

Traumatic Brain Injury in the Elderly: The Silent Epidemic

Michael-Gerard Moncman, DO, MSc
Neurosurgeon, Board Certified
Grant Medical Center

The Silent Epidemic

- They look fine
- They feel bad
- Their risk factors are myriad
- They can change (die) precipitously

“What a drag it is, getting old”

Jagger/Richards



One fell from a coconut tree and had surgery for an acute SDH; the other vowed not to be singing “Satisfaction” when he was 60. He’s still singing it at age 65.

Who are the Elderly?

Per the State of Ohio, State Board of EMS Trauma Committee, the Elderly are those patients

70

years old or older

Which Elder goes to a Trauma Center

- GCS <15 with suspected TBI
- Systolic BP < 100 Hg
- Hx of a FALL, even from a standing height with evidence of TBI (Leading cause of TBI)
- Pedestrian struck by a motor vehicle
- Known or suspected proximal long bone fracture from a MVC
- Multiple body regions injured

Special Considerations

- Diabetes
- Cardiac disease
- COPD
- Clotting Disorders, including Iatrogenic type
- Immunosuppressive disorder(s)
- Renal disease requiring dialysis

When is a Fall “Serious”?

- Fracture
- Laceration requiring closure
- Any CNS-associated clot or collection of blood

Any of these can trigger serious, precipitous decline

Why do the Elderly Fall?

- Meds may alter perception or balance
- Balance difficulties may accompany advancing age
- Physical limitations like visual changes or orthopedic issues
- They've fallen at least once before
- Lack of exercise
- Poor footwear
- Hazards in the home

Sequellae to the TBI

- Longer hospital stays
- Longer recuperation
- Longer period to reach baseline
- Usually make less progress than the younger patient with a similar injury

A Sobering Statistic

For each year that a patient in coma for at least six hours is over 35, the chance of dying from the TBI increases by 3 – 6 %.

THEREFORE, by 75 the chance of dying or being neurovegetative in this scenario is very nearly 100 %.

Consequences of TBI

Other than Death

- Impaired speech, hearing, vision
- HA
- Dyscoordination
- Spasticity / paralysis
- Seizures
- Insomnia
- Dysphoria
- Dysphagia
- Dysarthria
- Memory deficits
- Slower thought
- Decreased concentration
- Anxiety / coping disorders
- Denial
- Impaired perception or judgment
- Sexual dysfunction
- Mania / delusion
- Worsening or hastening the symptoms of dementing illnesses

How are these men related?



Gray (Hair)'s Anatomy

- Dura is densely adherent to the inner table of the skull; EDH less likely
- Atrophy stretches bridging veins; these tear easily when the brain is rattled; SDH are 3x more common in this group of patients
- SDH may be larger but silent in this group because of the atrophy
- Atrophy can protect against contusions

