

INTERVENTIONAL CARDIOLOGY 2017

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The problem is bigger than we think



Disclosures:

Consultant for Medtronic

Scientific Advisory Board:

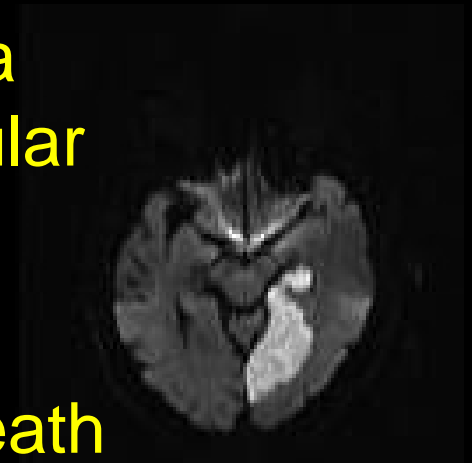
Ornim Medical

Keystone Heart

Silk Road Medical

What is the problem ?

- Historically, stroke was defined as a persistent neurologic deficit of vascular cause, purely on clinical grounds
- But infarction relates to neuronal death and necrosis, the endpoint of ischemia



Strokes and Infarcts

- Most clinical trials of devices and procedures have used the standard clinical stroke endpoints
- Clinical stroke has a profound effect on mortality and quality of life, and risk reduction must be a priority
- Is that all?



Strokes and Infarcts

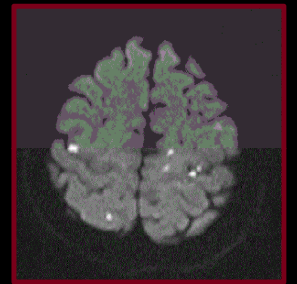
- New definitions leverage imaging, MR and DW imaging markedly increase sensitivity, and add objectivity
- Imaging defines infarctions, but many of these may be clinically inapparent.....

Brain and its vessels are fragile



Strokes and Infarcts

- Terms like “asymptomatic cerebral events” or “silent infarcts” have been used,
- But what if asymptomatic infarcts are not really so asymptomatic?



Strokes and Infarcts

- The old concept of multi-infarct dementia was a crude, unhelpful notion
- Evolved to vascular dementia, recognizing the additive effect of small or confluent areas of infarction

Strokes and Infarcts

Memory after silent stroke

Hippocampus and infarcts both matter

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ABSTRACT

Objective: Memory decline commonly occurs among elderly individuals. This observation is often attributed to early neurodegenerative changes in the hippocampus and related brain regions. However, the contribution of vascular lesions, such as brain infarcts, to hippocampal integrity and age-associated memory decline remains unclear.

Methods: We studied 658 elderly participants without dementia from a prospective, community-based study on aging and dementia who received high-resolution structural MRI. Cortical and subcortical infarcts were identified, and hippocampal and relative brain volumes were calculated following standard protocols. Summary scores reflecting performance on tasks of memory, language, processing speed, and visuospatial function were derived from a comprehensive neuropsychological battery. We used multiple regression analyses to relate cortical and subcortical

Strokes and Infarcts

Stroke

JOURNAL OF THE AMERICAN HEART ASSOCIATION

American Stroke
AssociationSM

A Division of American
Heart Association



Microinfarct Pathology, Dementia, and Cognitive Systems

Zoe Arvanitakis, Sue E. Leurgans, Lisa L. Barnes, David A. Bennett and Julie A. Schneider

