ATYPICAL PRESENTATIONS OF COMMON DISEASES

GOAL:
1) To recognize atypical presentations of infection, heart and thyroid diseases in elderly.

2) To understand the reasons behind the atypical presentations.

OBJECTIVES:
1) Review alterations in physiology with aging that are causes of altered presentations.

2) Identify symptom complexes that will lead you to appropriate evaluations.

I) PHYSIOLOGY and AGING
Key changes with age that are behind these altered presentations.
A) Thermoregulation:
B) Cardiac - Autonomic Nervous system
C) Volume regulatory
D) Immune dysregulation
E) Central nervous system

A) Thermoregulation:

1) Lower basal body temperatures
   \textbf{Aged} normal: oral = 35.8-36.8 \degree C (96.4-98.2F)  
   rectal = 36.8-37.2 \degree C (98.2-98.9F)  
   ear = (IRED)/(fever) = >37.2\degree C (>99.0F) 
   Summary: elders run one degree below normal youngers.

   Why: - decreased heat production per kg. body weight

   - reduced muscle activity (thermogenesis)+less efficient shivering

   - decreased meal induced thermogenesis \textsuperscript{iii}
   (especially by brown adipose tissue) \textsuperscript{iv}

\textsuperscript{i} Harchelroad F. M D Acute Thermoregulatory Disorders, Clinics in Geriatric Medicine Vol. 9,No. 3 aug. 1993  
\textsuperscript{ii} Smitz S. et al Comparison of rectal and infrared ear temperatures in older hospital inpatients JAGS Jn 2000;48:63-66  
\textsuperscript{iii} Reuben,D.B., Yoshikawa .T.T., Besdine R.W., Geriatric Review Syllabus Third Edition  
\textsuperscript{iv} High KP, Infectious Disease Geriatric Review Syllabus 5th edition 2002-2004 pp 306-315
Defining fever in Frail Elderly in LTC facilities

<table>
<thead>
<tr>
<th>Definition</th>
<th>Sensitivity</th>
<th>Specificity</th>
</tr>
</thead>
<tbody>
<tr>
<td>T &gt; 101 F (38.3 C)</td>
<td>40.0%</td>
<td>99.7%</td>
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<tr>
<td>T &gt; 100 F (37.7 C)</td>
<td>70.0%</td>
<td>98.3%</td>
</tr>
<tr>
<td>T &gt; 99 F (37.3 C)</td>
<td>82.4%</td>
<td>89.9%</td>
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</table>

“Therefore old people are “cooler” than young people”

Eddie 1998

B) Cardiac - Autonomic system

<table>
<thead>
<tr>
<th>System</th>
<th>Aging Physiologic change</th>
<th>Clinical effect</th>
</tr>
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<tbody>
<tr>
<td>Autonomic Nervous System</td>
<td></td>
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<tr>
<td>Beta-adrenergic systems \ (Beta system decrease due to decreased receptor responsiveness)</td>
<td>\ Max. heart rate</td>
<td>More/earlier: CHF \ Pulmonary Edema \ Hypotension \ Impaired Cardiac Output \ Impaired response to stress \ Ischemia presents more often as dyspnea due to transient increased LV end diastolic pressure</td>
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<td></td>
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<tr>
<td></td>
<td>\ Max. C.O.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\ Max. VO2</td>
<td></td>
</tr>
<tr>
<td>Alpha-adrenergic system \ unchanged</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>\ Systemic. vascular resistance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\ Vasodilator response</td>
<td></td>
</tr>
<tr>
<td>Cardiac System:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Myocyte loss with compensatory hypertrophy</td>
<td>\ LV wall thickness, \ LV stiffness, \ LV compliance &amp; relaxation</td>
<td></td>
</tr>
<tr>
<td></td>
<td>\ LV filling with reliance on LA systole</td>
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</table>

C) Volume regulation

1) decreased body water reserves due to decrease percent body water.

