be overweight as this is seen as a sign of wealth and happiness in black cultures. White girls on the other hand are seen to be heavily influenced by the Western beauty idea, which shuns obesity.

(Ed. We need to start treating obesity earlier, and in younger people, aggressively!)

Lifestyle Intervention Prevents Progression to Diabetes Over the Long Term

A n intensive lifestyle intervention program for preventing high-risk subjects from progressing to diabetes showed sustained benefits for 3 years after the intervention was stopped, reported Dr. Jaana Lindstrom in the Finnish Diabetes Prevention Study (FDPS) in the November 11 issue of The Lancet.

In 2001, after a median of 4 years of active intervention, the investigators initially reported a 58% reduction in relative risk of progressing from impaired glucose tolerance to type 2 diabetes. Now, extended follow-up for an average of 3 more years showed that the “marked difference in the cumulative incidence of diabetes can be sustained after the discontinuation of active counselling.” “From a public health point of view there is an important message: An intensive lifestyle intervention lasting for a limited time can yield long-term benefits.”

The multi-centre FDPS involved 522 overweight, middle-aged men and women with impaired glucose tolerance who were randomly assigned to receive either detailed, individualised diet and exercise counselling or general health behaviour information.

The absolute difference in diabetes risk between the intervention and control groups was about 15% during the initial trial period and also remained the same during post-intervention follow-up. The relative risk reduction of 43% was, however, less than the 58% seen during the original study, as expected from the increasing cumulative diabetes incidence in both groups.

During the entire 7-year follow-up, 75 cases of diabetes developed in the intervention group, and 110 developed in the control group, for incidence rates of 4.3 per 100 person-years and 7.4 per 100 person-years, respectively.

Potential marker of preclinical atherosclerosis in early type 2 diabetes

Obesity Does Not Always Mean Insulin Resistance

In Diabetes, Exercise Alone Improves Glycaemic Control

To Treat Recalcitrant Obesity, Think in Subcategories
Mean body weight, total fat intake, and saturated fat intake were lower in the intervention group than in the control group, while dietary fibre intake and physical activity levels were higher (Lancet 2006;368:1673-9).

The findings suggest that dietary composition and physical activity are important in diabetes prevention but their effect on diabetes risk is in large part, although not entirely, mediated through resulting weight reduction.

Of note, adherence to the intensive intervention was challenging, as approximately one-third of the subjects in the intervention group failed to meet predefined goals after 1 year. The goals included weight reduction of at least 5%, less than 30% of daily energy intake from fat, less than 10% of daily energy intake from saturated fat, fibre intake of at least 15 g per 1,000 kg, and moderately intense physical activity for 30 minutes or more per day.

Potential marker of preclinical atherosclerosis in early type 2 diabetes

A study from Japan suggests that serum high-sensitivity C-reactive protein could be a useful marker of preclinical atherosclerosis in individuals with early type 2 diabetes.

So far, the most reliable, non-invasive method of screening for early cardiovascular lesions has been the assessment of common carotid artery intima media thickness (CIMT) by ultrasound echotomography. The key message of this paper is that high levels of high-sensitivity C-reactive protein (hs-CRP) are strongly associated with early atherosclerosis in type 2 diabetes mellitus at diagnosis.

To exclude the possible influence of other factors on hs-CRP, the study was carried out in drug-naive patients with good metabolic control and with no complications. The design of the study (cross-sectional and not longitudinal) raises some caveats and warrants further substantiation. None the less, the first implication that can be drawn is that inflammation, which has been shown to be more and more involved in the genesis of atherosclerosis is not a marginal phenomenon and may be the “engine” of the disease.

Furthermore, from a clinical standpoint, measurement of hs-CRP could become a first-choice test to detect early subclinical lesions at diagnosis. It could thereby replace measurement of CIMT because it is easier to perform and less expensive. What we still need to be thoroughly convinced of a causal role of CRP in the cardiovascular complications of diabetes is an interventional trial that proves that CRP-lowering measures are effective in reducing cardiovascular morbidity and mortality in these patients.