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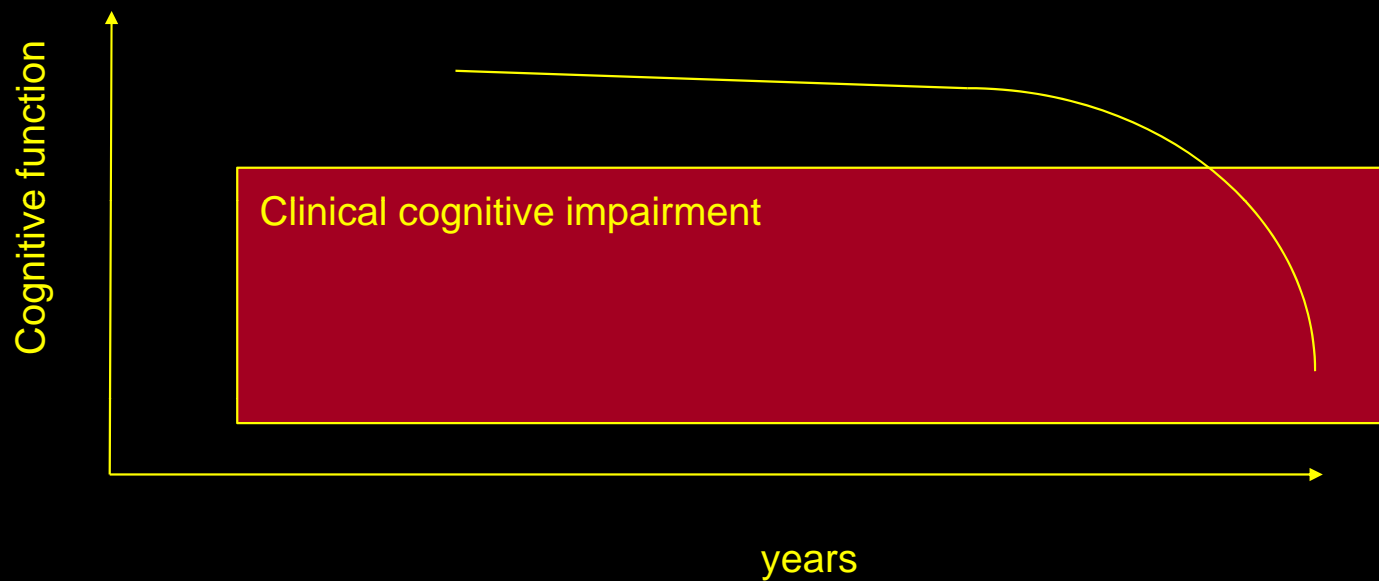
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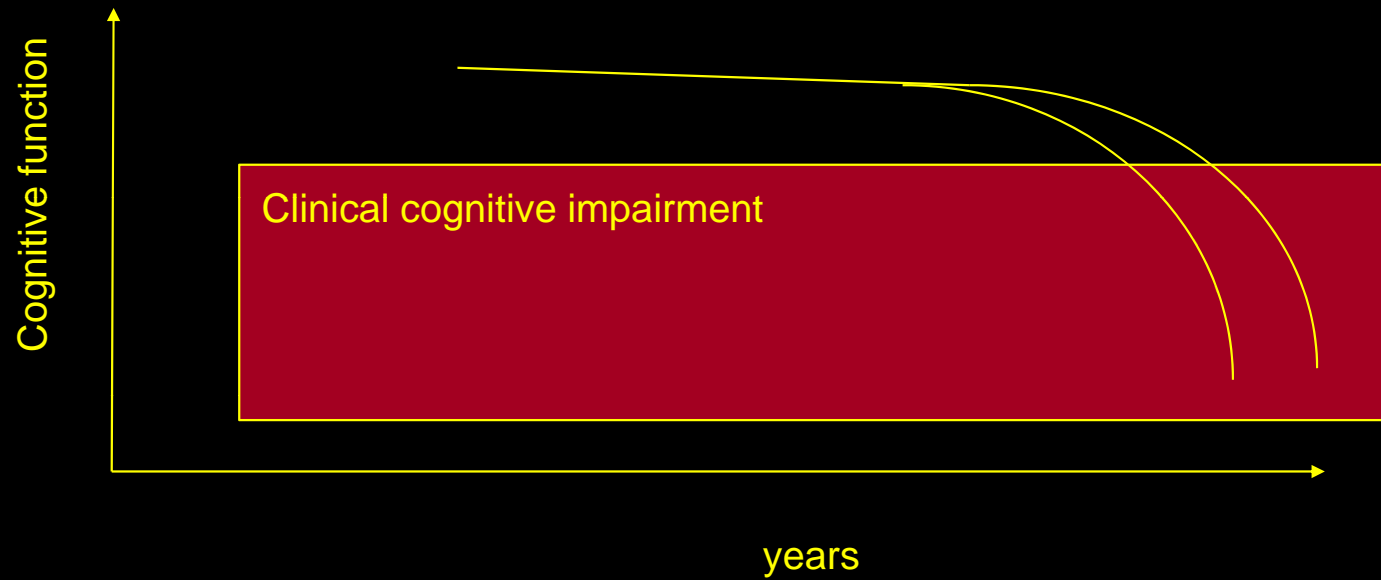
Strokes and Infarcts