2) decreased thirst drive

3) decreased ADH response to hypovolemia

4) age related renal dysfunction:
   - maximum urine osmolality------------decreased and slower to achieve
   - renin-angiotensin-aldosterone responsiveness-decreased
   - atrial natriuretic peptide responsiveness------ impaired

SUMMARY: they take water less in, have less water reserves, and are less able to retain.
RESULT: Earlier and faster dehydration than younger counterparts

D) Immune dysregulation

--- T cell
   - decrease number
   - decreased responsiveness
   - decreased production & response to IL-2
   - decreased activity of helper and cytotoxic T cells
   - Humoral antibody-mediated response
   - decreased

E) Central nervous system

1) Executive control and decision making
   In: a) Normal aged
   b) Cognitively impaired

SUMMARY
Stating the obvious: “Age is marked by maintenance of basal physiologic functions thru use of physiologic reserves thus impairing their own ability to respond to stress.

*******************************SEPSIS**************************************

I) Definitions:
A) SIRS (Systemic Inflammatory Response Syndrome):
   - diffuse inflammatory response seen in: burns, infections, pancreatitis, etc.
   (exemplified by alteration in body temperature, tachycardia, tachypnea,
   decreased or elevated WBC’s < 4000 or > 12,000)

   1) Sepsis (a subset of SIRS)

March 1996

vi Phillips PA, Rolfs BJ, et. al. Reduced thirst after water deprivation in healthy elderly men NEJM 1984;311(12):753-759


ix Royal D.R. Executive Control and Clock-drawing, AMDA convention 1997

x American College of Chest Physicians and the Society of Critical Care Medicine

xi Stengle J., MD, Dries D. MD, Sepsis in the Elderly, Critical Care Nursing of North America Vol. 6, No. 2 June 1994
-diffuse inflammatory response

-organ dysfunction: e.g. -hypoperfusion
-hypotension
-mental status changes

**Septic shock** = sepsis plus severe hypotension

II) Epidemiology

A) Incidence:

40-50% of all bacteremia occurs in the elderly.

60-70% of all deaths due to sepsis occur in the elderly\(^{xiii, xiv}\)

B) Mortality:

30-40% mortality with sepsis\(^{xv, xvi, xvii}\)

70-80% mortality with septic shock\(^{xviii}\)

**why?** One reason: delay in diagnosis due to failure to show typical signs.

C) Clinical Presentation; or “Non-presentation”

192 patients: 13% afebrile= (25 patients)\(^{xix}\)

Of the afebrile
-4/25= hypothermic
-8/25 =absent leukocytosis

Good news! -21/25 = had a *left shift*

Atypical symptoms: \(^{xx, xxi}\)

-CHANGE IN MENTAL STATUS----------52%\(^{xxii}\)
-CHANGE IN FUNCTIONAL STATUS
-anorexia
-falls
-blood sugar alteration

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\(^{xii}\) Stanley M. RN, Phd Sepsis in the Elderly, Critical Care Nursing of North America vol. 8, no. 1


\(^{xiv}\) Hollaway WA, Reinhardt J. Septic Shock in the Elderly Geriatrics 39;48 1984


\(^{xvii}\) Wheeler A, Bernard G. Treating patients with severe sepsis. NEJM 1999;340(3):207-214


\(^{xx}\) Gleckman RA, Hibert D: Afebrile bacteremia. JAMA 248:1478 1982

\(^{xxi}\) Besch CL, Sander CV,: Managing sepsis--a common cause of geriatric death. Geriatrics 41:55, 1986


example: 100 community acquired sepsis

34%(34)-----urinary source

6/34 had dysuria, urgency or other urinary sx.

