



Vascular Physiology Differentiates Alzheimer's Dementia.

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Methods: Alzheimer's Study University of North Texas

- 56 Patients with a diagnosis of probable dementia of the Alzheimer's type
- 31 Age-matched controls
- All underwent full TCD evaluation with Dynamic Vascular Analysis (DVA) to characterize the hemodynamics of the intracranial vasculature.

Results: Alzheimer's Study University of North Texas

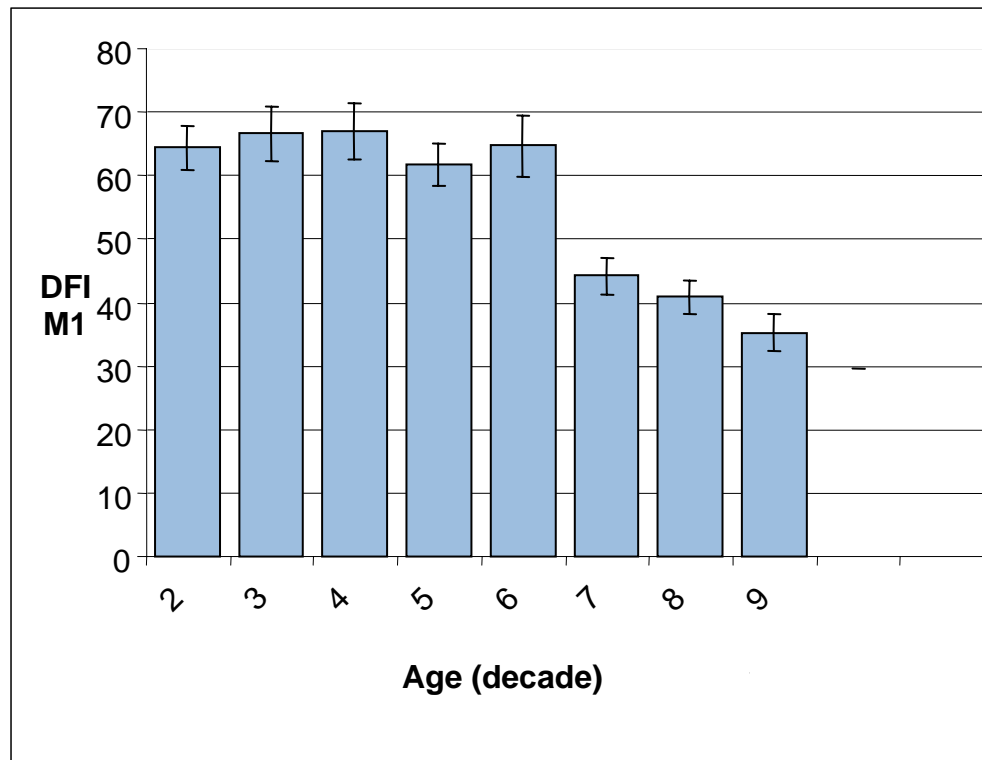
- DFI, Dynamic Flow Index, significantly diminished intracranial cerebral blood flow
- Values correlated with Folstein mini-mental status scores.
- Pulsatility Index significantly increased in same locations.
- Extracranial TCD sites (ophthalmic artery) did not differ between Alzheimer's subjects and controls
- Systolic upstroke acceleration did not differ between the two groups so global low flow not secondary to diminished proximal flow
- DWI, Dynamic Work Index increased in the Alzheimer's subjects suggesting increased kinetic expenditure to maintain flow and/or vessel stiffening.

Conclusion: Alzheimer's Study University of North Texas

- Alzheimer's Type Dementia appears to have characteristic cerebral blood flow hemodynamics.
- Increased impedance dramatically alters forward force and ultimately cerebral blood flow.
- Low cerebral blood flow in Alzheimer's disease is secondary to increased impedance in the small capacitance vessels, the arterioles.
- Due to increased amyloid deposition with alteration of vascular architecture, increased intracranial pressure (explaining the unaltered extracranial vessel hemodynamics), or a combination of both.

