Alzheimer Disease
Preventing Risk Factors Studies
Similarity to heart Risk Factors

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Introduction

• Extensive clinical and statistical studies have identified several factors that increase the risk of coronary heart disease and heart attack. Major risk factors are those that research has shown significantly increase the risk of heart and blood vessel (cardiovascular) disease.
• Investigating risk factor in people, to know if they are the same for Alzheimer’s disease.

What are the major risk factors that can’t be changed?

• Increasing age — Over 83 percent of people who die of coronary heart disease are 65 or older. At older ages, women who have heart attacks are more likely than men are to die from them within a few weeks.
• Male sex (gender) — Men have a greater risk of heart attack than women do, and they have attacks earlier in life. Even after menopause, when women’s death rate from heart disease increases, it’s not as great as men’s.
• Heredity (including Race) — Children of parents with heart disease are more likely to develop it themselves. Most people with a strong family history of heart disease have one or more other risk factors. As with, you can’t control your age, sex and race, you can’t control your family’s history. Therefore, it’s even more important to treat and control any other risk factors you have.

What are the major risk factors treat or control by changing lifestyle or taking medicine ?

• Tobacco smoke — Smokers risk of developing coronary heart disease is 2-4 times that of nonsmokers. Cigarette smoking is a powerful independent risk factor for sudden cardiac death in patients with coronary heart disease; smokers have about twice the risk of nonsmokers. Cigarette smoking also acts with other risk factors to greatly increase the risk for coronary heart disease.
People who smoke cigarettes or pipes seem to have a higher risk of death from coronary heart disease (and possibly stroke) but their risk isn’t as great as cigarette smokers. Exposure to other people’s smoke increases the risk of heart disease even for nonsmokers.
• High blood cholesterol — As blood cholesterol rises, so does risk of coronary heart disease. When other risk factors (such as high blood pressure and tobacco smoke) are present, this risk increases even more. A person’s cholesterol level is also affected by age, sex, heredity and diet.
• High blood pressure — High blood pressure increases the heart’s workload, causing the heart to thicken and become stiffer. It also increases your risk of stroke, heart attack, kidney failure and congestive heart failure. When high blood pressure exists with obesity, smoking, high blood cholesterol levels or diabetes, the risk of heart attack or stroke increases several times.
• Physical inactivity — An inactive lifestyle is a risk factor for coronary heart disease. Regular, moderate-to-vigorous physical activity helps prevent heart and blood vessel disease. However, even moderate-intensity activities help if done regularly and long term. Physical activity can help control blood cholesterol, diabetes and obesity, as well as lower heart blood pressures in some people.
What are the major risk factors treat or control by changing lifestyle or taking medicine II?

- **Obesity and overweight** — People who have excess body fat — especially if a lot of it is at the waist — are more likely to develop heart disease and stroke even if they have no other risk factors. Excess weight increases the heart's work. It also raises blood pressure and blood cholesterol and triglyceride levels, and lowers HDL ("good") cholesterol levels. It can also make diabetes more likely to develop. Many obese and overweight people may have difficulty losing weight.

- **Diabetes mellitus** — Diabetes seriously increases risk of developing cardiovascular disease. Even when glucose (blood sugar) levels are under control, diabetes increases the risk of heart disease and stroke, but the risks are even greater if blood sugar is not well controlled. About three-quarters of people with diabetes die of some form of heart or blood vessel disease.

- **What other factors contribute to heart disease risk?** Individual response to stress may be a contributing factor. Some scientists have noted a relationship between coronary heart disease risk and stress in a person's life, their health behaviors and socioeconomic status. These factors may affect established risk factors. For example, people under stress may overeat, start smoking or smoke more than they otherwise would.

- **Drinking too much alcohol** can raise blood pressure, cause heart failure and lead to stroke. It can contribute to high triglycerides, cancer and other diseases, and produce irregular heartbeats. It contributes to obesity, alcoholism, suicide and accidents.

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Objectives

- Using statistical approximation, knowing if is it possible to merge heart risk factors be the same alzheimer’s disease
- Controlling the progressive decline in memory
- Neuropsychologic test in 440 subjects
- CT, PET, MRI, non invasive studies
- Subjects from 35 to 75 years old male and female

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Hypothesis

- Are heart risk factors the same for Alzheimer disease?
- Are the Alzheimer disease hereditary?
- Is it possible to use the same clinical criteria using heart risk factors?
- Is there any way to prevent Alzheimer disease controlling blood pressure, blood cholesterol and triglyceride levels?

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Material and Methods

- 440 subjects from 35 to 75 years old male and female
- Specific neuropathology of senile plaques and neurofibrillary tangles, both entities are caused by the deposition of abnormal proteins.
  - In the case of senile plaques, the abnormal protein is amyloid, in the case of neurofibrillary tangles, the abnormal protein is designated as tau. Both tau and amyloid assemble into insoluble aggregates of neurofibrillary tangles and senile plaques that destroy neurons.
  - For reasons that are not fully known, both proteins are deposited along the course of cortical memory pathways dominated by pyramidal cells and cause neuronal destruction along these pathways. Senile plaques, which are extraneuronal in location, initiate an inflammatory response that destroys neurons by lysis of cell membranes of adjacent neurons and their dendrites.
Material and Methods I
Cross-sectional imaging techniques such as CT and MRI provide a valuable noninvasive method for detection of the cortical atrophy that is typically seen in Alzheimer’s disease. MR spectroscopy and metabolic imaging techniques, such as positron emission tomography (PET), are even more specific and provide evidence of unique metabolic changes in memory pathways, thus supplying a wealth of new information for investigators.

Material and Methods II
Newer imaging techniques, such as brain activation studies, may provide even greater diagnostic accuracy and at an early stage of the disease. By quantifying the progression of neuronal loss or dysfunction, these imaging techniques also allow investigators to monitor the disease increase in subjects.

CT - (Computed Tomography)
Computed tomography (CT) imaging, also referred to as a computed axial tomography (CAT) scan, involves the use of rotating x-ray equipment, combined with a digital computer, to obtain images of the body.

MRI (Magnetic Resonance Imaging)
Produces images which are the visual equivalent of a slice of anatomy.
SPECT (Single Photon Emission Computed Tomography)

Provides 3-D computer-reconstructed images of multiple views and function of the organ being imaged.

Problems

• Define the exactly show of subjects that covered all the hypothesis
• Maintaining the same subjects over 10 / 20 years in order to following the investigation results
• Define correctly the geographic covered, and type of human race.