Summary

Intima media thickness of the common carotid artery (CIMT) is a well-established marker of the progression of atherosclerosis in patients with or without type 2 diabetes (T2DM). Because patients with T2DM are at high risk of developing cardiovascular disease, other markers of early-stage atherosclerosis may be useful. Previous studies have shown that high-sensitivity C-reactive protein (hs-CRP) has a strong relationship with subclinical atherosclerosis in non-diabetic individuals, but similar correlations have yet to be established for T2DM.

Mita et al. recruited 75 patients with T2DM to investigate the importance of hs-CRP, compared with other markers of the metabolic syndrome, in determining subclinical atherosclerosis. Some of the patients included in previous studies of hs-CRP were taking medications such as statins, fibrates, aspirin, and thiazolidinediones, which reduce the serum level of CRP. In order to avoid confounding effects, the current study only recruited patients not taking medication. Because patients also had good glycaemic control (glycosylated haemoglobin < 6.5%), insulin resistance could be assessed using the homeostasis model assessment of insulin resistance (HOMA-IR) and fasting insulin level.

Strong correlations were found between hs-CRP values and factors associated with insulin resistance, such as HOMA-IR, body mass index (BMI) and fasting insulin level. There were also good correlations between hs-CRP values and two parameters of subclinical atherosclerosis: soluble intercellular adhesion molecule (sICAM)-1 and mean CIMT.

Univariate analysis showed that fasting insulin level, hs-CRP, serum sICAM-1, HOMA-IR, age, diastolic blood pressure, and BMI were significant factors associated with mean CIMT. Multivariate regression analysis identified age, hs-CRP, and diastolic blood pressure as independent covariates of mean CIMT and explained 50.2% of the variability. Factors associated with insulin resistance were not identified as significant determinants of CIMT.

Although hs-CRP is a sensitive marker of systemic inflammation, recent data suggest that high levels of hs-CRP might also enhance the progression of atherosclerosis and reflect arterial wall inflammation. The authors suggest that the close correlation between hs-CRP and serum ICAM-1 and CIMT indicate a strong association between hs-CRP and preclinical atherosclerosis. In a clinical setting, measurement of the serum hs-CRP level could be a useful screening method to identify those individuals with early T2DM who have preclinical atherosclerosis.
Obesity Does Not Always Mean Insulin Resistance

Not all obesity is created equal. In some individuals, obesity predisposes to heart disease, and in some, it may not. Dr. Gerald Reaven said at the Fourth World Congress on the Insulin Resistance Syndrome. Insulin sensitivity varies dramatically among people, and there are individuals who are overweight but who do not appear to have any insulin resistance, said Reaven, an emeritus professor at Stanford University, whose group was the first to develop a quantitative way to measure insulin sensitivity, back in 1970.

"Not all individuals who are obese have metabolic abnormalities that will give them coronary heart disease," Reaven said. Obesity does exacerbate insulin resistance, which in turn leads to the specific profile of dyslipidaemia with high triglyceride levels and low HDL-cholesterol levels, but at least one-third of obese individuals do not have insulin resistance despite their weight.

In one study he conducted with 314 volunteers, Reaven found that of the insulin-resistant patients, 25% were of normal weight and 25% were obese (J. Am. Coll. Cardiol. 2002;40:937-43). In another study in which he screened 261 healthy subjects, Reaven found that waist circumference was no better than body mass index at identifying who had dyslipidaemia, and, therefore, cardiovascular risk (Am. J. Cardiol. 2006;98:1053-6).

Reaven also said that although not all individuals with hypertension are insulin resistant, resistance is one of the single most important predictors of hypertension, and that hypertension in the absence of insulin resistance may not be that profound a risk factor, at least according to the Copenhagen Male Study (Arch Intern. Med. 2001;161:361-6).

