Central obesity and increased risk of dementia more than three decades later

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FROM ABSTRACT

Background:
Numerous reports show that a centralized distribution of adiposity is a more dangerous risk factor for cardiovascular disease and diabetes than total body obesity.

No studies have evaluated whether the same pattern exists with dementia.

The objective was to evaluate the association between midlife central obesity and risk of dementia three decades later.

Methods:
A longitudinal analysis was conducted of 6,583 members of Kaiser Permanente of Northern California who had their sagittal abdominal diameter (SAD) measured from 1964 to 1973.

Diagnoses of dementia were from medical records an average of 36 years later, January 1, 1994, to June 16, 2006.

Cox proportional hazard models adjusted for age, sex, race, education, marital status, diabetes, hypertension, hyperlipidemia, stroke, heart disease, and medical utilization were conducted.

Results:
A total of 1,049 participants (15.9%) were diagnosed with dementia.

Compared with those in the lowest quintile of SAD, those in the highest had nearly a threefold increased risk of dementia.

Those both obese and with high SAD had the highest risk of dementia, with an increased risk by 260%.

Conclusions:
Central obesity in midlife increases risk of dementia independent of diabetes and cardiovascular comorbidities.
Fifty percent of adults have central obesity; therefore, mechanisms linking central obesity to dementia need to be unveiled.

GLOSSARY
AD Alzheimer disease
BMI Body mass index
SAD Sagittal abdominal diameter

THESE AUTHORS ALSO NOTE:

“The abdominal distribution of body fat, referred to as central obesity, is an independent and more potent risk factor for type 2 diabetes, insulin resistance, coronary heart disease, stroke, and mortality than total body obesity.”

“Individuals with a healthy weight but with a centralized distribution of adipose tissue have a much higher risk of disease and death. This may be attributable in part to the role of intra-abdominal fat, also known as visceral adiposity, on metabolic abnormalities, which increases risk of diabetes and cardiovascular disease.”

“Visceral fat is more metabolically active than subcutaneous fat and is thought to have a stronger influence on adipocytokine production and insulin resistance.”

Obesity contributes to cognitive impairment.

“Obesity, as measured by body mass index (BMI), particularly in middle age, increases the risk of dementia, Alzheimer disease (AD), and neurodegenerative changes.”

“As people age, there is a greater accumulation of fat in the midsection accompanied by loss of bone and muscle mass, a condition referred to as sarcopenia.”

These authors measured central obesity by measuring sagittal abdominal diameter (SAD). SAD is the distance between the back surface and the top of the abdomen midway between the lower rib margin and the anterior superior iliac crest, measured after gentle expiration with the patient in a standing position using an anthropometer. High SAD was categorized as 25 cm or greater.

[This is a back to front measurement with a caliper device like chiropractors use to assess thickness prior to taking x-rays].

The BMI was calculated as weight in kilograms divided by height in meters squared.

RESULTS

“Those with central obesity were also more likely to have late-life heart disease and dementia.”
SAD increased risk of dementia in a dose dependent fashion vs those in the first quintile of SAD:
Those in the second quintile were 20% more likely to have dementia.
Those in the third quintile were 49% more likely to have dementia.
Those in the fourth quintile were 67% more likely to have dementia.
Those in the fifth quintile were 172% more likely to develop dementia.

DISCUSSION

“As is the case for diabetes and cardiovascular disease, central obesity is also a risk factor for dementia.”

“In this population-based diverse cohort of middle-aged adults followed for an average of 36 years, central obesity was associated with an increased risk of dementia independent of demographics, diabetes, cardiovascular comorbidities, and BMI.”

“For those with normal, overweight, or obese BMI, central obesity increased the risk of dementia.”

Those overweight or obese but without central obesity had an 80% increase in dementia risk.

Those overweight and with central obesity had a 134% increase in dementia risk.

Those obese and with central obesity had a 260% increase in dementia risk.

Even among those with a normal BMI, high central obesity is associated with an increased risk of dementia.