- Memory loss and cognitive function are in part determined by:
 - Age related neuronal loss
 - Disease related accelerated neuronal loss
 - Superimposed infarcts and micro-infarcts, including prior clinically asymptomatic events

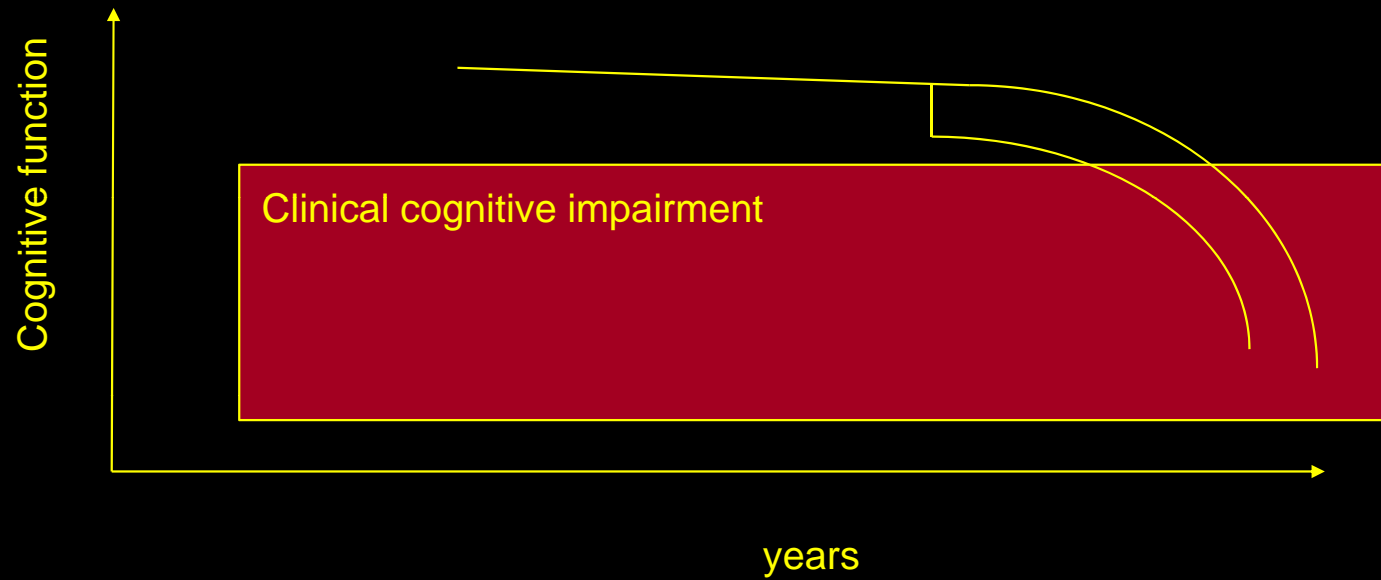
Senescence



Accelerated Senescence

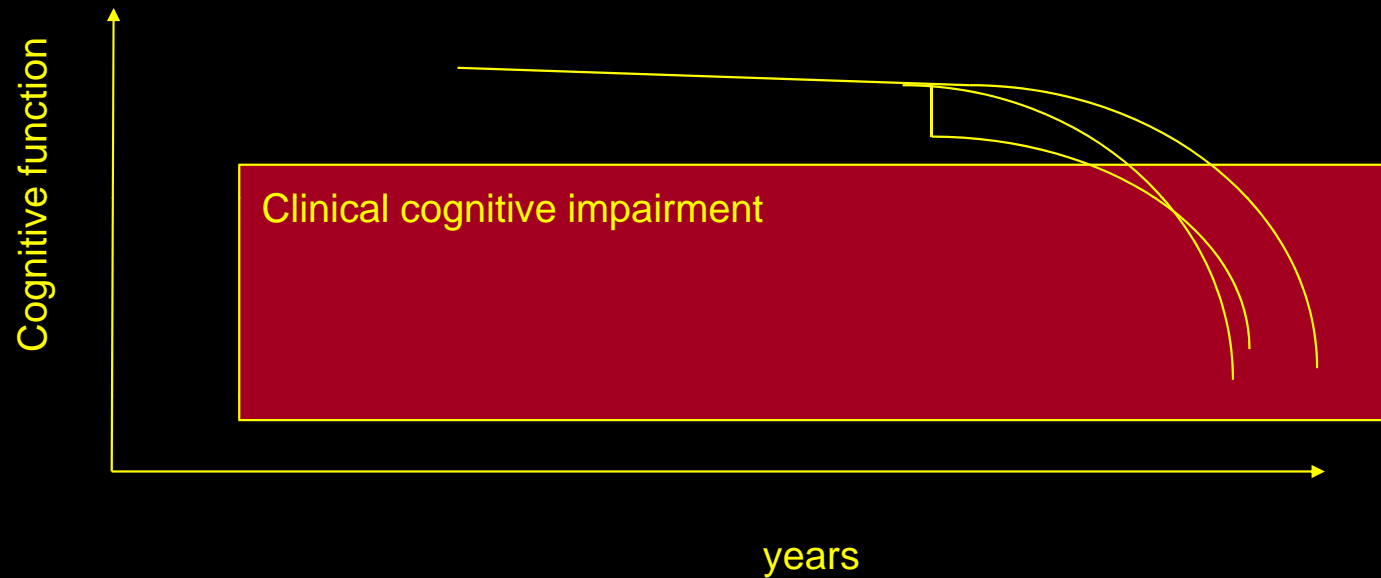


Acute Events



Accelerated Senescence

Is this a big problem?



Strokes and Infarcts

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VIEWPOINT

The Problem With Asymptomatic Cerebral Embolic Complications in Vascular Procedures

What If They Are Not Asymptomatic?

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Cerebral embolic events related to carotid and cardiac disease have been known for decades. Recently, cerebral embolic events have become a focus of clinical importance as complications of vascular procedures. Further, the development of new technologies and procedures has increased the overall clinical significance. Although the relative safety of these procedures is usually defined by acute stroke risk, it is also becoming clear that far more subclinical events are occurring. Recent reports provided substantial evidence of memory loss, cognitive decline, and dementia related to these so-called silent infarcts. Literature reports of magnetic resonance imaging