EDEN PARK

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Management of Major Trauma In The Elderly

A Medical & Ethical Challenge of The 3rd Millennium

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Management of Major Geriatric Trauma

The Philosophy…

- Can We Fix It ?? *Sure we can…!*
- Should We Fix It ?? *Yes… But…*
- Can We Keep The Patient Alive ?? *Maybe…*
- Should We Keep Him/Her Alive ?? *Hmm….*
- God Forbid… How Much Does It Cost ? *A lot..!!*
  - In Money, Cost to Pt. Cost o Society, In Pt. Suffering, In Family Anguish

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When Are We Considered OLD ?

- Definition of "Geriatrics" – Merriam Webster Dictionary –

"a branch of medicine that deals with the problems and diseases of - old people"
Merriam Webster Dictionary

- Who are The Old People ?
- People are Living Longer !
- Today People are more active when older !

When Are We Considered OLD ?

- Classic Definition → > 65 years
- (For Trauma >55 y)
- Today… > 70 y ? Tomorrow… > 80 y ??
- "Chronologic" Age V/s "Biologic" Age
- Lower Cutoff > 45-55, Very Old > 80 (octogenarians)
- Oldest Old > 90 (nanogenarians), > 100 (decagenarians)

So…

- When to operate and when not to operate ?
- When to treat and…when to let go…?

Epidemiology of Aging Population

- In 2000 →12% Over 65y
- In 2030 → 30% Over 65y
- Today's Senior Citizens:
  - Fewer Disabilities (Maybe more Co-Morbidities)
  - More Active Lifestyle
- By 2050 → 40% of Trauma Patients >65y (USA)

Chang & Schecter
Surg Clin N Am. 87:229-245, 2007

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Impact of Age in Major Geriatric Trauma

- Mortality Increased Among Pts >65y (ISS<9)
- Between the Ages 45 → 75 ; Risk of Death ↑ 200%
- Some Studies Differentiate three Sub Groups:
  - < 65 Young
  - 65-80 Elderly
  - > 80 Very Elderly

Finneli, Jonsson, Champion
J Trauma 1989

Mechanism of Major Geriatric Trauma

- Falls – By Far, The Most Common Mechanism
  - Significant Morbidity
  - Significant Mortality
  - Significant Medical Cost

- MVC → 2nd
- Pedestrian V/s Vehicle

(Car, Truck, Bus, Motorbike, Bicycle)

Predictors of Morbidity & Mortality
In Major Geriatric Trauma

- **Age**
  Underlying Medical Conditions
  Blunted/Limited Physiologic Response to Injury
  80% of Over 65 – at Least 1 co-morbidity
  50% of Over 65 – at Least 2 co-morbidity
- **Co-Morbidities → Independent Predictors of Death:**
  - **Cirrhosis** X 4.5
  - **Coagulopathy** X 3.2
  - **IHD** X 1.8
  - **COPD** X 1.8
  - **Diabetes** X 1.2

Schulman, Claridge, Young
Am Surg 2002

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Special Physiologic & Medical Considerations

- Anticoagulation:
  - Warfarin (Coumadin): A. Fib, DVT, Heart Valves
  - 1% / year – Risk for ICH – Can Be Deadly X5 Fold
  - If Overdosed (INR ≥ 6.5) 88% mortality for GCS ≤ 8
  - Treatment: FFP, Tranexamic Acid (Hexacapron), rFVIIa $$$$$ $
- Antiplatelet Factors:
  - Aspirin
  - Clopidogrel (Plavix) → up to X6 fold ↑ Mortality in Trauma
  - Benefit of Platelet Infusion → Unclear

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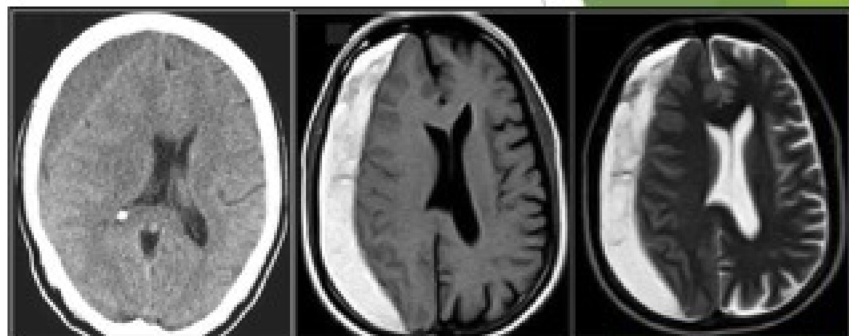
Specific Injuries – Major Dilemmas