The presence of central obesity in someone of a healthy body weight could indicate early insulin resistance or metabolic syndrome.

Peripheral obesity [fat arms and thighs] is not associated with dementia.

A study found that women with both central obesity and in the highest quintile of BMI had a 29 times greater risk of diabetes vs those in the lowest quintile of BMI and central obesity.

The central adiposity measurement “reflect a lifetime exposure to an altered metabolic and inflammatory state induced by high visceral adiposity.”

“There are several toxic effects of visceral adipose, which is a metabolically active endocrine tissue secreting several inflammatory cytokines and hormones.”
"The harmful effects of central obesity on the brain may start long before clinical signs of dementia appear and are not limited only to those who are overweight."

"In summary, these results contribute to a recent but growing body of evidence that a centralized distribution of adiposity is particularly dangerous, even for those who are not overweight, and that the brain may also be a target organ to the harmful effects of central obesity."

"Our findings imply that central obesity may contribute to a degree of cognitive aging.

KEY POINTS FROM DAN MURPHY

GLOSSARY
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BMI Body mass index
SAD Sagittal abdominal diameter

1) "Numerous reports show that a centralized distribution of adiposity is a more dangerous risk factor for cardiovascular disease and diabetes than total body obesity."

2) "Central obesity in midlife increases risk of dementia independent of diabetes and cardiovascular comorbidities."

3) "Fifty percent of adults have central obesity; therefore, mechanisms linking central obesity to dementia need to be unveiled."

4) "The abdominal distribution of body fat, referred to as central obesity, is an independent and more potent risk factor for type 2 diabetes, insulin resistance, coronary heart disease, stroke, and mortality than total body obesity."

5) "Individuals with a healthy weight but with a centralized distribution of adipose tissue have a much higher risk of disease and death."

6) "Visceral fat is more metabolically active than subcutaneous fat and is thought to have a stronger influence on adipocytokine production and insulin resistance."

7) Obesity contributes to cognitive impairment.

8) "Obesity, as measured by body mass index (BMI), particularly in middle age, increases the risk of dementia, Alzheimer disease (AD), and neurodegenerative changes."
9) “Those with central obesity were also more likely to have late-life heart disease and dementia.”
10) SAD increased risk of dementia in a dose dependent fashion vs those in the first quintile of SAD:
Those in the second quintile were 20% more likely to have dementia.
Those in the third quintile were 49% more likely to have dementia.
Those in the fourth quintile were 67% more likely to have dementia.
Those in the fifth quintile were 172% more likely to develop dementia.

11) “As is the case for diabetes and cardiovascular disease, central obesity is also a risk factor for dementia.”

12) “In this population-based diverse cohort of middle-aged adults followed for an average of 36 years, central obesity was associated with an increased risk of dementia independent of demographics, diabetes, cardiovascular comorbidities, and BMI.”

13) “For those with normal, overweight, or obese BMI, central obesity increased the risk of dementia.”

14) Those overweight or obese but without central obesity had an 80% increase in dementia risk.

15) Those overweight and with central obesity had a 134% increase in dementia risk.

16) Those obese and with central obesity had a 260% increase in dementia risk.

17) Even among those with a normal BMI, high central obesity is associated with an increased risk of dementia.

18) Peripheral obesity [fat arms and thighs] is not associated with dementia.

19) The central adiposity measurements “reflect a lifetime exposure to an altered metabolic and inflammatory state induced by high visceral adiposity.”

20) “There are several toxic effects of visceral adipose, which is a metabolically active endocrine tissue secreting several inflammatory cytokines and hormones.”

21) “The harmful effects of central obesity on the brain may start long before clinical signs of dementia appear and are not limited only to those whom are overweight.”

22) “In summary, these results contribute to a recent but growing body of evidence that a centralized distribution of adiposity is particularly dangerous, even for those who are not overweight, and that the brain may also be a target organ to the harmful effects of central obesity.”