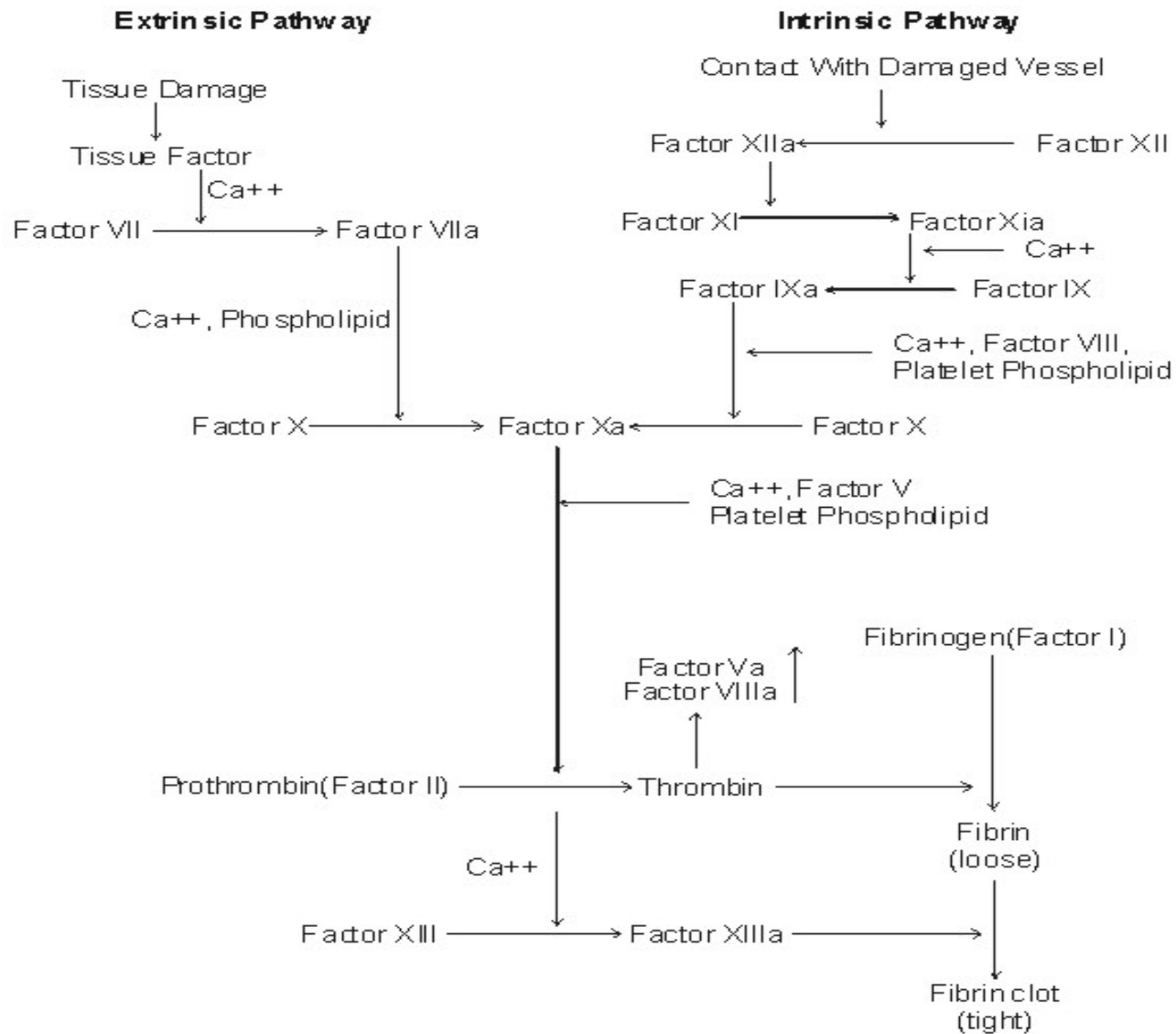
The Anti-coagulated Senior

- Is a potential mortality especially if the GCS <12 and older than 76
- Can devolve rapidly
- Is susceptible to otherwise “minor” trauma
- Needs special attention, both to the CNS and the coagulation status in general
- Has a 3x greater mortality rate than a like non-anticoagulated patient

Anticoagulants

- Their benefit in stroke reduction in patients with A-Fib or carotid stenosis is well established.
- Pre-injury use of Plavix (Clopidogrel) has been associated with increased morbidity and mortality.

Coagulation Cascade



There will be a quiz at the end of the day on this diagram

Enemy Agents

- Aspirin
- Plavix
- Warfarin
- Lovenox

Aspirin

- Platelet inhibitor
- Blocks Thromboxane A₂ synthesis
- Cyclooxygenase inhibitor
- Other pathways?

ASA Reversal

- Draw Platelet Function Assay
- T & C one 4-pack platelets
- Transfuse if surgery planned or if CT is (+) for ICH
- Repeat PFA, transfuse platelets as needed

Plavix

- Inhibits the binding of ADP to platelet receptors and ADP-mediated activation of GPIIb / IIIa complex
- This alters the platelet for its life
- Plavix is active for up to 5 DAYS after the last dose

Plavix Reversal

As described of aspirin.

Evidence as to efficacy of rapid reversal is lacking.

Warfarin (Coumadin)

Interferes with the hepatic synthesis of Vitamin K dependent clotting factors

- II
- VII
- IX
- X

Risks Associated with Warfarin

- 6 – fold increase in mortality in the elderly
- Risk of mortality increases with age

Warfarin Reversal

- Draw PT / INR, PTT
- T & C 4 units FFP
- Transfuse 4 units FFP
- Vitamin K 10mg IVPB if INR > 1.3
- FVIIa 1200mcg IV if INR > 1.3
- Repeat INR, transfuse FFP if INR >1.3
- Repeat FVIIa (after 60 mins)

Lovenox

- Inhibits factor Xa and to some degree inhibits @ IIa.
- This potentiates antithrombotic effects; it does not increase bleeding

Lovenox Reversal

- Protamine Sulfate 1mg / 1mg Lovenox if received within the last 8h.
- If >8h, use ½ the dose
- Max dose 50mg, given by IV route.
- Check factor Xa

Surgical Care



Brain Surgeon

Neurosurgery's Role

- Clots are usually of two general types if they are intraparenchymal, viz.

