



URGENT TIA TESTING:

THE RESULTS OF INTEGRATED HEART / BRAIN TESTING
THE SPACE TESTING PROGRAM

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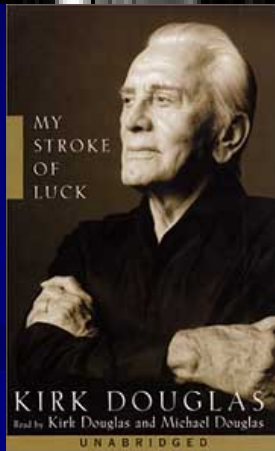
SORENSEN CARDIOVASCULAR GROUP

DISCLOSURE

NOTHING TO DISCLOSE

USA STROKE OUTCOME

Stroke is the leading cause of permanent disability in this country



“MY STROKE OF LUCK”

FOUR HEALTH UTILITY REVIEWS

70% rank stroke with moderate disability as “equal to or worse than death”

AMERICAN ACADEMY OF NEUROLOGY

DEATH	10%
RECURRENCE	30%
INSTITUTIONALIZED	20%
DISABLED	25%
DISABLED (EMBOLIC)	50%

SOURCE: NINDS DATA BASE; NHLBI
STROKE 2006; 37:577-617 (AAN GUIDELINES)

TIA OUTCOMES

TIA: No longer transient; No longer minor. A second chance to change outcome.

“TRANSIENT” ISCHEMIC ATTACKS

MRI IMAGING

60% DIFFUSION + = CVA

90 DAY STROKE RATE POST TIA

3-17% STROKE

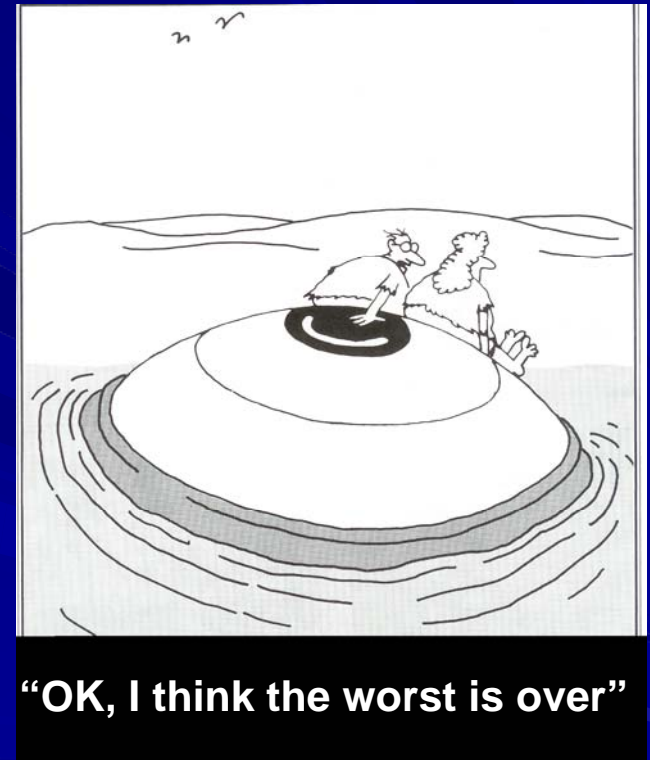
TIA+CVA worse than CVA alone

Urgent evaluation is needed

ONE YEAR TIA OUTCOMES

MORTALITY 25%

DISABILITY 20%



SOURCE: Arch Int Med 2007; 167:2417 / Neurol 2004; 62:520 + 2015
Stroke 2004; 35: 1842 / Ibid 60:1420 / BMJ 2004;328: 326

REGARDS III

“Stroke Symptoms in Individuals Reporting No Prior Stroke or TIA Are Associated With Decrease in Indices of Mental and Physical Function”

PCS AND MCS TESTING

16,090 NORMALS

3,404 WHISPERING CVA (WCVA)

