

Weight Gain in Middle Age Raises Diabetes Risk

BY MARY ANN MOON

FROM JAMA

Weight gain and fat accumulation in both middle and older age raise the risk of diabetes, according to a prospective cohort study.

The links between overweight and diabetes, and between central adiposity and diabetes, are well known in younger adults but have not been fully explored in older adults, said Mary L. Biggs, Ph.D., of the University of Washington School of Public Health and Community Medicine, Seattle, and her associates.

They examined these associations using data on 4,193 subjects participating in the Cardiovascular Health Study, a prospective, longitudinal cohort study of people aged 65 years and older living in four communities in North Carolina, Maryland, Pennsylvania, and California. The subjects were enrolled beginning in 1989 and followed annually for a median of 12 years.

The mean age at baseline was 73 years; 59% of the subjects were women, and

Compared with people whose weight was stable, those who gained 9 kg or more between age 50 and study entry had about three times the risk of developing diabetes during follow-up.

10% were African American.

Changes in the participants' weight, body mass index, fat mass, waist circumference, waist-to-hip ratio, and waist-to-height ratio were documented from baseline onward, at ages 65 and older. The subjects also were asked to report body composition measures from when they were age 50, so that their BMI at age 50 could be calculated.

During follow-up, 339 subjects developed diabetes.

Measures of overall and of central adiposity both at both middle age (50 years) and older age (at least 65 years) were significantly associated with the risk of developing diabetes in men and women. Subjects in the highest category of adiposity had a two- to sixfold greater risk of incident diabetes than did those in the lowest category.

Similarly, the risk of diabetes rose monotonically with the amount of weight gained between age 50 and baseline. "Compared with participants whose weight remained stable [during that interval], those who gained 9 kg or more between the age of 50 years and study entry had an approximately threefold greater risk of developing diabetes during follow-up," Dr. Biggs and her colleagues said (JAMA 2010;303:2504-12).

"Participants who were obese (BMI greater than or equal to 30) at 50 years of age and who experienced the most weight gain (greater than 9 kg) between the age of 50 years and study entry had five times the risk of developing dia-

betes, compared with weight-stable participants with normal BMI (less than 25) at 50 years of age," they added.

Subjects in the highest categories of both BMI and waist circumference were more than four times as likely to develop diabetes as were subjects in the lowest categories of those measures.

The increased risk associated with adiposity appeared to wane as subjects aged, but even among participants aged 75

and older, those in the highest category of BMI still had double the risk of developing diabetes, compared with those in the lowest category of BMI.

The reason that diabetes risk declines somewhat after age 75 is not known. It is possible that anthropomorphic measures may not adequately quantify body fat at that age because of age-related changes in body composition, such as decreased muscle mass and decreased height.

"A second possibility is that regional fat distribution is more important in the etiology of diabetes than absolute fat mass," the researchers wrote. Another reason may be that the pathology of diabetes in older adults differs from that in younger adults.

Or it simply may be that people who are more susceptible to adiposity-related death do not survive into old age, resulting in selective survival of fitter peo-



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Humalog Important Safety Information

Contraindications

Humalog is contraindicated during episodes of hypoglycemia and in patients sensitive to Humalog or one of its excipients.

Warnings

Humalog differs from regular human insulin by its rapid onset of action as well as a shorter duration of action. Therefore, when used as a mealtime insulin, Humalog should be given within 15 minutes before or immediately after a meal.

Due to the short duration of action of Humalog, patients with type 1 diabetes also require a longer-acting insulin to maintain glucose control (except when using an insulin pump).

Glucose monitoring is recommended for all patients with diabetes.

The safety and effectiveness of Humalog in patients less than 3 years of age have not been established.

ple, said Dr. Biggs and her colleagues. The investigators were somewhat surprised to note that the risk of diabetes did not decline in subjects who lost weight during follow-up. Again, the reason is not yet known. "Older adults may lose proportionately more muscle mass with weight loss than younger ones, decreasing the accuracy of weight loss as a surrogate for loss of adipose tissue in older adults. Furthermore, the loss of skeletal muscle mass may decrease insulin sensitivity, negating the benefit derived from fat loss," they noted.

However, clinicians should note that the relation between weight loss and diabetes risk in older adults is complex, and "our results do not preclude the possibility that voluntary weight loss reduces the risk of diabetes in older adults," they added. This study was supported by the National Heart, Lung, and Blood Institute, the National Institute on Aging, the University of Pittsburgh Claude D. Pepper Older Americans Independence Center, and the National Institute of Neurological Disorders and Stroke. No financial conflicts of interest were reported. ■



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Important Safety Information, continued

Warnings, continued

There are no adequate and well-controlled clinical studies of the use of Humalog in pregnant or nursing women.

Starting or changing insulin therapy should be done cautiously and only under medical supervision.

Hypoglycemia

Hypoglycemia is the most common adverse effect associated with insulins, including Humalog. Hypoglycemia can happen suddenly, and symptoms may be different for each person and may change from time to time. Severe hypoglycemia can cause seizures and may be life-threatening.

Other Side Effects

Other potential side effects associated with the use of insulins include: hypokalemia, weight gain, lipodystrophy, and hypersensitivity. Systemic allergy is less common, but may be life-threatening.



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Important Safety Information, continued

Other Side Effects, continued

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