Clinical strategies for managing the overweight neurology patient

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Summary

Obesity and excess body fat contribute to both the risk for and progression of several prevalent neurologic conditions. While obesity treatment is not generally considered part of the job description of the neurologist, we summarize the evidence for this important relationship, and describe ways that being mindful of diet and lifestyle factors in the neurologic patient can yield dividends for patient outcomes.

Obesity is a chronic, complex, multifactorial disorder¹ that has reached epidemic proportions in the United States. Currently, an estimated 68% of the population is categorized as overweight or obese, 34% as obese.² Obesity is associated with an increased risk of morbidity and mortality secondary to complicating conditions that include heart disease, diabetes, cancer, asthma, sleep apnea, osteoarthritis, reproductive complications, and psychological disturbances^{3,4} (table). Moreover, obesity is associated with greater degrees of inflammation and oxidative stress,⁵ which recently have been shown to underlie many chronic conditions, such as cardiovascular disease and cancer,⁶ as well as neurodegenerative diseases, like Alzheimer disease (AD),⁷ Parkinson disease,⁸ and cognitive decline.⁹ By being aware of a patient's diet and behaviors and making general recommendation, the engaged neurologist can have a considerable impact on health and wellness and in preventing neurologic conditions and complications such as cognitive decline⁹ and the risk of falls.¹⁰

Are neurology patients at higher risk of developing obesity?

Aside from the risk of certain medications promoting weight gain, neurology patients are generally not at higher risk of developing obesity. However, subsets may be at higher risk (e.g., developmentally disabled patients) and obesity seems to be a risk factor for MS (RR

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Table Major health risks of obesity

Type 2 diabetes
Hypertension
Coronary artery disease
Dyslipidemias
Stroke
Carcinoma (especially endometrial, colorectal, esophageal, postmenopausal breast)
Multiple sclerosis
Alzheimer disease
Sleep apnea
Gallbladder disease
Gastroesophageal reflux disease
Nonalcoholic fatty liver disease
Osteoarthritis
Gout
Infertility
Thromboembolism

~2.0 of being obese), particularly in young women,¹¹ chronic migraine, and chronic daily headaches (RR ~5).^{12,13}

Obesity is a risk factor for a few common neurologic diseases. Obesity (in particular abdominal/visceral obesity) has been found to be a risk factor for dementia in later life^{14,15} as well as a risk factor for stroke (relative risk 1.5–2.0),¹⁶ cognitive decline,^{17–19} depression,¹⁸ and AD.²⁰

There is growing evidence that AD, the most common cause of dementia in the United States, is fundamentally a metabolic disease.⁷ Whether the underlying problem stems from a primary disorder of the CNS, or secondary systemic effects from obesity or metabolic syndrome, the end result is progression of AD.²⁰

Increased oxidative stress due to increased obesity or increased adiposity trigger apoptotic pathways leading to neuronal senescence and cognitive decline.²¹ Weight reduction reduces metabolic syndrome, and therefore possibly reduces the risk of stroke,¹⁶ cognitive decline,²¹ and AD.^{8,20}

Certain neurology patients are at higher risk of injury related to falls. Obesity appears to be associated with greater risk of falling in older adults, as well as a higher risk of disability after a fall compared to normal-weight respondents (odds ratio [OR] = 1.17, 95% confidence interval [CI] = 1.02–1.34; OR = 1.39, 95% CI = 1.10–1.75, respectively).¹⁰ Severe obesity (body mass index ≥ 40 kg/m²), however, was associated with a reduced risk of injury from a fall,¹⁰ though it is not as protective as previously thought, according to the Global Longitudinal study of Osteoporosis in Women.²² This study, conducted among 60,393 women aged ≥ 55 years, showed that obesity was not protective against fracture and was associated with increased risk of ankle and upper leg fractures.²²

Prevention is the key to reducing obesity-related neurologic complications, cognitive decline, and the risk of injury due to falls. Questioning your patients about their diet, physical activity, and lifestyle may enhance the care you provide.

Medical assessment

Overweight is defined as a BMI of 25 to 30 kg/m², obesity 30+ kg/m², and extreme (formerly called morbid) obesity a BMI of 40+.² BMI may be a poor reflector of the

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actual degree of adiposity in very muscular individuals (e.g., certain types of athletes and laborers) and may understate adiposity in very sedentary individuals with little muscle mass.

