Associations Between Body Mass Index and Risks in Elderly Patients With a First-Ever Acute Ischemic Stroke

In the December 9/23, 2002, issue of the ARCHIVES, in a prospective study by Kurth et al[1] it was clearly demonstrated that excess weight is a strong predictor of stroke (total, ischemic, and hemorrhagic) in men. Even though obesity is regarded as a modifiable risk factor of cardiovascular disease, it has been neglected in the overall stroke risk estimation over the past years.[2] Moreover, debatable data have been reported considering obesity and stroke in studies involving men and women.[3] In this regard, Dey et al[4] have recently shown that high values of waist circumference (≥99 cm) and body mass index (≥28 [calculated as weight in kilograms divided by the square of height in meters]) increase the risk for stroke in 70-year-old men but not in women.

We have recently concluded a population-based case-control study examining the characteristics and metabolic parameters (including lipid and nonlipid variables) in patients older than 70 years who were admitted due to first-ever acute ischemic (nonembolic, fatal, or nonfatal) stroke. We evaluated 163 elderly patients (88 men and 75 women; median age, 78 years) successively hospitalized in the University Hospital of Ioannina, Epirus, Greece, over a 5-year period in comparison with 166 subjects (87 men and 79 women; median age, 77 years) without a history of cardiovascular disease attending regional primary care facilities. All subjects resided in the prefecture of Ioannina (northwestern Greece), a nonindustrialized region of the country, where at least older persons (which comprise about 17% of the population) lead their lives in a Greek "traditional" way. In this area, eating habits in the elderly population have remained unchanged for years (ie, a Mediterranean diet, consisting of olive oil and minimal saturated fat consumption, which is similar to the National Cholesterol Education Program diet[5]). This is in contrast to a more westernized way of living followed by the urban younger population residing in the city of Ioannina. In logistic regression analysis, an association between excessive body weight and ischemic stroke was evident among subjects with a body mass index of 27 or greater (odds ratio, 1.24 [95% confidence interval, 1.05-1.56]; $P=.04$). This association was attenuated after controlling for age, sex, smoking habits, hypertension, diabetes mellitus, total cholesterol, triglycerides, and high density lipoprotein cholesterol (odds ratio, 1.15 [95% confidence interval, 0.85-1.53]; $P=.3$).

Considering the remarkable increase in the proportion of the elderly population throughout the industrialized world, it is becoming increasingly important for societies to reduce the burden of illness in their aging populations.[6] Since stroke is one of the leading causes of mortality in the developed countries, identifying overweight and obesity as modifiable risk factors might have an additive value in the overall stroke prevention.

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In reply

Milionis and colleagues' interesting data nicely complement our study results,[1] and emphasize that excess weight is an important modifiable risk factor for stroke. In their study, a body mass index (BMI) of 27 or greater was associated with a 24% increase in the risk of nonembolic ischemic stroke in the elderly compared with a BMI of less than 27.

When we used a BMI cut point of 27 or greater in our cohort, the effect of excess weight on ischemic stroke tended to be greater in younger than in older people. Among men who were younger than 70 years at baseline in 1982, for BMIs of 27 or greater, the age-adjusted relative risk was 1.57 (95% confidence interval, 1.28-1.92) compared with participants with BMIs less than 27. Interestingly, when we restricted our analyses to participants 70 years and older at baseline and used the BMI categorization of Milionis et al, our risk estimates were quite similar: after 12.5 years of follow-up, men with BMIs of 27 or greater had an age-adjusted 24% increase (relative risk, 1.24 [95% confidence interval, 0.82-1.88]) in the risk of ischemic stroke compared with participants with BMIs less than 27. Since our cohort included mainly middle-aged men, power was low for this age group. Additional adjustment for alcohol con-