“Don’t expect to win, when you play cards with Grandpa, because he’ll never show you his hand”
Eddie 1998

D) Sources of infection
    urinary  -27-44%
    respiratory -20%
    abdominal -20%xxiv, xxv, xxvi, xxvii, xxviii

E) Organism type
    Gram-negative-65%/xxix
    Gram-positive--24-36%/xxx

F) Indicators of mortality risk
    -neutropenia
    -S. aureus infections
    -lower respiratory infections
    -age > 85 years
    -WBC < 5,000
    -patients not treated with the appropriate antibiotic within the first 24 hours.

G) Treatment;  -RAPID


xxvi Elangovan SE. Clinical and laboratory findings in acute appendicitis in the elderly. J Am Board Fam Pract. 1996:9;75-78


xxviii Paajanen H, Kettunen L, Kostianinen S. Emergency appendicitis in patients over 80 years Am J Surg 1994;60:950-953


- Broad spectrum ------ S. aureus
  aerobic gram-negative bacilli
  Enterococci

If intrabdominal source => anaerobes

************** MYOCARDIAL INFARCT **************

I) The “Bad News”

A) Incidence
   - 60% of all MI’s occur in > 65 y.o.
   - 30% of all MI’s occur in > 75 y.o.
   Autopsy 70% of 70 y.o. CAD with ≥ 50% obstruction of coronary arteries

B) Changes with Old-Old (>80) Age

   As we age beyond age 80:
   INCREASED: women, CHF, renal insufficiency, functionally disabled
   DECREASED: males, diabetics, nonwhites, COPD,
              prior revascularization

   Clinical presentation changes with MI:
   INCREASED: CHF, tachycardia, AMI’s, > 6 hr from onset presentations
   DECREASED: chest pain with MI’s, ST segment elevation, LBBB, enzyme elevation

C) Mortality
   - in age > 70 y.o: mortality = 3 x younger age group
      survival for 1 year after MI = 60%
      survival for 2 years after MI = 50%

D) Why so bad?
   - preexisting cardiac disease
   - preexisting risk factor diseases (DM, hypertension etc)
   - LESS AGGRESSIVE management:
     - decreased thrombolytic therapy
       Patients presenting with MI who meet criteria for thrombolytics:
       - 30% of 65-74, 20% of age>80 meet criteria

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xxxiv Blazing MA, Galanos AN, O’Connor CM, Cardiovascular diseases and disorders, Geriatric Review Syllabus 4th
Why many don’t meet criteria:
- Delayed presentation for treatment:
  *In age > 75 yo presented > 60 min from onset 1.5X more often than those age < 75 with MI.*

**CAUTION  Avoid Thrombolytics in Age > 80**
- Age > 80 eligible recipients increased odds of death (1.4) compared to nonrecipients of thrombolytics xxxv

Complications of (hemorrhagic) stroke with TPA or TNK xxxvi:
GUSTO: If < 75 y.o. 0.52%  If > 75 y.o. 2.08%

decreased coronary bypass surgery
Complications: in > 80 y.o.
- 11.55% mortality
- 2.5% stroke
- 60% delirium with 10%-42% permanent cognitive impairment

decreased PTCA/stenting xxxvii, xxxviii, xlix, lxxx
- PTCA/stenting better than Thrombolytics with lower 30 and 360 day mortality and less CHF. xxli, xxlii
Complications: - 0.2% PTCA,
- 0.9% thrombolytics
Invasive strategies improve outcomes in MIs xl, xli, xlii

~90% of ACS (unstable angina) can be stabilized with medical management. If patients continue with unstable angina symptoms 30 mins after initiation of therapy or recurrent symptoms during hospitalization L L L coronar