"If you have high blood pressure and do not have the dyslipidaemia of insulin resistance, you have no increased risk of coronary heart disease, and that accounts, I am sure, for why treating blood pressure is so much more effective at reducing stroke than reducing heart disease," he said. "The worst group by far is the group with the high blood pressure and the dyslipidaemia of insulin resistance.

Regarding the diagnosis of the metabolic syndrome, Reaven said that really is no reason to label a patient as having the metabolic syndrome. There are three guidelines for diagnosing metabolic syndrome, from the World Health Organisation, the Third Report of the National Cholesterol Education Program's Adult Treatment Panel, and the International Diabetes Federation.

But each of the guidelines has its own shortcomings that limit its usefulness, and a physician should manage a patient with any cardiovascular risk factor anyway, regardless of whether he or she has been diagnosed with metabolic syndrome.

As regards helping a patient to lose weight, Reaven recommended a low-carbohydrate diet with less than 45% of calories from carbohydrates. Carbohydrate intake induces higher insulin levels, in turn increasing triglyceride levels. So a low-carbohydrate diet - even one high in unsaturated fat - followed by weight loss will reduce triglyceride levels and raise HDL-cholesterol levels.

In Diabetes, Exercise Alone Improves Glycaemic Control

Physicians can be confident in recommending that their patients with type 2 diabetes exercise, based on evidence that exercise by itself can significantly improve glycaemic control, according to a recent Cochrane review. The review included 14 randomised, controlled clinical trials involving 377 people with type 2 diabetes mellitus. Although exercise, diet, and medications have been the stalwarts of diabetes management, it's difficult to isolate the exact benefits of exercise because the effects of exercise in this disease are not well documented, according to D.E. Thomas et al (Cochrane Database Syst. Rev. 2006; DOI: 10.1002/14651858. CD002968.pub2).

This review found that exercise-aerobic, resistance, or a combination of the two-improves blood sugar control and that this effect is evident even without weight loss. "Furthermore, exercise decreases body fat content, thus the failure to lose weight with exercise programs probably is explained by the conversion of fat to muscle."

The analysis found no beneficial effect of exercise on blood pressure or plasma cholesterol level. Quality of life was examined in only one study, which found no effect associated with exercise. The effect of exercise on diabetic complications was not assessed in any of the studies. On average, exercise reduced HbA1c by 0.6%. This represents a 30% improvement toward a target HbA1c of 7% and a 20% improvement toward a normal value of 6% HbA1c. Possible improvements achievable through exercise are not insubstantial. Also, they found evidence that the improvement in glycaemic control can be maintained over the longer term. In the 12-month post intervention follow-up reported in a 1994 study, participants who continued to exercise maintained the improvement while the others did not. However, many patients were lost to follow-up, they said (Israeli J. Med. Sci. 1994;30:766-70).

In the only other study to report a 12-month post intervention follow-up (Diabetologia 1988;31:902-9), the investigators found that use of medication for participants in the exercise intervention group was reduced to a greater extent than it was for the control group. But once again, patients were lost to follow-up.

Interventions in which the exercise involved a variety of activities were as effective as those using a single type of exercise. Different exercise types may make exercise more acceptable to people, increasing the sustainability of the exercise so as to obtain longer-term health benefits.
To Treat Recalcitrant Obesity, Think in Subcategories

Thinking of weight gain simply as the sum of “calories in minus calories out” doesn’t cover a minority of obese patients whose dietary records show reasonable caloric balance but who can’t seem to lose weight, Dr. Scott R. Rigden said. These patients may show dietary records reflecting an intake of 1,800-1,900 calories per day, and often say they’re tired of health care providers thinking that they’re lying in their food diaries because they haven’t lost weight, he said at a symposium on obesity sponsored by the American Society of Bariatric Physicians.

“I really think there are a lot of people with special issues, with switched-off metabolisms, that don’t fit that model” of calories in / calories out, said Dr. Rigden, a family physician who has practised bariatrics since 1976. “What has shut down their metabolism, and how do we turn it back on?”

