Atypical Presentation – Part II

- Atypical Presentation in Acutely Ill Older Adults
- Head to Toe Assessment
- General Weakness/FTT
- The Frailty Syndrome/Phenotype

Dr. Peter O’Connor
Geriatrician
Feb 2008
<table>
<thead>
<tr>
<th>Younger</th>
<th>Older</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>“The Other Hand”</td>
</tr>
<tr>
<td></td>
<td>Vision, hearing</td>
</tr>
<tr>
<td></td>
<td>Skin status</td>
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<tr>
<td></td>
<td>Lying/standing BP</td>
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# Physical Assessment

<table>
<thead>
<tr>
<th>Younger</th>
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<tr>
<td></td>
<td><strong>Hydration status</strong></td>
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<tr>
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<td><strong>Protein malnutrition</strong></td>
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<td></td>
<td><strong>Balance &amp; Gait, walking speed</strong></td>
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<tr>
<td></td>
<td><strong>Establish cognitive baseline, mental state</strong></td>
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<tr>
<td></td>
<td><strong>Grip Strength</strong></td>
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<td><strong>Environment!!</strong></td>
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Oral vs. Aural vs. Rectal

- Rect Feb, Tymp Afeb
- Rect Feb, Tymp Afeb <1C
- Rect Afeb, Tymp Feb
- Rect Feb Tymp Feb
- Rect Afeb, Tymp Afeb

- Rect Feb, Oral Afeb
- Rect Feb, Oral Afeb <1C
- Rect Afeb, Oral Feb
- Rect Feb, Oral Feb
- Rect Afeb, Oral Afeb
Malnutrition

- Anthropometric indices
- Grip strength or subjective assessment of muscle mass
- Intake Hx
- Swallowing assessment
- Strategies to boost intake
Baseline Investigations

- CBC, E7, U/A & C/S
- CXR, EKG, troponin
- CPK if fall
- TSH, albumin, Ca, PO4, Mg, B12
- CT head
Atypical Presentations
Follow-up

- Need to identify cause, and provide management

- “Simple” – delirium, due to hyponatremia

- “Complex” – “faller” with malnutrition, chronic pain and excess medication use
General Weakness / Failure to Thrive

- “not the red light”, but around the planet 17,000 times

- Summation of deficits, characterised by diagnostic difficulty, BUT ALSO limited or slow response to all forms of therapy
The “Difficult” FTT

- Mental State: dementia, delirium, depression
- CHF
- Occult Tumour
- Underestimating Pain/Immobility
- Hormonal: e.g. hypogonadism
- Role of Renal Disease
ALL MY LIFE I’VE PREFERRED OLDER WOMEN AND NOW THERE AREN’T ANY!

EDGAR ARGO
Infections In The Elderly
UTI and bacteruria in the Elderly

- UTI’s most common type of infection
- Most frequent cause of gram-negative bacillary sepsis
- Frequency of bacteriuria in ambulatory:
  - 10% to 30%: women
  - 5% to 10%: men
- Frequency of bacteriuria in LTC:
  - 25% to 50%: women
  - 15% to 20%: men
Asymptomatic bacteriuria

- $\geq 10^5$ CFU/mL bacteria in urine
- not associated with clinical signs and symptoms of infection
- frequently transient or intermittent. Often pyuria is lacking as well
- long-term sequelae of asymptomatic bacteriuria unclear
- In the absence of chronic urinary obstruction, asymptomatic bacteriuria in aging adults should not be treated with antibiotics
- Adjunctive Rx’s e.g. cranberry, oestrogen
Clinical Presentation

- An uncomplicated, symptomatic community-acquired UTI can present with fever, dysuria, frequency, and urgency, or, less typically, as weakness and fatigue, anorexia, or change in mental status.
Clinical Presentation

- Complicated UTI’s - structural or functional abnormalities of the urinary tract
- Frequently caused by organisms that are resistant to different antibiotics. C/S essential
- May recur with either relapse or reinfection and may require prolonged treatment of 4 to 6 weeks
Pneumonia
Pneumonia

- Leading infectious cause of mortality in the elderly
- Fourth leading cause of mortality in those over age 75
- Compared with younger adults, the elderly have a five- to tenfold increased risk of developing pneumonia
Pneumonia

- Majority secondary to micro- or macro-aspiration of oral pharyngeal flora in patients with compromised host defenses (e.g., diminished cough reflex, waning cellular immunity)
- Causes of pneumonia differ from younger – gram negative more likely, \textit{S. pneumoniae} still most likely in more active community patients
- Hospital-acquired pneumonia more likely to be caused by mixed flora
- oropharyngeal colonization by staphylococci and aerobic gram-negative bacilli increases with decreasing functional status and increasing level of care
Pneumonia

- Diagnosis masked: esp. in debilitated elderly patients
- Cough and fever may be diminished or absent
- Tachypnea and tachycardia are sensitive but not specific findings
- Atypical:
  - altered mental status
  - decline in functional status
- Physical examination often no signs of consolidation
- CHF/COPD confound
- CXR with Hx and PX often
- Higher mortality rates for pneumonia in the elderly should not discourage aggressive therapy in appropriate patients – outcomes can be comparable in selected patients to younger pts
Heart Failure

