Elder Abuse and Neglect

Overview of Medicolegal Death Investigation

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State of the Science

- Developing area of research
- Limited funding/support
- Complex issue
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Increasingly Acknowledged

- Criminalization
- Protective/restraining orders
- Identification of new phenomena
- Mandatory reporting
- Enhanced penalties
- Expansion of protective proceedings

But…

- These are useless unless cases can be accurately identified.

Unique Challenges

- Feared retaliation
- Perceived stigmatization
- "Home" effect
- Duty to protect abuser
- Communication difficulties

Unique Challenges

- Expectation of death
  - –
  - –
- But also more vulnerable!
  - –
  - –

Forms of Abuse

- Physical
- Sexual
- Financial
- Emotional/Psychological
- Abandonment
- Neglect

The Cost

- $5.3B in direct medical expenses

Forensic Markers

- Abrasions
- Lacerations
- Bruising
- Fractures
- Contractures
- Decubiti
- Weight Loss
- Dehydration
- Rx misuse
- Burns
- Hygiene
- And others

Definitions

- Physical abuse: an act of violence that may result in pain, injury, impairment, or disease
- Neglect: failure to provide the goods or services necessary for functioning or to avoid harm

Evidence

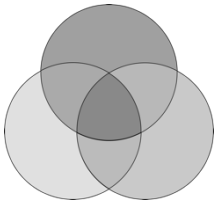
- Abuse is rarely directly observed by protective professionals
- Reliance on circumstantial evidence
  - signs with dx of abuse/neglect

Extreme Abuse

- Gunshot wounds
- Sharp force injuries
- Rope burns
- Bite marks

Grey Zone Cases

- Overlapping markers of disease, neglect, and/or abuse



DETECTING ABUSE AND NEGLECT IN ELDERS

Blunt Trauma

- Abrasions
- Lacerations
- Contusions
- Fractures

Abrasions

- Colloquially: “scrape”
- Removal of the superficial epithelium (i.e. epidermis) by friction
- Examine for patterns
- Antemortem or postmortem?
  - Red/brown vs. yellow and dry

Patterned Abrasions

- Imprint of
  - –Offending object (e.g. hammer)
  - –Intermediary material (e.g. clothing)

Mimics

- Birthmark
- Diaper rash
- Insect activity
- Drying artifact

Lacerations

- Tear/split in tissue
  - –*Not* a catchall term
- Shearing/crushing forces exceeding elasticity
- Usually irregular
- Margins contused/abraded

	Laceration	Incised Wound
Cause	Blunt force trauma	Sharp force trauma
Edges	Ragged/ irregular	Cleanly divided
Bruising/abrasions?	Yes	No
Depth	Variable	Can be uniform
Presence of tissue bridging?	Yes	No
Position	Particularly bony prominences	Any location
Presence of foreign bodies?	Often contaminated wounds	Usually clean (unless caused by glass)
Hairs	Intact hairs may cross the wound	Hairs are cleanly divided
Bony injury	May have associated fractures	Scoring or chipping of bone may occur
Healing	2° intention (with extensive scarring)	1° intention – good if wound edges apposed. Generally leaves fine scarring

Age-Related Changes

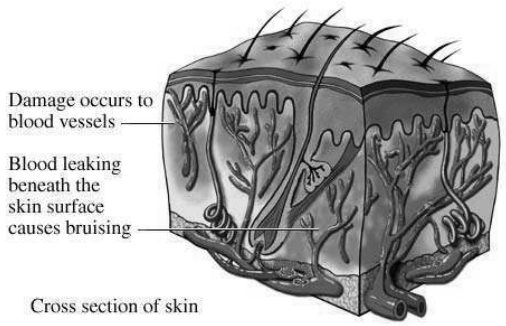
- ↓ kin thickness, elasticity, and tensile strength
- ↑ trauma

Skin Tears

- ~1 per patient per year in NH
- Usually <1 inch
- Often undetermined etiology (~50%)
  - Or minor bump/fall
- Usually on arms/hands
  - Sometimes on legs

Contusions

- Colloquially: “bruise”
- Tearing of vessels
- Soft tissue hemorrhage
- May be mimicked by *livor mortis*
  - Blanching?
  - Hemorrhage on incision?