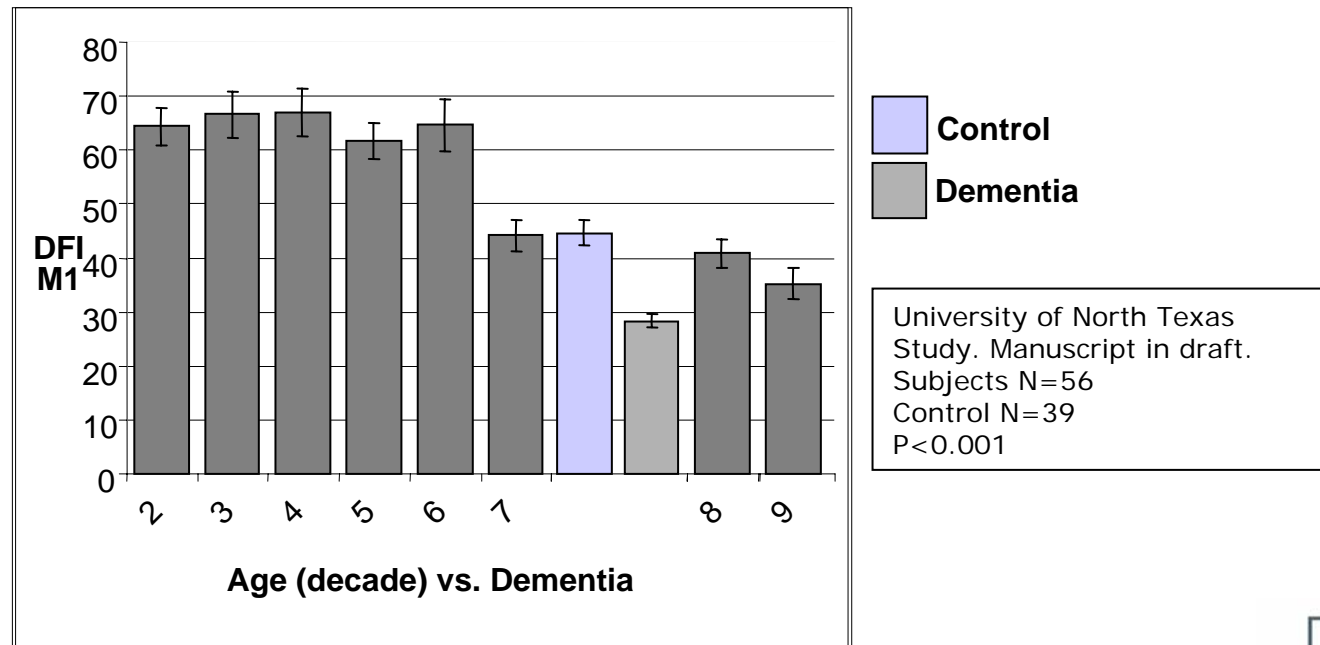
DVA Research: Normal Aging

- Cerebral blood flow dynamics demonstrate how the vascular system ages
- DFI declines after the 6th decade of life