- Heart failure - most common reason for hospitalization and recurrent hospitalization in patients over 65 years of age
- Incidence of new cases approximately doubles with each decade from age 45 to age 84. After age 85, the incidence of new cases increases four- to six-fold.
- Commonly, elderly patients with heart failure who become mildly symptomatic during exertion tend to curtail their daily activities and become relatively asymptomatic. Therefore, in elderly patients, the diagnosis of clinical heart failure is usually made at a later stage in the disease process than in middle aged and younger patients.
Interrelationship of Baseline & Precipitating Factors

Precipitating Factors
- Use Physical Restraints
- Malnutrition
- >3 Meds Added
- Indwelling catheter
- Any iatrogenic Event

Baseline Risks
- Impaired Vision
- Severe Illness
- Cognitive Impairment
- High BUN/CR
Frailty

- State of high vulnerability for adverse health outcomes, including disability, dependency, falls, need for LTC, and mortality
Frailty – interchangeable syndromes??

- **Disability**: Difficulty or dependency in carrying out activities essential to independent living
- **Comorbidity**: Concurrent presence of two or more medically diagnosed diseases – high prevalence – doesn’t account for impact of each comorbidity
- **Frailty**
Evolving Definitions of Frailty

**The “old”**
- >5 meds
- Dementia
- Incontinent
- Falling
- Needing personal care
- Residential care

**The “new”**
- recent weight loss
- self-reported exhaustion
- poor grip strength
- slow walking speed
- low physical activity
Frailty vs. the ISAR

**Frailty**
- Recent weight loss
- Self-reported exhaustion
- Poor grip strength
- Slow walking speed
- Low physical activity

**ISAR**
- Pre-morbid function
- Acute function
- Hospitalization in last 6 months
- Visual impairment
- Memory impairment
- >3 medications
Cardiovascular Health Study
N=2762
A. Physical Health Concerns for Older Adults

Comorbidity
- The concurrent presence of two or more chronic diseases or conditions

Disability
- A physical or mental impairment that substantially limits one or more of the major life activities

Frailty
- Clinical syndrome characterized by multiple characteristics including weight loss, and/or fatigue, weakness, low activity, slow motor performance, and balance and gait abnormalities. Potential cognitive component.

B. Major Health Care Implications

- Complexity of treating concurrently present diseases;
  - Interaction causing adverse outcomes
  - Contraindication or incompatibility of treatments for two diseases
  - Prioritization of treatments may be necessary
  - Risk associated with polypharmacy
- Minimize risk for frailty, disability
- Fragmented, multi-provider, multi-setting care associated with less than optimal outcomes
- Potential for prevention of selected individual diseases, minimizing disease severity, interactions

- Need for rehabilitative, community, supportive services
- Minimize risk for social isolation, dependency, mortality
- Decreased access to health care, hospitalization, long-term care
- Potential for primary, secondary, and tertiary prevention

- Vulnerability to stressors (e.g., hospitalization, medical procedures)
- Need to treat underlying conditions, weakness, undernutrition
- Minimize risk for falls, disability, hospitalization, mortality
- Progressive condition with potential for primary and secondary prevention
Chronic Undernutrition
[Inadequate intake of protein and energy; micronutrient deficiencies]

Aging: Senescent musculoskeletal changes

Negative Energy Balance

Negative Nitrogen Balance

Weight Loss

Loss of muscle mass
Sarcopenia

Disease

↓ Total Energy Expenditure

↓ Activity

↓ Walking Speed

Disability

Dependency

↓ Resting Metabolic Rate

↓ Strength & Power

↓ VO₂ max
Overview of hypothesized molecular, physiological, and clinical pathway to frailty

Molecular & Disease
- Oxidative stress
- Mitochondrial deletions
- Shortened telomeres
- DNA damage
- Cell senescence
- Gene variation
- Inflammatory diseases

Impaired Physiological
- Inflammation
  - Interleukin-6
  - Sarcopenia, osteopenia
    - Immune function
    - Cognition
    - Clotting
    - Glucose metabolism
    - Insulin-like growth factor-1
    - Dehydroepiandrosterone-Sulfate
    - Sex steroids

Clinical
- Slowness
- Weakness
- Weight loss
- Low activity
- Fatigue
Lower Extremity Function and Subsequent Disability

Figure 1. Disability Status at Four Years According to the Baseline Summary Performance Scores among 1121 Subjects with No Disability at Baseline.
Table 5. Baseline Frailty Status Predicting Disability, Falls, Hospitalizations, and Death over 3 Years: Community-Dwelling Men and Women Aged 65 Years and Older, Cardiovascular Health Study

