STRESS & DEMENTIA
Exploring Distress and Distress Prone Personality
As A Risk Factor For Dementia

Amanda Berg, June 23, 2010
OUTLINE

- Risk Factors For Dementia
- Personality types as a marker for chronic stress
- Research
  - Personality as a Risk Factor for Dementia
  - Distress as a Risk Factor for Dementia
- Theories on Pathophysiology
- Implications for clinical practice
MODIFIABLE MIDLIFE RISK FACTORS FOR LATE-LIFE DEMENTIA

- Education, complex occupation
- Blood Pressure, Cholesterol, Diabetes Mellitus, Obesity, smoking cessation.
- Head Injury
- Depression
- Physical Activity, Cognitive Activity Social Activity
- Light to moderate alcohol consumption
- Avoid post-menopausal reproductive hormone therapy
- Personality

PERSONALITY

Aspects include

- How people tend to think of themselves
- How they relate to people
- How they interpret and deal with events in the environment
- How they react emotionally to a situation.

Personality Disorder vs. Personality Traits.

extraversion, neuroticism, agreeableness, openness, conscientiousness.
NEUROTICISM

- Tendency to experience negative emotions
  - Anger, anxiety, guilt, depressed mood
- Those who score high tend to be
  - Sensitive/Nervous as opposed to secure/confident
  - emotionally reactive
  - vulnerable to stress
- Associated with lower effectiveness in managing stress
CONSCIENTIOUSNESS

Trait of being:
- careful,
- self disciplined
- thorough, organized,
- think carefully before acting
- need for achievement.
- Efficient/organized as opposed to easy going/careless
EXTROVERSION

- Characterized by
  - Positive emotions
  - Tendency to seek out stimulation
  - Tendency to seek out company of others
  - Energetic/outgoing as opposed to shy/reserved
PERSONALITY TRAITS & LONGEVITY

- The Nun Study
  - Positive Emotions in Early Life and Longevity
  - Handwritten autobiographies 180 nuns
  - Positive emotional content – step wise decrease in risk of mortality.

DO PERSONALITY TRAITS PREDICT THE OCCURRENCE OF ALZHEIMER’S DISEASE

- 56 probable Alzheimer’s Disease & 65 controls with Parkinson’s Disease.
- Pre-morbid personality traits were assessed using a standardized personality test completed by a close relative.
- Reference time frame 3 years prior to dementia or EPS.
- Patients with AD had significantly higher neuroticism.
- The patients did not differ from the controls in frustration tolerance, extraversion or rigidity.

PERSONALITY AND RISK OF COGNITIVE IMPAIRMENT 25 YEARS LATER

- 4039 subjects in the Swedish Twin Registry
- Neuroticism and extroversion scores were collected in 1973 at midlife
- Cognitive impairment was assessed in the same group 25 years later

1) Greater neuroticism was associated with higher risk of cognitive impairment controlling for age, gender and level of education, smoking, and alcohol use

2) Moderate extraversion and decreased risk of cognitive impairment

3) High neuroticism/low extraversion conferred significant high risk

CHRONIC DISTRESS AND INCIDENCE OF MILD COGNITIVE IMPAIRMENT

- Participants in the Religious Orders Study
- N=1256 without cognitive impairment at baseline
- Completed 6 item measure of neuroticism
  - indicator of tendency to experience psychological stress
- During 12 year follow up 38% developed MCI
- Risk of MCI increased by about 2% for each one point in increase on the distress scale
- Overall, a person scoring in the 90th percentile 42% more likely to develop MCI than someone in the 10th percentile.

Chronic Distress and Incidence of Mild Cognitive Impairment

- Adjustment for depression symptoms did not affect the risk.
- Depressive symptoms were also related to risk of MCI but not after controlling for distress score.
CHRONIC DISTRESS, AGE-RELATED NEUROPATHOLOGY AND LATE-LIFE DEMENTIA

- ?common neuropathology accounting for relation of chronic distress and dementia
- 210 autopsies.
- Levels of amyloid-beta and tau-positive neurofibrillary tangles and lewy bodies were quantified.
- Higher level of chronic distress was associated with higher likelihood of dementia and lower level of cognition proximate to death.
- Chronic distress was not correlated with any form of neuropathology, including limbic, neocortical and global indices
- Novel neuro-deteriorative mechanism may be involved

CONSCIENTIOUSNESS AND THE INCIDENCE OF ALZHEIMER DISEASE AND MILD COGNITIVE IMPAIRMENT

- 997 older catholic nuns, priests and brothers
- 12 year follow-up
- 176 people developed Alzheimer’s Disease
- Conscientiousness had been assessed at baseline
- Hazard of AD decreased by more than 5% for each additional point on the conscientiousness scale
- Also associated with decreased incidence of mild cognitive impairment and reduced cognitive decline
- Conscientiousness was unrelated to neuropathology measures

Midlife Neuroticism and the Age of Onset of Alzheimer’s Disease

- Case comparison study of 213 patients with probable AD.
- Age of onset and retrospective Personality Inventory by two knowledgeable informants.
- Midline neuroticism predicted younger age of dementia onset in females but not males.
- Was equivalent to a difference of almost 2 years in age of onset across the quartiles for Neuroticism.

MIDLIFE PSYCHOLOGICAL STRESS AND RISK OF DEMENTIA: A 35 YEAR POPULATION STUDY

- Prospective Population Study of Women in Gothenburg
- 1462 females aged 38-60 were assessed for psychological distressed with a standardized question
  - 1968, 1974, 1980
- During 35 year follow-up 161 developed dementia
- Risk of dementia was increased in females reporting frequent/constant stress
- Reporting stress at one, two or three examinations was related to a sequentially higher dementia risk. HR (1.10, 1.73, 2.51)

Brain (May 2010) Johansson et. al.
What is the Mechanism.

- Chronic psychological stress
  - Neurodegenerative effect.
  - Overactivation of hypothalamic-pituitary-adrenal axis and sympathetic nervous system
  - Overproduction of cortisol,
  - Structural and functional damage to the hippocampus
  - Pro-inflammatory cytokines
  - Brain volume - reduced cerebral reserve

- Experience of stress as an early symptom, in the pre-clinical stage

- Vulnerability to stress may be both a cause and a consequence of lifestyle factors which may mediate the association
IMPLICATIONS FOR PRACTICE

- Interesting research but difficult to apply when assessing patients for dementia
- No suggestion that the increased distress measured in the study correlates to Personality Disorder that psychiatrists might treat.
- Personality is not easily “modifiable” in the first place
- Part of a greater trend in research looking at health implications of chronic stress.
  - Overall may lead to more research in detecting and managing chronic stress and understanding the pathophysiology of chronic stress related health complications
SUMMARY

- Multiple studies suggest an association between neuroticism score and risk for dementia
- Less robust evidence conscientiousness as a protective factor for dementia does exist.
- No neuropathological correlation has been found
- Multiple theories regarding the pathophysiology of the association.
- Part of an emerging area of research.