Too large to remove, or

Too small to remove / worry about

- Guidance

Neurosurgery's Approach

Be available

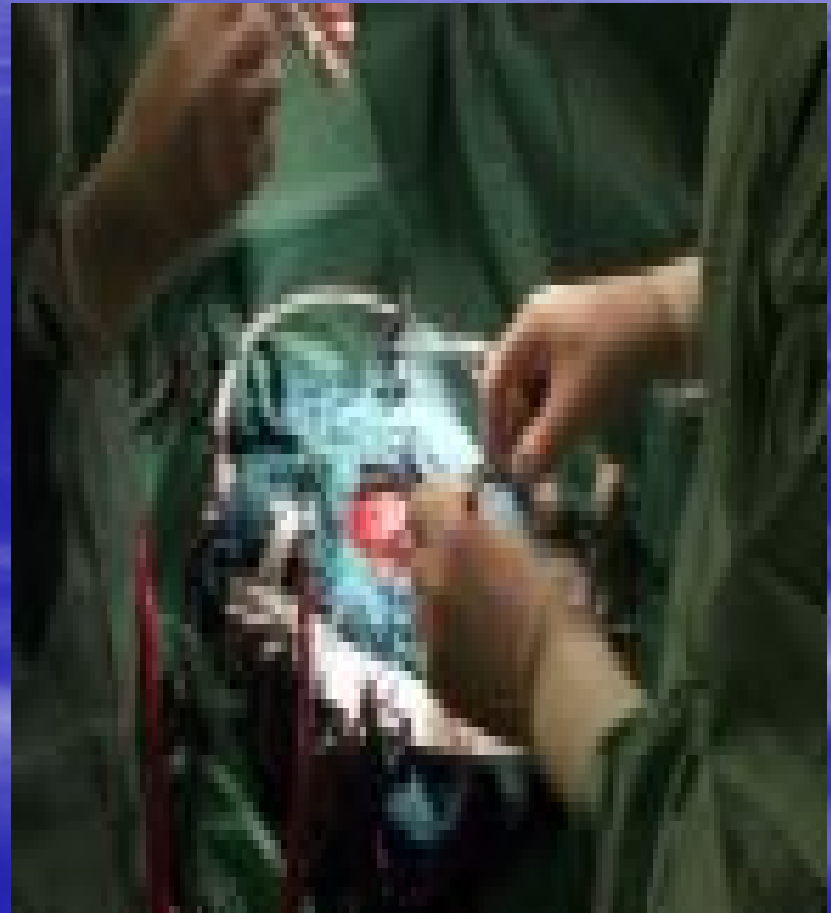
History is important

Exam plus Imaging

Go / No go decision

Reversal

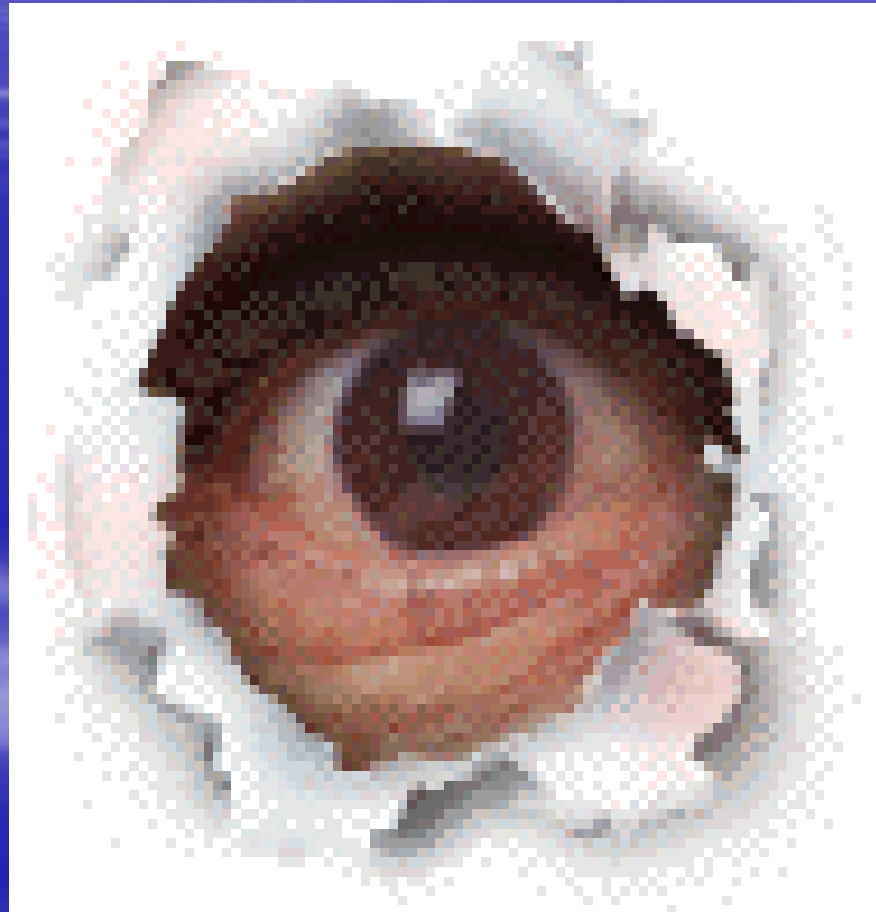
No Secondary Insult



Management Tip # 1



Management Tip #2



Management Tip #3



Craniectomy



- Evidence for use in the elderly is speculative

Management Tip #4





REMEMBER THIS:

These patients have special needs and should be treated as such until cleared.

They get sicker quicker and die sooner