To assess regional distribution of fat: central (visceral) deposition of fat (the “apple shape” pattern), seen more commonly in men, increases risk, while excess fat in the lower body (thighs, hips, and buttocks), seen more commonly in women (the “pear shape” pattern), is associated with a lower risk of such complicating conditions. A waist circumference of more than 40 inches for men and more than 35 for women defines abdominal obesity,²³ and can be measured with a measuring tape around the widest point above the navel. Fortunately, this metabolically active abdominal fat is usually first to diminish with weight loss. Medical benefits can be expected with weight loss in many of those with medical complications of obesity. For example, patients with type 2 diabetes can often discontinue insulin or oral agents, anti-hypertensive medications may become unnecessary, and sleep apnea usually disappears with as little as a 10% to 15% loss of initial weight.²⁴

Medical history

The history should assess for precipitants of weight gain (i.e., job change and disordered eating and dietary patterns) and secondary (and potentially treatable) causes of obesity. These include endocrine disorders, such as hypothyroidism, hyperadrenalism, and neuroendocrine tumors (although even the most common of these, hypothyroidism, is rarely a significant cause of obesity in adults); psychiatric disorders; and pharmacologic agents, such as sulfonylureas, insulin, steroids, most antipsychotics, and certain antidepressants. Unfortunately, neurology patients are often prescribed some of the most weight gain predisposing medications, particularly antiepileptic agents and steroids. Valproic acid has been linked with the highest rates of weight gain, both in children and in adults, though weight gain has also been reported fairly consistently with pregabalin, gabapentin, carbamazepine, and vigabatrin.²⁵ Weight loss is seen commonly with topiramate.²⁵ When choosing weight-affecting antiepileptic drugs, consider that this side effect may be desirable for overweight patients, but an adverse event for those at risk of malnutrition.

If a weight-challenging drug must be used, discuss the issue with the patient. Monitor weight and appetite (self-monitoring via a weekly weight log is useful). If >5 lb weight gain occurs, consider changing drugs.

The family history is of particular interest for endocrine disorders or extreme obesity, but it is rare to see a purely genetically determined case of obesity.

Laboratory examination

Laboratory evaluations should serve to screen for the complications of obesity. Blood chemistries should include, in particular, counts of fasting serum glucose, cholesterol and triglycerides, and liver tests. A thyroid-stimulating hormone (TSH) level should be obtained, and other endocrine and metabolic tests if there is clinical suspicion.

Behavioral assessment

Most obese individuals experience no more physical hunger than do lean people, but may misinterpret learned habits and situations that lead to eating as “hunger.” A major breakthrough in the ability to control unnecessary eating can result when individuals learn to accurately distinguish physiologic from learned forms of hunger.

The most common eating cues cited are as follows: habit (“It’s noon so I guess I’ll have lunch” or “I have a jelly doughnut and coffee in the car on the way to work”), stress (“I’ve got

to finish this paper, and eating while I write helps me concentrate”), boredom (“There’s nothing else to do”), emotions (“I eat when I’m depressed or upset”), and food as a reward (“After a hard day, I deserve a rich dessert”). The patient should be helped to recognize that using food to deal with stress, boredom, and emotions is, at best, ineffective. Some patients may benefit further by seeing a behavior psychologist.

Dietary assessment

Although most aspects of diet are more properly characterized as behaviors, the need remains to understand patients’ tastes and food choices. Although the physician can and should get some idea of the patient’s diet, a formal dietary assessment is best done by a dietitian, using either a prospective or retrospective food diary.

The results of a food diary must be interpreted with caution, as both retrospective underreporting and prospective restrained eating are more common among obese individuals (and may in fact explain some of the propensity toward obesity if the obese are less aware of the foods and quantities they choose).

The macronutrient composition of a patient’s diet will often be weighted toward fats, simple carbohydrates, and protein. By cutting fat and increasing intake of complex carbohydrates, especially vegetables and fruit, such patients can considerably increase the volume of food they consume as they attempt to reach and maintain a lower weight.

Exercise assessment

An exercise assessment should include an exploration of the patient’s usual degree of physical activity, limiting factors (such as joint disease, previous injuries, or environmental limitations), types of physical activity the patient finds enjoyable, and a measurement, preferably by an exercise specialist, of the current fitness level.

Treatment

For most patients, only a modest degree of weight loss is likely to occur. However, this should not be viewed as a failure or a waste of time. Current US guidelines on weight reduction recommend intensive lifestyle interventions that contain 3 key elements: balanced diet, increased physical activity, and behavior modification.

Dietary and behavior modification Behavior modification may include coupling strategies for controlling inappropriate eating cues with dietary changes that emphasize foods lower in fat and calories and higher in fiber and water content (i.e., low energy-density foods), so that lower dietary restraint is required to maintain a given intake. Skipping meals when the patient is physically hungry should be discouraged.