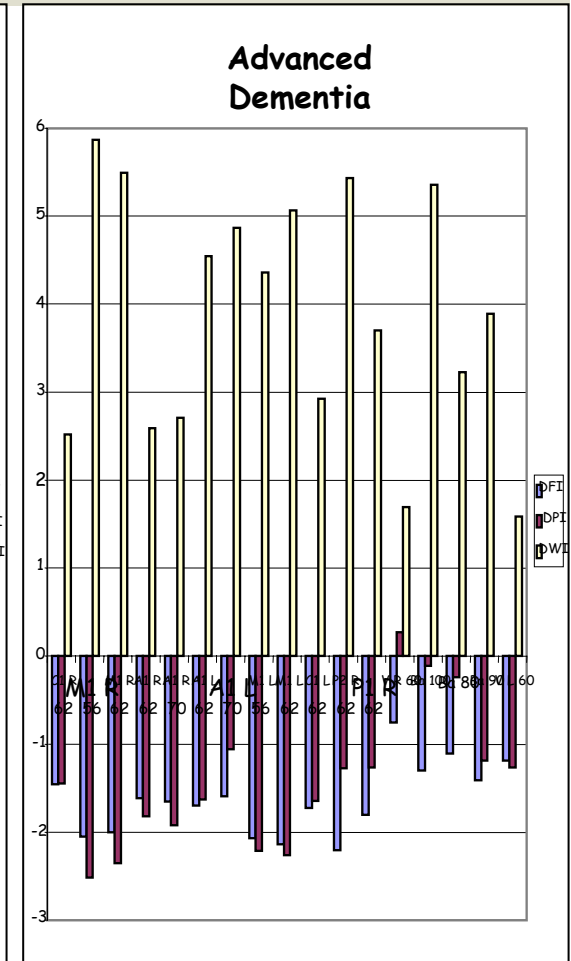
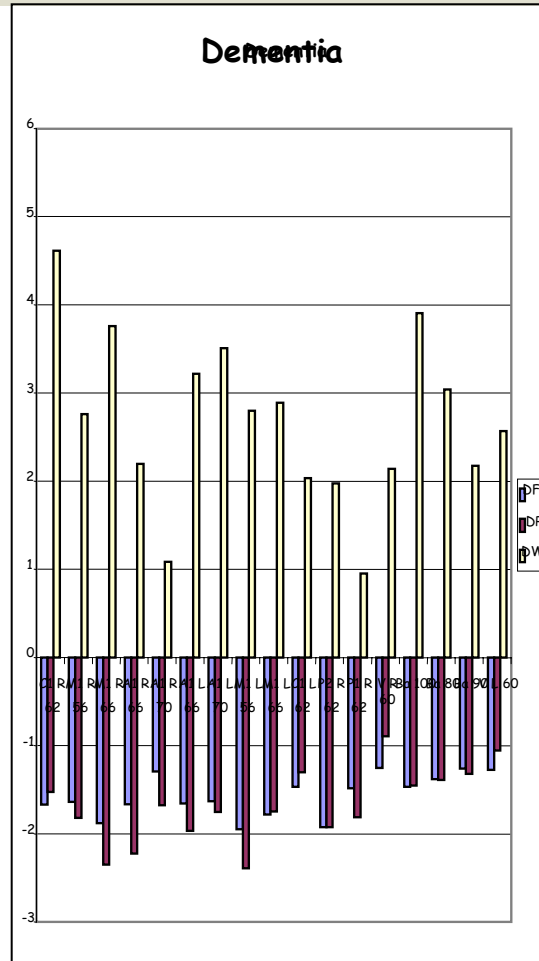
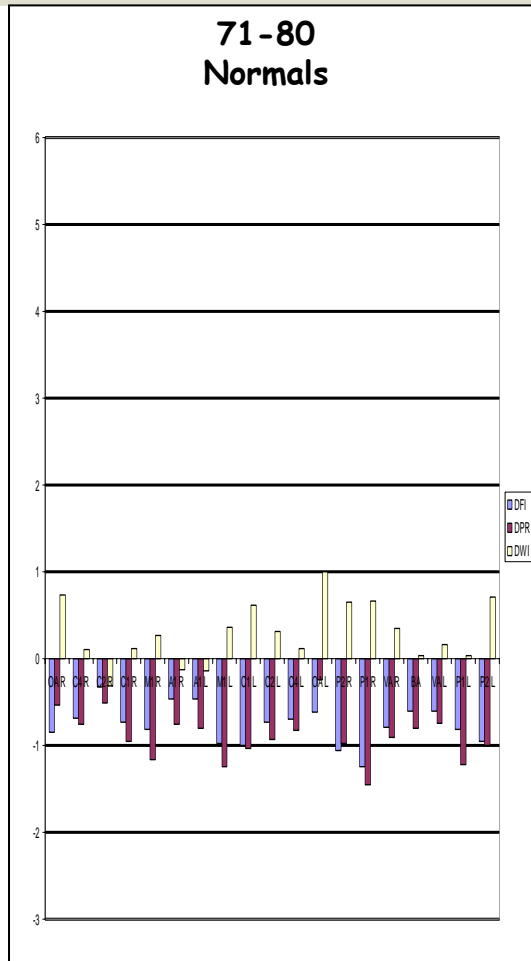


Alzheimer's Study University of North Texas

- Alzheimer's Dementia assisted living facility (Ft. Worth, TX)
- Shows subtypes – sorts among forms of dementia
- Findings consistent with contraction of capacitance vessel volume
 - Amyloid angiopathy in majority
- DVA studies identified patterns associated with vascular dementias



DVA in Alzheimer's Type Dementia, 1 subject



Dementia Pattern

