Why do some groups have increased risk for Alzheimer’s Disease?

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OVERVIEW

Brief Review Definitions:

• Dementia
• Alzheimer’s disease dementia

Historical perspective

NOTE: Will refer to Alzheimer’s disease as AD
OVERVIEW

Risk related to race and ethnicity:
  • African Americans
  • Native Americans
  • Hispanic

Why some groups are at greater risk than others
  • Link between diabetes and AD
Q: What is Dementia?

Answer: A syndrome

Criteria:

- Change from baseline
- Affecting day to day life
- Deficits in 2 or more cognitive domains
- Not explained by something else, e.g., depression, delirium
What is Alzheimer’s

Most common cause of dementia

Clinically:

• Slow, insidious onset
• Progressive decline
• Characteristic pattern of memory & thinking changes
What causes Dementia?

- Alzheimer's Disease (AD): 65%
- AD & Vascular: 10%
- Lewy body: 7%
- AD and Lewy body: 5%
- Vascular: 5%
- Other: 8%

Adapted from figure on www.alz.org
What is Alzheimer’s

Most common cause of dementia

Neuropathologically:
- Atrophy (cell death)
- Beta Amyloid plaques (senile plaques)
- Neurofibrillary tangles (hyperphosphorylated tau)
- Inflammation
Frau Auguste D. arrived at asylum in 1901

d. April 1906; Alzheimer’s presents case in Nov 1906
Dr. Alzheimer first to describe tangles. “We must not be satisfied to force it into the existing group of well known disease patterns.”
What is Alzheimer’s
Historical Perspective

Alzheimer’s disease was a *presenile dementia* (onset before age 65)

Dementia after the age of 65:
- Senile Dementia
- Chronic Brain Syndrome
- Hardening of the Arteries

*Alzheimer’s disease was Rare*
Historical Perspective

1968-70: Series of papers – most cases of “Senile Dementia” = Alzheimer’s disease (Blessed et al.)

Alzheimer’s disease is a Common Disease
What is Alzheimer’s
Percent Change in Deaths due to disease 2000-2010

Data adapted from 2014 Alz. Dis. Facts and Figures, and Nat’l Center for Health Statistics
OVERVIEW

Risk related to race and ethnicity:
- African Americans
- Native Americans
- Hispanic

Why some groups are at greater risk than others
- Link between diabetes and AD
Proportion of People Age 65 and older with Alzheimer’s Disease and other Dementias*

From Gurland et al. Alz. Assoc. AD Facts and Figures 2014
http://www.alz.org/alzheimers_disease_facts_and_figures.asp
Native Americans, Alaskans, and African Americans have increased odds of developing early onset AD (Chen and Panegyres; 2016)
Native Americans, Alaskans, and African Americans have increased incidence of dementia compared to Asian Americans (Mayeda et al; 2016)
Putting findings from **Mayeda et al.** and Chen and Panegyres together
Why are AA & NA at greater risk than whites?

Look at risk factors in general:
- Age
- Female gender
- Genetic risks
- Low education
- Cardiovascular risk factors:
  - High Blood Pressure
  - High cholesterol
  - Diabetes
  - Insulin resistance
Diabetes

- Problem that causes **blood sugar** levels to rise higher than normal.

- Body does not use **insulin** properly: insulin resistance.

- At first, pancreas makes extra insulin to make up for it.

- Over time pancreas can’t keep up and can’t make enough insulin to keep your blood sugar normal.

- **Type 2 diabetes** is the most common.
• 29.1 million Americans (9.3% of population) have diabetes.
• Percentage of Americans age 65 and older with diabetes: 25.9%
• Pre-diabetes: 86 million Americans age 20 and older
A link between Alzheimer’s and diabetes?

Your brain needs sugar and insulin, but not too much.
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![Brain Images](image1)

![Brain Images](image2)

![Brain Images](image3)
Birdsill et al. (2013). Low cerebral blood flow is associated with lower memory function in metabolic syndrome. Obesity (Silver Spring): 21(7): 1313-20


Willette et al. (2014). Insulin resistance predicts brain amyloid deposition in late middle-aged adults. Alzheimer's & Dementia
Why are diabetes and brain changes linked?

- Blood vessels may be damaged
- Similar factors may contribute to both diabetes and Alzheimer’s
- Abnormal levels of insulin or sugar in the brain
What leads to increased blood sugar/diabetes?

• Family history
• Foods/diet
• Physical Activity
• Sleep
• Stress
• Where you live
I have diabetes – will I get Alzheimer’s dementia?

• No!

• “Double the risk” could still mean only a slightly greater risk...

http://www.giaging.org/resources/gia-toolkit/start-funding-aging/choose-a-focus/
Risk factors

- You can do all the right things and still get the disease
Need more AA and NA participants

In the Kaiser Permanente study; >280,000 subjects
  206,490 Whites
  21,000 Latinos
  18,778 African Americans
  4543 Native Americans

In the Alzheimer’s Disease Centers; >11,000 participants
  26,641 Whites
  2533 Latinos
  4211 African Americans
  174 Native Americans
Patients with AD willing to be in a survey study

Patients with AD willing to be in a Clinical study

Everybody with AD in UW 5.3 million

AD patients accurately identified in medical records
Thank you