Anorexia & Weight Loss in Older People

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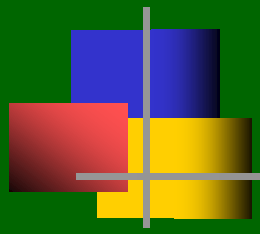
Geriatric Giants
- atypical presentation

- Instability (Fall)
- Immobility
- Intellectual impairment
- Incontinence
- Inanition Anorexia
- Insomnia
- Iatrogenesis

Geriatric Syndrome



1. Decline in physiologic function & reserve
2. Disease

→

Symptoms

- weakness
- fatigue
- anorexia
- undernutrition
- weight loss

Signs

- physiologic changes
- balance & gait
- deconditioning

→

- falls
- injury
- acute illness
- hospitalization
- disability
- dependency
- death

Neurologic Changes in Aging & Under-nutrition

Physiologic changes	Clinical correlation
↓ dendritic connections	impaired memory retrieve
↓ dopamine activity	↑Parkinsonism
↑ neurofibrillary tangle & senile plaques	pathologic change of Alzheimer disease
↓ acetylcholine activity	↑amnesia
↓ serotonin activity	↑depression
↓ smell ~ 50%	↓ appetite
↓ gustatory sense	spicy, salty food

Aging and Nutritional Changes : Decreased total energy requirement

Why changes	Aggravating factors in ageing	Consequences	Common co-morbid diseases
- ↓ energy expenditure: ↓ resting metabolic rate 1-2%/decade between age 20 – 70.* - Loss lean body mass - ↓ physical activity	- Acute & chronic illnesses - Polypharmacy - Anorexia (vision, taste, olfactory) - Oral health & dysphagia - Constipation	- Nutrient needs may ↔ or ↑ then, may lead to nutrient deficiency	- Frailty

*Bernstein M. J Acad Nutr Diet 2012;112(8): 1255-77.

Anorexia & under-nutrition in older people

- Why under-nutrition is commonly unrecognized in daily clinical practice ?
- Why anorexia & under-nutrition is so important among older patients ?
- How to recognize under-nutrition in older patients ?
- How to prevent under-nutrition in various settings ?

Why under-nutrition is commonly unrecognized in daily clinical practice ?

R-A-M-P-S

- **R – reduced body reserve : muscle wasting**

?

Why under-nutrition is commonly unrecognized in daily clinical practice ?

R-A-M-P-S

- **R – reduced body reserve : muscle wasting**
- **A – atypical presentation : under-nutrition is the important underlying mechanism of many geriatric syndromes**
- **M – multiple pathology : disease ↔ nutrition**
- **P – polypharmacy : adverse drug reaction**
- **S – social adversity : influence of social impact**

Livesley B.Spectrum International. 1992 ; 32 : 40-2.

Why under-nutrition is so important among older patients ?

1. Common
2. Underlying causes of many common diseases among older people
3. Silent killer hidden in the dark
4. Easy to correct, if do it in time

Why under-nutrition is so important among older patients ?_common

Protein calorie malnutrition

- Developed country:
  community 15%, hospital 23-62%, nursing home 85%
- Thailand : community

	Men (%)	Women (%)
60 – 69 years old	13 – 27	5 – 24
70 – 79 years old	16 – 39	11 – 39
≥ 80 years old	20 – 39	18 – 54

ประเสริฐ อัสสันตชัย, การอบรมด้านผู้สูงอายุและความชรา พ.ศ. 2544. กรุงเทพฯ : โรงพิมพ์แห่งจุฬาลงกรณ์มหาวิทยาลัย 2544 : 58-83

Why under-nutrition is so important among older patients ?_common

Vitamin deficiency_surveyed in 2,336 cases from 4 regions of Thailand

- Betacarotene deficiency 83 %
- Vitamin E deficiency 55.5 % (vs. 2.5%)
- Folate deficiency 38.8 % (vs. 3.3%)
- Vitamin B1 deficiency 30.1 % (vs. 3-15%)
- Vitamin C deficiency 9.9 % (vs. 25%)
- Vitamin A deficiency 6.1 % (vs. 0.3%)
- Vitamin B12 deficiency 0.6 % (vs. 20%)

Assantachai P, et al. Pub Health Nutr 2007; 10 : 65-70.

Why under-nutrition is so important among older patients ?_underlying causes

- Fall

- low lean body mass (OR 0.96, 95% CI : 0.92 - 0.98)
- low serum albumin (OR 1.86, 95% CI : 1.17 - 2.96)

Assantachai P, et al. J Med Assoc Thai 2003; 86: 124-130

- Osteoporosis

- community : low fat mass (OR 0.91, 95%CI: 0.88-0.94 in women)
  (OR 0.94, 95%CI: 0.89-0.98 in men)

Assantachai P, et al. Osteoporos Int 2006; 17 : 1174-1181.

- nursing home :

low lean body mass (regression coefficient 0.003, p 0.03)

Assantachai P, et al. Osteoporos Int 2006; 17 : 1096-1102.