- **Severe Head Injury**
  - Caused By Falls
  - Pedestrian Struck
  - SDH – Common – Bridging Veins
    - ↑ Distance Dura/Brain
  - EDH Uncommon – Dura/Skull Adherence (Stiff)
  - Cerebral Atrophy → Initial Subtle Signs ("Space")

Special Physiologic & Medical Considerations

- **Severe Head Injury**
  - Mortality Rate Increased
  - Functional Outcome Decreased
  - If Presenting GCS ≤ 8 → Extremely Poor Prognosis !
  - Study of 136 Severe Head Inj - > 70 years
    - "Surgical" Bleed – 100% mortality
    - "Non-Surgical Bleed" – 80% Mortality
    - Practically All Pts. with GCS 3 on Admission → Die !
    - If Survive with initial GCS 4-7 → Most = Vegetative State

Kotwica & Jakubowski
Acta Neurol Chir 1992

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Specific Injuries - Major Dilemmas

- **Severe Head Injury - Conclusion**
  - In Severe Head Injury in The Elderly
  - Of No Significant improvement within 72 Hrs.
  - No Aggressive Treatment is Rational
    (eg. De-compressive Craniectomy)

Jacobs DC et al, J Trauma 2003

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Specific Injuries – Major Dilemmas

Abdominal Injury

- The Era of Non Operative Treatment for Blunt Trauma
- Standard of Care In Stable YOUNG Trauma Pts.
- The Problem with The Old:
  - ↓ Physiologic Reserve
  - Less Tolerance to Shock
- Difficult to Analyze Studies
- The Problem = Much Higher Mortality if Conservative Tmt. Fails

Special Physiologic & Medical Considerations

- **Extremity & Pelvic Fractures**
  - Trigger To Reconstruct Or Amputate Extremity - Variable.

  - Osteoporosis !!!
  - Pelvic Fracture Most Serious (Bleeding, Immobilization)
  - Complicated Pelvic Fractures → Up To 80% Mortality
  - X3 Fold Need for Blood Trx.
  - X3-5 Fold Mortality in Older than 55 y
  - ↓ Functional Outcome Even in Survivors

Special Physiologic & Medical Considerations

- Intensive Care For Geriatric Trauma Pts.
  - Less ICU Admission Rate – ICU Bed Availability…
  - Long Hospital Stay
  - If Admitted To ICU → Longer Stay
  - ↑ Rate of Nosocomial Infections (X6 Fold Mortality)

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Withholding Treatment

- Age Alone is Not an Indication to Withhold Therapy !!
- Guidelines Should Take into Consideration:
  - Pre Morbid status
  - Magnitude of Initial Trauma
  - The 1st 24-72 Hrs.
  - GCS: "True" GCS 3, GCS 4-8, GCS >8
  - Accept Higher Mortality
  - Know when to Withdraw Support

Advanced Directives

- Living Will – Legal Document

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Withholding & Withdrawing Life Support

- Common Occurrence in ICU
  - Brain Death
  - "Futility" – Physician Initiative & Concept
  - "Patient's Suffering" – Nurse's Initiative & Concept
  - Anticipated Poor Quality of Life
    - Individual Philosophy
    - Cultural & Religious Background

Beecher, JAMA
Harvard Med School, Boston MA, USA

Politically "Incorrect" Issues

- Interpretation of Poor Quality of Life
- Competition for ICU Beds
- Limited Health Care Resources
- Interest of Society V/s Interest of Patient
- Surgeons are Poor Health Care Economists
- They Make Poor Economic Related Clinical Bedside Decisions

Management of Major Geriatric Trauma

The Philosophy…

Governed By:

- The Specific Injury
- The Patient's Pre-Morbit Status
- Patient's Directives
- Culture/Religion
- Medical Capabilities
- Financial State
- "Cost of Futility" Philosophy

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We Are Not GOD…. But…

- Withholding & Withdrawing Life Support In Hopelessly Ill Geriatric Trauma Patients is a Necessity
- Sometimes It Is The Most Rational and Humane Action
- The Challenge:

Identification & Definition of "Hopelessly Ill…"

Summary

- Geriatric Trauma Is An Increasing Challenge for Trauma Surgeons & Trauma Systems
- The Problem Will Increase even Further Over The Next Several Decades
- We Should Train Our Trauma Teams and Hospital Personnel To Cope With This Challenge

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Thank You

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