

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

Aged normal: oral = 35.8-36.8 C (96.4-98.2F)
rectal = 36.8-37.2 C (98.2-98.9F)ⁱ
ear = (IRED)(*fever*) = >37.2C (>99.0F)ⁱⁱ

Summary: elders run one degree below normal youngsters.

Why: -decreased heat production per kg. body weight

-reduced muscle activity (thermogenesis)+less efficient shivering

-decreased meal induced thermogenesisⁱⁱⁱ
(especially by brown adipose tissue)^{iv}

ⁱ Harchelroad F. M D Acute Thermoregulatory Disorders, Clinics in Geriatric Medicine Vol. 9, No. 3 aug. 1993

ⁱⁱ Smitz S. et al Comparison of rectal and infrared ear temperatures in older hospital inpatients JAGS Jn 2000;48:63-66

ⁱⁱⁱ Reuben, D.B., Yoshikawa .T.T., Besdine R.W., Geriatric Review Syllabus Third Edition

^{iv} High KP, Infectious Disease Geriatric Review Syllabus 5th edition 2002-2004 pp 306-315

Defining fever in Frail Elderly in LTC facilities^v

Definition	Sensitivity	Specificity
T > 101 F (38.3 C)	40.0%	99.7%
T > 100 F (37.7 C)	70.0%	98.3%
T > 99 F (37.3 C)	82.4%	89.9%

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

Eddie 1998

B) Cardiac - Autonomic system

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

^vCastle SC, Yeh M, et al. Lowering body temperature criterion improves detection of infections in nursing home residents. *Aging Immunol Infect. Dis.* 1993;4 (2):67-76

C) Volume regulation

- 1) decreased body water reserves due to decrease percent body water.
- 2) decreased thirst drive^{vi}
- 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^{vii}-----T cell

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

E) Central nervous system

- 1) Executive control and decision making^{ix}

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):^x

- 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)^{xi, xii} March 1996

^{vi}Phillips PA, Rols BJ, et. al. Reduced thirst after water deprivation in health elderly men NEJM 1984;311(12):753-759

^{vii}Ben-Yehuda A, Weksler ME: Host resistance and the immune system. Clin Geriatric Medicine 8:913, 1992

^{viii} Taffet G.E., Age Related Physiologic Changes, Geriatric Review Syllabus, 4th edition, pp 10-23

^{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

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

^{xiii} Fontanarosa PB, Kaeberlein FJ, Gerson LW et. al, Difficulty in Predicting Bacteremia in Elderly Emergency Patients. Ann. Emerg. Med. 21:99 1992

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

^{xv} Chattopadhyay B, Al-Zahawi M: Septicaemia and It's Unacceptable High Mortality in the Elderly. J Infect 7:134, 1983

^{xvi} Meyers BR, Sherman E. Mendelson MH, et al: Blood Stream Infections in the Elderly. Am J Med 86:379, 1989

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

^{xviii} Tran DD, Groeneveld ABJ, van der Meulen J, et al: Age, Chronic disease, Sepsis Organ System Failure, and Mortality in a Medical Intensive Care Unit. Crit Care Med. 18:474, 1990

^{xix} Gleckman RA, Hibert D: Afebrile bacteremia. JAMA 248:1478 1982

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

^{xxi} Madden JW, Croker JR, Beynon GPJ: Septicemia in the elderly. Postgrad Med 57:502, 1981

^{xxii} Meyers BR, Sherman E. Menddelson MH, et al. Bloodstream infections in the elderly. Am J Med. 1989;86:379-84

example: 100 community acquired sepsis^{xxiii}
 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

^{xxiii} Mccue JD, Gram negative bacillary bacteremia in the elderly: incidence, ecology, etiology, and mortality. J Am Geriatric Soc. 1987;35:213-8

^{xxiv} Horattas MC, Guyton DT, Wu D. A reappraisal of appendicitis in the elderly. Am J Surg. 1990; 160:291-293

^{xxv} Owend RJ, Hamit HF. Appendicitis in the elderly. Ann Surg 1978;187:392-396

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

^{xxvii} Lan WY, Fan ST, Yiu TF et al. Acute appendicitis in the elderly. Surg Gynecol Obstet. 1985;161:157-160

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

^{xxix} Sonneblick M, Carmon M, Rudenski B, et al: Septicemia in the elderly: Incidence, etiology and prognostic factors Isr J Med Sci 26:195 1990

^{xxx} Rudman D, Hontanosas A, Cohen Z, Mattson DE. Clinical correlation of bacteremia in a Veterans Administration extended care facility. J Am Geriatr Soc. 1988;35:726-32

-Broad spectrum-----S. aureus
aerobic gram-negative bacilli
Enterococci^{xxx1}
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 \geq 50% obstruction of coronary arteries

B) Changes with Old-Old (>80)Age^{xxxii}

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:^{xxxiii}

-decreased thrombolytic therapy

Patients presenting with MI who meet criteria for thrombolytics:

-30% of 65-74 , 20% of age>80 meet criteria^{xxxiv}

^{xxx1}Bender BS: Sepsis. Clinics in Geriatric Medicine 8:913

^{xxxii}Mehta RH, Ratmore SS, et al. Acute Myocardial Infarction in the Elderly: Differences by Age. J. Am. Coll. Cardio.. Vol 38 No 3 2001

^{xxxiii}Mc Laughlin TJ, Gurwitz JH, Willison DJ, Gao X, Soumerai SB Delayed Thrombolytic Treatment of Older Patients with Aduce Myocardial Infarction JAGS 47: 1222-1228 1999