To help these patients, think in terms of the following five subcategories, and tailor dietary and lifestyle recommendations accordingly, he suggested:

1. Carbohydrate sensitivity:
Rigden defined a patient with carbohydrate sensitivity as one whose genetic makeup produces a rapid spike of glucose after consuming simple carbohydrates and sugars. That glucose spike in turn triggers a spike in insulin and associated metabolic cellular messengers that tell the body to store fat, not burn it. The insulin spike also causes a rapid and uncomfortable drop in glucose that motivates the person to seek more carbohydrates and sugars to remedy the discomfort.

These patients do not yet meet criteria for metabolic syndrome. They have normal fasting insulin and glucose levels and are not hypertensive. “They often have stellar labs, yet a terrible lifelong obesity issue,” Rigden said. He has devised a nine-item questionnaire focusing on eating and exercise habits to identify this subgroup.

A four-step treatment plan starts with behaviour modification to change the patient’s relationship with food and an exercise program with at least 150 minutes of moderate aerobic exercise weekly. The third step emphasises adequate water intake of at least 64 ounces per day - “perhaps the most overlooked part of a weight management program.” Dietary intervention is the fourth step, starting with a soy protein powder meal replacement plan and switching to a low glycaemic diet (which he also called a modified Mediterranean diet) after the patient loses 5%-10% of initial weight.

2. Metabolic syndrome:
Diagnostic criteria for metabolic syndrome include an elevated waist circumference, triglyceride level above 3.9 mmol/L, an HDL cholesterol level less than 1.0 mmol/L for males or less than 1.3 mmol/L for females, blood pressure above 130/85 mm Hg, and fasting blood sugar above 5.6 mmol/L.

In these patients, foods that have a high glycaemic index cause blood sugar levels to plummet, boosting cravings for more high-glycaemic foods such as sugars and fat, Dr. Rigden said. He recommends what he calls a “caveman” diet of low-fat, non-starchy foods that he spells out for patients. After losing 10% of body weight, they switch to the low glycaemic diet.

He also recommends nutraceutical medical food with slow-release, amylose-resistant starch, and soluble fibre in the form of 15 g per day of guar gum. Micronutrient support may be the most undervalued component of therapy for these patients, he added.

3. Hormonal imbalances:
Questionnaires and physical exams will help identify the endocrine problems contributing to recalcitrant obesity in these patients. Most will be due to clinical or sub clinical hypothyroidism. This is probably the No. 1 hormonal imbalance that is seen in people who have switched metabolism. Other hormonal problems to consider in women include polycystic ovarian syndrome or a sex hormone imbalance with oestrogen dominance. Tailor treatment to the particular problem.

4. Food hypersensitivity:
These are not true allergies but hypersensitivities that can lead to switched metabolism, Rigden said. Wheat and milk are the most common reactors, with delayed physical findings - such as boggy nasal mucosa, mouth breathing, wheezing, eczema, or urticaria - appearing 24-72 hours after ingestion. IgG levels may help identify offending foods. Eliminate the problem foods from the patient’s diet for 90-120 days, then perform a careful challenge with the food, and urge minimal intake of problem foods thereafter.

5. Chronic illness:
Some patients complain that they never had weight problems until diagnosed with chronic fatigue syndrome, fibromyalgia, lupus, rheumatoid arthritis, irritable bowel syndrome, or other chronic problems.

In these patients, the liver’s detoxification abilities are impaired, leaving higher levels of toxins in the body that compromise fat metabolism, he said. Eliminate common dietary allergens such as gluten for 4 weeks and support liver detoxification with a hypoallergenic rice-based protein formula containing selected nutrients.

The lipid profile of someone with insulin resistance tends to be one with high triglycerides and low HDL cholesterol. In fact, a ratio of those two parameters is a good easy screen for insulin resistance— it should be 3.0 (or 1.8 in SI units), according to one study (Ann. Intern. Med. 2003;139:802-09).