“What is Dementia? How Do You Prevent It? How Do You Treat It?”

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July 2012
Presented to Rotary Club of Ottawa South
Disclosure:

I bought a treadmill for Christmas.
Izzie Stephens: “Maybe I should have gone into geriatrics. No one minds when you kill an older person.”
Alex Karev: “Geriatrics is for freaks who live with their mothers and never had sex.”
COUNT THE NUMBER OF “F’s” ON THIS SLIDE

FINISHED FILES ARE THE RESULT OF YEARS OF EXPERIENCE COMBINED WITH MONTHS OF SCIENTIFIC RESEARCH
What is Dementia?

Dementia is a set of symptoms, which includes loss of memory, understanding, and judgment.
Dementia – not a disease, but a set of symptoms that accompanies a disease

- Alzheimer’s Disease
- Mixed Dementia
- Lewy Body Dementia
- Frontotemporal Dementia
- Vascular Dementia
The Amyloid Hypothesis

- The degeneration in AD is caused by the build-up of the amyloid in plaques, and this in turn causes the cells to die.
- If you could stop the amyloid from building up, then you could halt the disease.
- Amyloid build-up is the ‘prime mover’ in the degeneration of AD.
Hippocampal Volume in Alzheimer’s Disease

Dark lines cross the thinnest width of the hippocampus and arrowheads indicate hippocampal boundaries.

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SPECT scan of normal control vs AD

Normal Control

Alzheimer’s Disease

Sandra E. Black-S&W-U of T
Vascular Dementia

- Result of a single or multiple stroke
- Stroke causes loss of blood flow to the affected area
- Single strokes can occur in different areas of the brain
- Strokes can have a cumulative effect
- Risk factors include: high blood pressure, narrowing of the arteries, heart disease or diabetes
Overlap Between Alzheimer’s Disease (AD) and VaD

Cholinergic deficit

Probable Possible Mixed Possible Probable

AD
Amyloid plaques Genetic factors Neurofibrillary tangles

Mixed
AD/VaD
Amyloid plaques Genetic factors Neurofibrillary tangles Stroke/TIA Hypertension Diabetes Hypercholesterolemia Heart disease

VaD
Stroke/TIA Hypertension Diabetes Hypercholesterolemia Heart disease

Risk Factors We Can’t Control

- Age
- Parents/Genetics
- Down’s Syndrome
Alzheimer’s And Stroke Share Common Risk Factors

- High Blood Pressure
- High Cholesterol
- Diabetes
- CVA
- MI
- CHF

Other Risk Factors

- Head trauma
- Low education
- Psychiatric factors
- New onset depression in old age
- Delirium
You have a very rare condition we call "Good Health." Cigarettes & fast food should take care of it fairly quickly & we'll see you again in six months.
Preventing Alzheimer’s Disease and Cognitive Decline

(Agency for Healthcare Research and Quality/U.S. Dept. of Health and Human Services)

Read ALL 727 pages.

Brain Fitness Approaches

- Cognitive exercises and training
- Nutritional choices
- Lifestyle decisions
- Physical exercise
- Neuroprotective agents
- Neuroenhancing drugs
Healthy Brain Diet

- Moderate caloric intake to avoid illnesses associated with obesity
- Antioxidant foods
  - Berries, raisins
  - Green leafy vegetables, tomatoes
- Omega-3 fatty acids
  - Mediterranean diet: cold water fish, olive oil
  - Avoiding animal fats
- Avoid blood glucose spikes (low glycemic index carbs)

Brain Fitness: Lifestyle Choices

- Physical exercise
- Social engagement
- Recreational activity
- Exposure to novel situations
- Stress level
- Work complexity

Brain Fitness: Physical Exercise Studies

- 6 months of moderate levels of aerobic exercise produce significant improvements in cognitive functioning
- Greatest impact is on executive control
- Correlated with altered brain activity measures
- Increases in prefrontal and temporal grey matter volume

Exercise and the Aging Brain

1. Walking 1 hour a week vs talking decreased dementia at 3 years by 30%.
2. Walking 1 hour a week increased hippocampal volume 1% in a year vs control group decrease 2%
3. 30 trial meta-analysis of effects of exercise training in elderly persons with CI and dementia
   - Statistically significant benefits A,B,C (MMSE 16)
How to Avoid Getting Dementia