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xxxviii Rosenthal GE, Fortinsky RH, Differences in the treatment of patients with acute myocardial infarction according to patient age JAGS 1994; 42:826-832
xxxix Berger AK, Schulman KA, Gersh BJ, et al Primary coronary angioplasty vs thrombolysis for the management of acute myocardial infarction in elderly patients JAMA 1999 282 : 341-348
xl Munoz JC, Alonso JJ, et al. Coronary stent implantation in patients older that 75 years of age: clinical profile and initial and long-term (3 years) out come. AHJ, April 2002 Col. 143, No 4
xlIII Pfisterer et al. Trial of invasive vs medical therapy in elderly patients with chronic symptomatic coronary-artery disease (TIME) The Lancet 9/22
xlIV The TIME Investigators Trial of invasive versus medical therapy in elderly patients with Chronic symptomatic coronary artery disease (TIME): A randomized trail Lancet 2001 Sept. 22;358:945-6
xlV NEJM June;344:1879
xlVI JAMA Nov 21; 286:2405
How do we do with simpler therapies?

Acute MI–1996 and 2001–Elderly

- ASA----------within 24 hrs----55%
- B-Blockers------within 12 hrs----39%
- Thrombolytics-within 90 mins--26%

-DELAYED or UNRECOGNIZED presentation

Patients with Q waves

Age > 65 y.o. (all)=> 25 % “silent” Q wave infarct.

Age 75-85 y.o.(men) = 42 %”silent” MI

Age > 80 y.o. (all) => 60% “silent MI

More women than men in all ages= “silent” MI’s

Silent defined as:
- no symptoms at all (50%)
  or
- atypical symptoms that were unrecognized (50%)

D) Atypical symptoms of MI

- syncope -7%
- stroke -7%
- palpitations -4%
- dyspnea -20-50%
- confusion -13

E) Atypical symptoms of unstable angina (N = 4,167)

~50 % of patients > 65 y.o. presented with these symptoms

- Dyspnea
- Nausea
- Diaphoresis
- Atypical chest pain or discomfort not located in the chest
  ( ie rather located in arms, epigastrium, shoulders and neck)

More likely to present with atypical symptoms:

- older, female, demented,
- no history of MI or hypercholesterolemia and no family hx cardiac disease

References:

xliii Malach M et al Early intervention reduces mortality in persons after MI Am Coll Cardiol 1996
Less likely to receive on admission:
ASA, antiplatelet agents, heparin or beta-blockers

F) Outcomes:
1) Recognized vs unrecognized
SAME PROGNOSIS\textsuperscript{lv,lvii}
for another MI
-ventricular fibrillation
-sudden death
-in hospital mortality\textsuperscript{lviii}

*************** HYPERTHYROIDISM **********************

I) SYMPTOMS:
TYPICAL IN YOUNG:
-fine tremor
-skim moist smooth
-increased perspiration
-ophthalmopathy
-bowel frequency

Elderly may present with the above symptoms but the \textit{atypical} symptoms are more common:\textsuperscript{lviii}
-tremor: -usually not present but if present \textit{coarse}
-skin: -no change
-perspiration -no change
-eyes -occasional ophthalmopathy usually no change
-bowels -no change, occasionally the “joyful” relief from constipation.

WHAT ARE THE TYPICAL SYMPTOMS OF HYPERTHYROIDISM IN THE ELDERLY?:
-anorexia
-weight loss------usually quite significant
-muscle wasting primarily in proximal muscles
-change in cardiovascular functioning:
-cardiac presentations of hyperthyroidism
-

\textsuperscript{lvii} Canto JG et al. Prevalence, clinical characteristics and mortality among patients with myocardial infarction presenting without chest pain JAMA 2000 June 28; 283:3223-9
\textsuperscript{lviii} Canto JG et al. Atypical presentations among Medicare beneficiaries with unstable angina pectorus. Am J Cardiol. August 1 2992;909:248-53
\textsuperscript{lviii} Reuben DB, Yoshikawa TT, Besdine RW, Geriatric Review Syllabus Third Edition pp 296-297
- atrial fibrillation -------------------------------40%
- new or worsening angina ------------------------20%

Apathetic hyperthyroidism: 
- Depression
- Apathy
- Placid Facies  *(Mimics depression or parkinsonism)*

II) TESTING 
- TSH-ultrasensitive is the screening test of choice

Does it ever miss?  Rarely
T-3 toxicosis---exclusive disease of elderly sometimes needs
T-3 RIA if still suspect.