<table>
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<tr>
<th>Event</th>
<th>Hazard Ratios* Estimated Over 3 Years Frail*** (Versus Not Frail)</th>
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<tbody>
<tr>
<td>Worsening mobility disability</td>
<td>1.50**</td>
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<tr>
<td>Worsening ADL disability</td>
<td>1.98**</td>
</tr>
<tr>
<td>Incident fall</td>
<td>1.29**</td>
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<tr>
<td>First hospitalization</td>
<td>1.29**</td>
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<tr>
<td>Death</td>
<td>2.24**</td>
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<tr>
<td>Group</td>
<td>Odds Ratio for Frailty</td>
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<tr>
<td>---------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>1</td>
<td>1.0</td>
</tr>
<tr>
<td>2</td>
<td>2.80 (0.95–8.21)</td>
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<tr>
<td>3</td>
<td>3.33 (1.23–9.03)</td>
</tr>
<tr>
<td>4</td>
<td>5.40 (1.83–15.92)</td>
</tr>
<tr>
<td>5</td>
<td>9.85 (3.04–31.99)</td>
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Summary

- Atypical Presentation - unpredictable
- Physiological Instability
- Features in Hx and Px
- UTI, pneumonia, cardiac
- Investigations
- Approach to the “Difficult” FTT
- Frailty
Additional Slides
What is Frail?

- recent weight loss
- self-reported exhaustion
- poor grip strength
- slow walking speed
- low physical activity

Fried, Linda
Systolic vs. Diastolic Heart Failure

- Type of ventricular dysfunction found different between elderly and younger
- Approximately 40% to 50% of elderly patients with heart failure have normal left ventricular systolic function with predominantly diastolic dysfunction
Cardiac Ischaemia and MI

- **Angina and equivalents**
  - Exertional angina - most common manifestation of myocardial ischemia in young and middle-aged
  - In elderly, dyspnea also common
  - Asymptomatic, although silent ischemia also frequent - demonstrable by stress testing or Holter monitoring.
Cardiac Ischaemia and MI

- **Acute MI**
  - 45% of MIs were silent or unrecognized
  - percentage increased with the patient's age in males (Framingham)
  - Instead of chest pain, elderly patients more commonly complain of dyspnea or have vague symptoms of confusion, abdominal pain, or generalized weakness at the time of acute MI.
  - Main cause of death in elderly patients
Factors that contribute to the atypical presentation of infection in the elderly

- Underreporting of illness
- Compromised cognition
- Coexisting diseases
- Altered physiologic responses
Table 4  Association of frailty criteria with development of new-onset dependence in activities of daily living

<table>
<thead>
<tr>
<th>Frailty criteria</th>
<th>Incidence rate of dependency (per 100 person-years)</th>
<th>Unadjusted hazard ratio (95% confidence interval)</th>
<th>Adjusted hazard ratio* (95% confidence interval)</th>
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<tbody>
<tr>
<td>Number</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>0</td>
<td>7.7</td>
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<tr>
<td>1</td>
<td>11.7</td>
<td>1.54 (0.96–2.48)</td>
<td>1.33 (0.82–2.16)</td>
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<tr>
<td>2</td>
<td>16.7</td>
<td>2.21 (1.40–3.49)†</td>
<td>1.62 (1.00–2.60)†</td>
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<tr>
<td>3</td>
<td>25.2</td>
<td>3.40 (2.12–5.45)†</td>
<td>2.23 (1.34–3.71)†</td>
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<tr>
<td>4–5</td>
<td>37.9</td>
<td>5.18 (3.09–8.67)†</td>
<td>2.38 (1.33–4.25)†</td>
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<td>Specific criteria</td>
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<td>Shrinking</td>
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<td>No</td>
<td>13.3</td>
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<tr>
<td>Yes</td>
<td>27.9</td>
<td>2.15 (1.65–2.80)†</td>
<td>1.60 (1.20–2.12)†</td>
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<tr>
<td>Weakness</td>
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<tr>
<td>Yes</td>
<td>18.7</td>
<td>1.47 (1.14–1.88)†</td>
<td>1.06 (0.81–1.39)</td>
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<td>Slowness</td>
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<tr>
<td>Yes</td>
<td>20.6</td>
<td>2.45 (1.83–3.28)†</td>
<td>1.96 (1.43–2.70)†</td>
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<td>Low physical activity</td>
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<td>No</td>
<td>12.0</td>
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<tr>
<td>Yes</td>
<td>23.1</td>
<td>1.95 (1.54–2.48)†</td>
<td>1.44 (1.12–1.87)†</td>
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<td>Exhaustion</td>
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<td>No</td>
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<tr>
<td>Yes</td>
<td>19.5</td>
<td>1.26 (0.94–1.70)</td>
<td>0.94 (0.67–1.31)</td>
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</table>

*Adjusted for age, race, education, self-reported health status, baseline difficulty with ≥1 activities of daily living, baseline difficulty walking one-quarter mile or up 10 steps, presence of ≥4 chronic conditions, Mini-Mental State Examination score, Geriatric Depression Scale score, and hospitalization.
†P value <.05.