Contusions

- Descriptive terminology
  - Petechiae (small/punctate), not usually true contusion
  - Hematoma (large/space-occupying)
- Ecchymosis *not* synonymous
  - Extravasated red cells

Contusions

- Absence of contusion ≠ absence of trauma
  - Deep contusions may not be externally visible
  - *Especially* in anterior abdominal wall
- Influenced by many factors
  - Age, health, sex, site, etc.

Contusions

- Like abrasions, contusions may be *patterned*
  - Reflect the shape/configuration of the offending object

Age-Related Changes

- Easier bruising
- Longer-lasting bruising
- "Senile purpura"
- Medication effect (anticoagulants)
- Illness
  - Cirrhosis, cancer, etc.

Markers of Abusive Contusion

- Patterned bruising
  - –Knuckles, fingers, tram track, etc.
- Site of bruising
  - –Face, neck, chest, abdomen, buttocks, genitals, palms/soles

Fractures

- Bones become less dense with age
- Conditions predisposing to fracture
  - –
  - –
  - –
  - –
  - –
  - –
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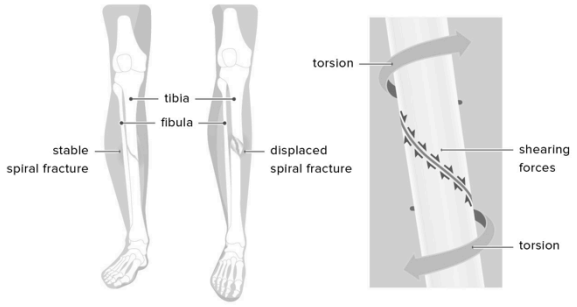
Spontaneous Fractures

- Vertebral
- Hip

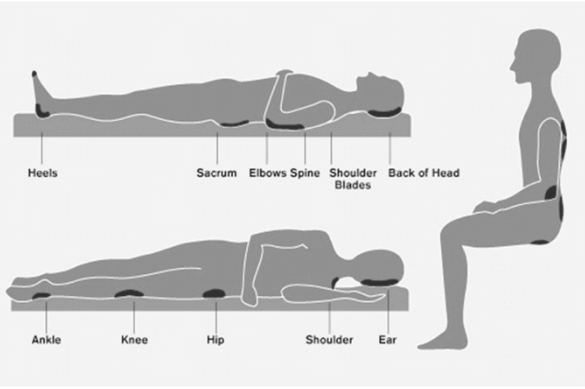
Markers of Abuse: Fractures

- Sparse literature
- Fx of head, spine, torso more suspicious
- Spiral fx of a large bone is diagnostic of abuse
- Hx of falls does not imply abuse



Decubitus Ulcers

- Circulatory failure due to pressure resulting in loss of skin integrity
  - –32mmHg, 2 hours
- Staged 1 – 4
- Sacrum is most frequent location
  - –Hips and heels also common



Decubitus Ulcers: Risk Factors

- function
- Altered consciousness
- Pressure over bony prominences
- Malnutrition
  - –
    wasting → decreased padding

Decubitus Ulcers: Risk Factors

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  - –Sliding of tissue → damage and thrombosis
-
  - –Fecal and urinary incontinence
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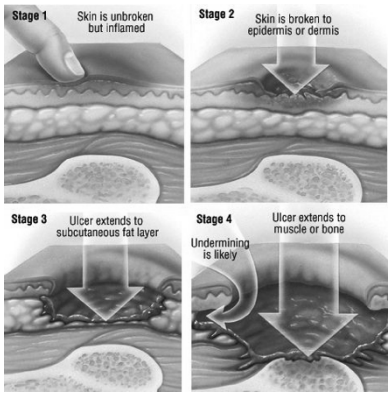
  - –Fat is poorly vascularized