III) CAUSES
25% of thyrotoxicosis had iodine contrast in the previous 3-8 weeks.
How do you tell the difference?  24 hour Iodine 123 uptake.

<table>
<thead>
<tr>
<th>Increased uptake</th>
<th>%*</th>
<th>uptake pattern</th>
<th>Deacreased uptake</th>
<th>%lix</th>
</tr>
</thead>
<tbody>
<tr>
<td>Graves dz</td>
<td>35-100%</td>
<td>homogenous</td>
<td>Subacute thyroiditis</td>
<td>2%</td>
</tr>
<tr>
<td>Toxic adenoma</td>
<td>20-60%</td>
<td>[ in nodule, n-v in surrounding gland</td>
<td>Silent post-partum thyroiditis</td>
<td>2%</td>
</tr>
<tr>
<td>Toxic multinodular goiter</td>
<td>20-60%</td>
<td>heterogenous</td>
<td>Factitious</td>
<td>rare</td>
</tr>
<tr>
<td>TSH-induced hyperthyroidism</td>
<td>30-80%</td>
<td>homogenous</td>
<td>Struma ovarii</td>
<td>rare</td>
</tr>
</tbody>
</table>

*percentage range based on multiple studies.

****** ATYPICAL PRESENTIONS OF COMMON DISEASE -- the Pearl Card***

I) PHYSIOLOGIC CHANGES OF NORMAL AGING

A) Thermoregulation:
1) Lower basal body temperatures
   *Aged* normal:  
   | oral = 35.8-36.8 C (96.4-98.2F) | rectal = 36.8-37.2 C (98.2-98.9F) |
   | ear ( IRED) (fever) = >37.2C (>99.0F) |

B) Cardiac - Autonomic system: Beta-adrenergic systems---decreased
   Alpha-adrenergic system------unchanged
   LVH (compensatory)

C) Volume regulation
1) decreased body water reserves due to decreased percent body water.
2) decreased thirst drive
3) decreased ADH response to hypovolemia
4) age related renal dysfunction:

D) Immune dysregulation----------T cell & antibody: -decreased responsiveness

F) Central nervous system: Executive control & decision making change with age.

II) SEPSIS
- diffuse inflammatory response
- organ dysfunction: e.g  -hypoperfusion  -hypotension  -mental status changes

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11
- CHANGE IN MENTAL STATUS (50%)
- CHANGE IN FUNCTIONAL STATUS
- anorexia
- falls
- blood sugar alteration

B) Sources of infection: urinary (27-44%), respiratory (20%), abdominal (20%)
C) Reasons for failure: age >85, neutropenia, S. aureus, lower resp. inf., patients not treated with the appropriate antibiotic within the first 24 hours.

III) MYOCARDIAL INFARCTION

A) Atypical symptoms
- syncope - 7%
- stroke - 7%
- palpitations - 4%
- dyspnea - 20-50%
- confusion - 13%

B) Treatments: underutilized 1) thrombolytics 2) PCTA 3) Beta-blockers 4) ASA

TYPICAL SYMPTOMS OF HYPERTHYROIDISM IN ELDERLY:
- anorexia,
- weight loss, muscle wasting (proximal muscles)
- change in cardiovascular functioning:
  - new or worsening CHF (60%), atrial fibrillation (40%), new or worsening angina (20%)

Apathetic hyperthyroidism: - Depression, Apathy, Placid Facies

II) TESTING
- TSH-ultrasensitive, occasionally Free T-3 and Free T-4

III) CAUSES:
- toxic nodular goiter,
- single hyperfunctioning nodule,
- diffuse toxic goiter (Graves),
- iatrogenic (excess thyroid replacement, or s/p iodine contrast) 2/3/03 evv