1491 CVA

818 TIA

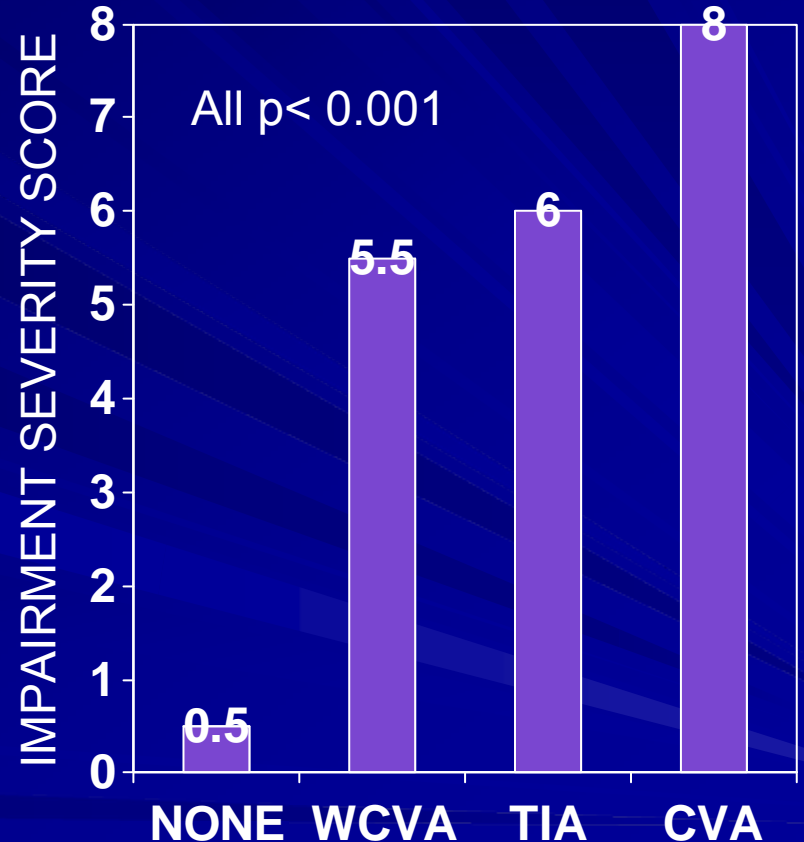
PCS-12 TESTING -5.5

MCS-12 TESTING -2.7

Not explained by demographics, vascular risk, health behaviors.

CONCLUSION: Patients with brief neurological symptoms often may have permanent impairment of motor and cognitive skills. “Silent “ brain injury may have long lasting effects and aggressive diagnostic evaluation and treatment is indicated.

PCS 12 *PHYSICAL* IMPAIRMENT



SOURCE:REGARDS III : STROKE 2007; 38:2446-2452

REGARDS II: STROKE 2007; 38:1143

REGARDS I: ARCH INT MED 2006; 166:1952

URGENT TIA TESTING PROGRAM

Based upon the strong association between the heart and brain events, we implemented a multi-disciplinary out-patient program for prompt cardiovascular testing and triage of neurology testing and consultation.

- Urgent care patients with neurological symptoms not warranting admission (focal symptoms with resolution; symptoms possibly neurological).
- Informational brochure with instructions and direct phone access to a dedicated triage person.
- Urgent out patient cardiac testing
Age <55: CE-TTE + pM-mode TCD
Age >55: CE-TTE + Carotid US
- Immediate referral to an imaging-based neurological practice for MRI imaging and consultation



75 patients:45 female, 30 male; age 19-73
Focal neurological symptoms 46 / Possibly neurological 29

TIME TO TESTING (From Urgent Care Visit)

CARDIAC: CE-TTE, TCD, CUS = 2.3 DAYS (range 1-5 days)

NEUROLOGICAL: MRI + CONSULTATION= 1.7 DAYS (range 1-6 days)

NO ADVERSE EVENTS OCCURRED

ABNORMAL <u>NEURO</u> FINDINGS	N	%
Abnormal MRI / MRA	40	53%
Multi-focal MRI (T2)	36	48%
Brain tumor(1)/Aneurysm(2)	3	4%
CVA (diffusion +)	3	4%
Multiple sclerosis	5	7%
DF+/MF MRI + Severe Shunt	19	25%

SPACE

Abnormal CARDIAC findings in 75 patients presenting with TIA

Severe right-to-left shunt (5/5 TCD)	22	29%
Atrial fibrillation	6	8%
≥50% Carotid stenosis	8	11%
Valvular heart disease		
mod-severe aortic stenosis	2	3%
mod-severe mitral stenosis	2	3%
Ebstein's anomaly w/ ASD	1	1%
Moderate regurgitation	5	6%

Other : malignant HT= 2, CM =3, MI (wall motion abnl) =3

CONCLUSIONS

- Patients presenting at urgent care facilities with neurological symptoms commonly have significant heart and brain findings on integrated Heart-Brain testing.
- Significant abnormal findings were found in 56% of patients which is much higher than the results of ischemic chest pain evaluation programs (e.g. ROMIO Chest Pain Protocol = 5% abnormal)
- A structured, multi-disciplinary approach of early out-patient, imaging-based cardiology and neurology evaluation is safe, effective, and may improve outcomes through early diagnosis and treatment.

WHAT'S NEXT?

“GLOBALIZATION”

The complexity of the brain results in a broad range of symptoms which ignores the artificial boundaries of medical specialties:

- Embolic Visual Loss
- Hypoxemia; Sleep Apnea Stroke
- Pregnancy TIA / Stroke
- Central Vertigo and Imbalance
- Cognitive Dysfunction
- Post-Procedural Events
- In-dwelling Catheter TIA /CVA
- Dialysis CVA / Cognitive Dysfunction

Whether “doctor, lawyer, or Indian Chief”, we all see these manifestations of preventable brain injury. It is time for structured integration.

THANK YOU