1. Recognize and treat ALL VRFs (vascular risk factors)
2. Go play outside: Exercise: walking and pumping
3. Stay in school…and keep learning
4. Wear a helmet
5. Eat like your Italian Momma
How to Avoid Getting Dementia

6. Go find a nice girl or boy (and get married)

7. I love to cook with wine and SOMETIMES I even put it in the food.

8. Don’t smoke or roll in the grass.

9. Go play with your friends.

10. Don’t Worry…Be Happy
"The game has been postponed."
Texting for Seniors

1. ATD – At The Doctor’s
2. DWI – Driving While Incontinent
3. LMDO – Laughing My Dentures Out
4. LOL – Living on Lipitor
5. TOT – Texting on Toilet
6. WTP – Where’re the Prunes
7. GGLKI – Gotta Go, Laxative Kicking in!
NORMAL AGING

- Many complain of decreased ability to remember things esp. names BUT
  - Typically the information comes to the individual later
  - THE changes do not interfere with function/occupation
  - The changes are not progressive
Continuum of Cognitive Function with Aging

Normal

Mild Cognitive Impairment (MCI)

Dementia
MCI = Mild Cognitive Impairment

- 10% of elderly
- Not as sharp as 1 year ago
- Not dementia but high risk to progress to dementia
1. Normal Aging Changes: Memory
3. Dementia is COGNITIVE LOSS CAUSING FUNCTIONAL LOSS.
Whatever happened to our sexual relations?

I don't know. I don't even think we got a Christmas card from them this year.

James and Loretta
Case Study: Mrs. Green

A 80 year old female with BP 165/85 and no family history of dementia

Question #1: IS HER RISK OF DEMENTIA

1. <10%
2. 10-20%
3. 20-30%
4. Over 30%
The Doubling Rule (Think 2) For Dementia Risk

<table>
<thead>
<tr>
<th>Age</th>
<th>Risk</th>
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<tbody>
<tr>
<td>&lt; 65</td>
<td>1%</td>
</tr>
<tr>
<td>65</td>
<td>2%</td>
</tr>
<tr>
<td>70</td>
<td>4%</td>
</tr>
<tr>
<td>75</td>
<td>8%</td>
</tr>
<tr>
<td>80</td>
<td>16%</td>
</tr>
<tr>
<td>85</td>
<td>32%</td>
</tr>
</tbody>
</table>

- Risk **Doubles** every 5 years.
- But each additional risk factor approximately **doubles** the risk.
- +ve family history **doubles** the risk.
Dementia Quick Screen: 2 Minutes

- 3 item recall (0-1 correct: OR 3.1)
- Animals in 1 minute (<15: OR 20.2)
- Clock drawing (abnormal: OR 24)
Triple Therapy In Dementia

**Prevent the Preventable**
- Lifestyle changes
- Antihypertensive
- Antidiabetic
- Antiplatelet
- Antilipemics
- Anticoagulants
- Antidepressant

**Treat the Treatable**
- A trial in all patients with a cholinesterase inhibitor
- A trial with Ebixa in mod-severe disease

**Care for the Caregivers**
- Referral to Alzheimer Society
- Home support
- Respite
- Recognize and change caregiver burden/stress/depression
Treatment: Cholinesterase Inhibitors (CI)

- Three medications with this mechanism now approved for use in Canada for AD
  - donepezil (Aricept)
  - galantamine (Reminyl)
  - rivastigmine (Exelon)

- All have been evaluated with randomized double blind placebo controlled trials
Expectations

Non-Responder
(Continued worsening)

Super Responder
(Much better)

Responder
Average response = mild improvement or same for 1 year (Brain Cancer)
Memantine (EBIXA)

- Approved in Canada for treatment of AD (moderate to severe)
- Non-competitive inhibitor of NMDA receptor
- Now indicated for treatment of moderate and severe AD
- Primarily for use in combination with CI’s
How Dementia Drugs Work

Normal

Alzheimer’s

Alzheimer’s ADD CI

ADD Memantine to CI

Cholinesterase inhibitor = ± cholinergic

GABA receptor antagonist = ↓ excitotoxicity