Staging

- Stage 1: reactive hyperemia
  - –Increased blood flow following pressure release
  - –Persists >24 hours
- Stage 2: blister/shallow ulceration
  - –Do <u>not</u> penetrate into subcutaneous fat

Staging

- Stage 3: Full-thickness ulcers
  - –Extension through subcutaneous fat
  - –Bases is usually necrotic, foul-smelling
- Stage 4: Ulceration into underlying tissue
  - –Extends to muscle or bone
  - –Risk of osteomyelitis



Decubitus Ulcers

- Underreported
- Common
- Illness or neglect?
  - "Inevitable"?

Homicide by Ulcer?

- Failure to provide basic nursing services
- Falsified records
- Delay in notification of MD
- Failure to institute therapy (by MD)

Malnutrition

- Deficit, excess, or imbalance in diet
- Up to 80% of NH patients (!)
- Influenced by body size, age, health, activity, environment
  - Stress/infection increase caloric requirements by 1.6x

Malnutrition: Risk Factors

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- Malabsorption

Malnutrition: Caregiver Factors

- Inappropriate prescribing
- Failure to maintain oral hygiene
- Inadequate assistance*
- Improper assistance

Albumin

- Wt loss may not mean malnutrition
- Easiest indicator is serum albumin
- Low levels seen w/ protein deprivation
  - infection, surgical stress, trauma)
- $T_{1/2}$ = 12 − 20 days
  - Transferrin and pre-albumin are shorter

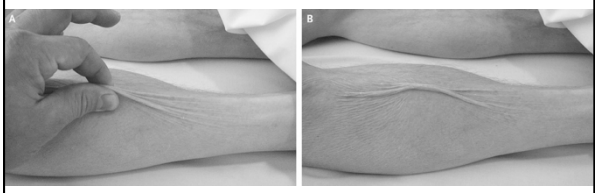
Table 21.1 Blood Albumin*

Normal	3.5 - 4.5 g/dl
Mild protein depletion	3.0 - 3.4 g/d
Moderate depletion	2.5 - 2.9 g/dl
Severe depletion	< 2.5 g/dl

* There is some variation in normal ranges among laboratories.

Dehydration

- Decreased fluid intake and/or excessive fluid loss
- Elderly are more susceptible
  - Decreased water reserves
  - Decreased thirst drive
  - Altered renal water regulation



Dehydration: Abuse/Neglect

- May be precipitated by illness
- Look for hx withholding
  - If refusing fluids, should be clearly documented in medical record
- Death in ~10 days in the healthy
  - Likely shorter in the elderly

Contractures

- Flexion/fixation of a joint
- Nonfunctional, resistant to bending
- Disuse → atrophy and shortening
  - Prolonged bed rest
  - Impaired sensorium
- Preventable w/ PROM exercises
- 20% of NH residents

Medication Use

- Elderly use 3x more meds
- May respond unpredictably
  - Decreased hepatic metabolism, GI absorption, body composition, etc.
  - Increased risk of ADRs
- Complicated regimens
  - ~1/3 take improperly

Medication Use: Abuse/Neglect

- Overdosing or withholding
  - Reasonable error?
  - Diverting?
  - Ease management?
  - Punishment?
- Often need to consult w/ MD

POSTMORTEM CONSIDERATIONS

The Medical Examiner

- Determine cause & manner of death
- Many of the same markers apply
  - Nutrition, hydration, injuries, etc.
  - Limited by inability to interview
- Reliance on investigation, records, reports, etc.

The Medical Examiner

- Almost always yields less information than a living exam
- Many lab tests are no longer possible or interpretable

The Medical Examiner

- Internal exam may add key information
  - State of nutrition/hydration
  - Evidence of natural disease (infection, CVD, malignancy, dementia…)
  - Direction evaluation of fractures