A helpful tool in altering the composition of the patient’s diet is the technique of gradual change. For example, a patient reluctant to switch from whole milk to skim milk could first try 2% milk, get used to this for a month or so, then move on to 1% fat milk for another month. This demonstrates that taste preferences are acquired and quite changeable, even in later life. Encourage the patient to explore the wide variety of foods now available and to focus on the good taste of the new choice rather than comparing it to the “real thing.” The patient should be taught to read labels and to stay within the calorie “budget.” For overweight patients, a caloric deficit of 500 to 750 calories per day to achieve 1 to 1.5 pounds of weight loss per week may be appropriate. A dietitian can design a low-calorie, food-based diet that is either balanced-deficit (reducing total number of calories while keeping proportions from carbohydrate, fat, and protein roughly the same as before), or fat-deficit, with most of the caloric reduction resulting from restriction of fat intake, or carbohydrate deficit. Also, a greater volume of food can be eaten on a diet that emphasizes fiber-rich complex and vegetable-source carbohydrates and reduces fat to 30% of calories consumed or less.

It is important, however, to recognize that at this level of caloric restriction it will take more than a year to attain a weight loss of 50 to 75 pounds. Few patients can sustain this degree of

Body mass index

The body mass index (BMI), or Quetelet index, is a heuristic proxy for human body fat based on an individual's weight and height. BMI does not actually measure the percentage of body fat. It was invented between 1830 and 1840 by the Belgian polymath Adolphe Quetelet during the course of his research on the

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restriction for that long; therefore, for a limited period of time, a physician-supervised very-low-calorie diet (VLCD) of fewer than 800 calories per day, or a slightly higher caloric intake low-calorie diet (LCD) may be appropriate.

Physical activity Despite the multiple medical benefits of exercise, exercise in the absence of concurrent dietary change is generally ineffective to lose weight for most people. This may be due to increased hunger secondary to exercise, partially or largely counterbalancing the calories burned in the exercise.

Exercise is, however, an excellent aid to maintaining a lower weight after weight loss, enabling a person to eat somewhat more than a nonexerciser and still maintain their weight. Regular aerobic exercise and strength training will also improve cardiovascular fitness, reduce adipose tissue depots (especially visceral fat), and promote growth of metabolically more active muscle tissue.

The first component of a plan to increase physical activity consists of increasing so-called “lifestyle” activity. Lifestyle activities include taking the stairs in gradually increasing increments, parking the car farther away from the destination, walking the dog farther, and the like. This step alone may double the level of physical activity in a very sedentary individual.

The next phase is a structured walking plan. A patient should make a minimum of 20 to 30 minutes available for each session of exercise. Studies suggest that an hour is best for weight control, and 90 minutes for weight loss.²⁶ The intensity of the exercise is not critical to the burning of calories: walking at a leisurely pace for 1 hour is roughly equal to walking briskly for half an hour. Allow the patient to set the pace. Have the patient keep a log of the time spent walking and the distance covered after each session. The patient can then see the progress being made and set the goal a bit higher regularly.

Next, the types of activities performed should be broadened. Recommend aerobics classes, stationary or outdoor bicycling, swimming, or just about anything else that will burn calories and be enjoyable to the patient. Strength/resistance training of large muscle groups is an important component to include, as this can build muscle mass and raise resting metabolic rate, an aid to future weight control. Again, the most important criterion for a good exercise plan is that it be one that the patient is likely to follow and be comfortable with as a lifelong habit.

Obesity drugs Adjunctive anorectic medications may be useful for the obese patient. The most commonly used anorectic drug is phentermine. An additional agent for weight loss is orlistat, which is sold by prescription as Xenical and, in a nonprescription strength, Alli. This is the only nonsystemically acting obesity medication currently. It acts in the lumen of the small bowel by binding to lipases, and thus causes malabsorption of about 25%–30% of ingested fat, depending on dosage.^{27,28} Along with dietary fats, these agents also block the absorption of cholesterol and fat-soluble vitamins, which requires multivitamin supplementation. While orlistat and Alli have no appetite-curbing effects, they may have a behavioral,

disulfiram (Antabuse)-like effect in that consumption of more than a moderate amount of fat at a sitting will result in unpleasant GI consequences. While not approved yet specifically for weight loss, topiramate is quite potent, particularly in concert with phentermine.

Due to a close existing therapeutic alliance with their long-term patients, neurologists are in a position of being able to positively influence their patients, either by practicing the principles of obesity treatment described above, or, at a minimum, encouraging the patient to consult/referring them to weight control specialists and programs.

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DISCLOSURES

Dr. Cheskin serves on a medical advisory board and as a consultant for Vivus, Inc.; serves on a scientific advisory board for Medifast, Inc.; receives research support from the McKesson Foundation; and has served as an expert witness in medico-legal cases. C.M. Sonzone is an employee of Medifast, Inc. Dr. Davis serves as a consultant for Medifast, Inc. and the Coleman Research Group and is a shareholder in Medifast, Inc.

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