events lead to an estimate of as many as 600,000 patients with new brain injury each year in the United States alone. Given the magnitude of the numbers involved, the impact of accelerated cognitive loss and premature senescence in a vulnerable at-risk population could well be significant. (J Am Coll Cardiol 2012;60:1614-6) © 2012 by the American College of Cardiology Foundation

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It is a big problem...

Table 1 Estimated Annual U.S. Patients With New Brain Lesions

Procedures	No. of Annual U.S. Patients	Incidence of New Brain Lesions, %	No. of Annual U.S. Patients With New Brain Lesions
Coronary angiography	1,672,000	11-17	118,000-182,000
Percutaneous coronary intervention	596,000	11-17	66,000-101,000
Coronary artery bypass graft	242,000	16-61	39,000-123,000
Surgical aortic valve replacement	90,000	38-47	34,000-42,000
Atrial fibrillation ablation	72,000	8-18	6,000-13,000
Transaortic valve implantation	10,000	68-91	7,000-9,000
Carotid endarterectomy	93,000	4-34	4,000-32,000
Carotid artery stenting	70,000	15-67	11,000-47,000
Cerebral angiography	300,000	11-20	33,000-60,000
Endovascular aneurysm	30,000	10-64	3,000-19,000
Total	2,600,000	13-24	321,000-628,000

It is a big problem

- These are important beneficial procedures that need to be done
- We just need to do them more safely