^{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%^{xxxvii} permanent cognitive impairment

decreased PTCA/stenting^{xxxviii, xxxix, xl, xli, xlii}

-PTCA/stenting better than Thrombolytics with lower 30 and 360 day mortality and less CHF,^{xliii, xliiv}

Complications: - 0.2% PTCA,

- 0.9% thrombolytics

Invasive strategies improve outcomes in MI's^{xlv, xlvi, xlvii}

~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 coronary*

^{xxxv}Soumerai SB, McLaughlin TJ, et al. Effectiveness of thrombolytic therapy for acute myocardial infarction in the elderly. Archives of IM Vol 162, No. 5 March 11, 2002

^{xxxvi}Angeja BG, Alexander JH, et al. Safety of weight-adjusted dosing regimen of Tenecteplase in the ASSENT-Trial. Am J of Cardiol. Vol 88: 1240-1245 December 1 2001

^{xxxvii}Newman MF, et al. Longitudinal assessment of neurocognitive function after coronary artery bypass. NEJM 2001 Feb 8;344:395-402

^{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 than 75 years of age: clinical profile and initial and long-term (3 years) outcome. AHJ, April 2002 Vol. 143, No 4

^{xli}de Doer M-J et al Reperfusion therapy in elderly patients with acute myocardial infarction: A randomized comparison of primary angioplasty and thrombolytic therapy. J Am Coll Cardio. 2002 Jun 5; 39:1723-8

^{xlii}Thiermann DR, Primary angioplasty for elderly patients with myocardial infarction: Theory, practice and possibilities. J Am Coll Cardiol. 2002 Jun 5; 39:729-32

^{xliii}Pfisterer et al. Trial of invasive vs medical therapy in elderly patients with chronic symptomatic coronary-artery disease (TIME) The Lancet 9/22

^{xliiv}The TIME Investigators Trial of invasive versus medical therapy in elderly patients with Chronic symptomatic coronary artery disease (TIME): A randomized trial Lancet 2001 Sept. 22;358:945-6

^{xlv}NEJM June;344:1879

^{xlvi}JAMA Nov 21; 286:2405

^{xlvii}Strenestrand U, Wallentin I. Early revascularisation and 1 year survival in 14 day survivors of acute myocardial infarction: a prospective cohort study Lancet 2002 May 25; 359:1805-11

angiography^{xlviii}

How do we do with simpler therapies?

Acute MI–1996 and 2001–Elderly^{xlix} ¹ ^{li}

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.^{lii}

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^{liii}

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

E) Atypical symptoms of unstable angina^{liv} (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

^{xlviii}Aronow WS. Cardiovascular disease and disorders. Geriatric Review Syllabus 5th Edition pp253-266

^{xlix}Malach M et al Early intervention reduces mortality in persons after MI Am Coll Cardiol 1996

^lMehta RH, Ratmore SS, et al. Acute Myocardial Infarction in the Elderly: Differences by Age. J. Am. Coll. Cardio.. Vol 38 No 3 2001

^{li}Allison JJ, Kiefe CI, Weissman NW, et. al. Relationship of hospital teaching status with quality of care and mortality for Medicare patients with acute MI. JAMA 2000 Dec 20;284(23):2994-5

^{lii}Kannel WB, Prevalence and clinical aspects of unrecognized myocardial infarction and sudden death. Circulation 1987;75:4-5

^{liii}Pathy MS Clinical presentation of myocardial infarction in the elderly. Br. Heart Journal 1967;29:190-199

^{liv}Canto JG et al. Atypical presentations among Medicare beneficiaries with unstable angina pectorus. Am J Cardiol. August 1 1992;909:248-53

Less likely to receive on admission:

ASA, antiplatelet agents, heparin or beta-blockers

F) Outcomes:

1) Recognized vs unrecognized SAME PROGNOSIS^{lv},^{lvi}
for -----
-another MI
-ventricular fibrillation
-sudden death
-in hospital mortality^{lvii}

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

I) SYMPTOMS:

TYPICAL IN YOUNG:

- fine tremor
- skin: moist smooth
- increased perspiration
- ophthalmopathy
- bowel frequency

Elderly may present with the above symptoms but the *atypical* symptoms are more common:^{lviii}

- tremor: -usually not present but if present *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
-new or worsening CHF-----60%

^{lv} Sigurdsson E, thorgeirsson G, Sigvaldson H, Sigfusson N. Unrecognized myocardial infarction: Epidemiology, clinical characteristics and the prognostic role for angina pectoris. The Reykjavik Study. Ann Intern Med. 1995;122:96-102

^{lvi} 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

^{lvii} Canto JG et al. Atypical presentations among Medicare beneficiaries with unstable angina pectoris. Am J Cardiol. August 1 2002;90:248-53

^{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.

Increased uptake	%*	uptake pattern	Deceased uptake	%^{lix}
Graves dz	35-100%	homogenous	Subacute thyroiditis	2%
Toxic adenoma	20-60%	[in nodule, n-v in surrounding gland	Silent post-partum thyroiditis	2%
Toxic multinodular goiter	20-60%	heterogenous	Factitious	rare
TSH-induced hyperthyroidism	30-80%	homogenous	Struma ovarii	rare

*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 decrease 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

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

II) SEPSIS

-diffuse inflammatory response

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

A)TYPICAL SYMPTOMS OF SEPSIS IN ELDERLY::

^{lix}Haddad G, Is It Hyrperthyroidism? PGM. Vol 104, no 1 , 12/1998

-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**) 2/3/03evv