Why under-nutrition is so important among older patients ?_underlying causes

- **Hospitalization**

  - Survey in 66 elderly clubs : low BMI

    OR 1.52, 95%CI : 1.09 - 2.13

    Assantachai P, et al. J Med Assoc Thai 2005 ; 88 : 1051-6.

- **Quality of life**

  - Survey in 66 elderly clubs : lack of regular milk intake

    OR 1.40, 95%CI : 1.06 - 1.85

    Assantachai P, et al. J Med Assoc Thai 2003 ; 86 : 938-46.

Why under-nutrition is so important among older patients ?_underlying causes

Complications of protein calorie malnutrition

- **Muscle weakness**
- **Immunodeficiency : ↓CD4/CD8, infection in elderly**
- **Anemia**
- **Poor cognitive function**
- **Delayed wound healing**
- **Adverse drug reaction : pharmacokinetics**

Why under-nutrition is so important among older patients ?_silent killer

- **Overall mortality**

  BMI < 22 : RRR = 1.3 in women aged 55 – 64

  RRR = 1.6 in women aged 65 – 74

  Tayback M, et al. Arch Intern Med 1990; 150: 1065-1072.

- **Bacterial infection**

  anorexia requiring NG tube feeding in pt. with UTI predicted mortality

  Assantachai P, et al. J Med Assoc Thai 1997 ; 80 : 753-9.

How to recognize under-nutrition in older patients ?

- Community setting
  - Annual check-up
    - comprehensive geriatric assessment
    - validated tools e.g. MNA, NSI, SCALES, etc.
- Clinical setting
  - Holistic geriatric assessment
  - Clinical examination
  - Laboratory tests

Summary of screening issues for under-nutrition

Physical	Mental	Social
Drug-induced anorexia	Chronic alcoholism	Poverty
Oral health	Delirium	Low education, nutritional awareness
Chronic disease esp. chronic diarrhea	Depression	Live alone
Malignancy	Dementia	Poor social input
Hyperthyroidism		Poor ADL: cooking, shopping

How to recognize under-nutrition in older patients ? __community setting

- Holistic geriatric assessment
  - Physical : chronic illness, gait, geriatric syndrome, visual acuity, hearing, dental, dietary recall.
  - Mental : dementia, depression
  - Social : social isolation, poverty
  - Function : poor self-care

How to recognize under-nutrition in older patients ? :

Mini-Nutritional Assessment (MNA)®

Nestlé Nutrition Institute

- **Validated in various settings: community, nursing home, hospital**
  - **sensitivity 96%, specificity 98% !**
  - **4 parts : anthropometry, dietary recall, clinical, self assessment.**

Interactive versions of the MNA®-Short Form: 27 languages
Bengali, Chinese, Czech, Dutch, English, Farsi, Finnish, French,

German, Greek, Hindi, Indonesian, Italian, Japanese, Korean,

Lithuanian, Norwegian, Portuguese, Polish, Romanian, Sinhala, Slovakian, Spanish, Swedish, Turkish, Thai and Urdu

Mini-Nutritional Assessment (MNA)®

A Has food intake declined over the past 3 months due to loss of appetite, digestive problems, chewing or swallowing difficulties?
0 = severe decrease in food intake
1 = moderate decrease in food intake
2 = no decrease in food intake ☐

B Weight loss during the last 3 months
0 = weight loss greater than 3 kg (6.6 lbs)
1 = does not know
2 = weight loss between 1 and 3 kg (2.2 and 6.6 lbs)
3 = no weight loss ☐

≤ 11 : at risk
≤ 7 : malnourished

C Mobility
0 = bed or chair bound
1 = able to get out of bed / chair but does not go out
2 = goes out ☐

D Has suffered psychological stress or acute disease in the past 3 months?
0 = yes 2 = no ☐

E Neuropsychological problems
0 = severe dementia or depression
1 = mild dementia
2 = no psychological problems ☐

F1 Body Mass Index (BMI) (weight in kg) / (height in m)^2 ☐
0 = BMI less than 19
1 = BMI 19 to less than 21
2 = BMI 21 to less than 23
3 = BMI 23 or greater ☐

How to recognize under-nutrition in older patients ? __community setting

- SCALES : no diagnosis is needed, >3 points
  - S – sadness — Yesavage's GDS 10-15 = 1 pt.; ≥ 16 = 2 pts.
  - C – cholesterol — total chol.<180=1pt., <160=2 pts.
  - A – albumin — albumin <4 = 1pt., <3.5 = 2 pts.
  - L – loss of weight — loss < 2 lbs.(1m.) = 1pt., loss > 6 lbs.(6m.) = 2 pts.
  - E – eating — cognitive impairment (1pt.), physical limitation (1pt.)
  - S – shopping — inability to shop or cook = 1 pt.

How to recognize under-nutrition in older patients ? __community setting

- **DETERMINE** : self-rated
  - **D** – disease
  - **E** – eating poorly
  - **T** – toothless/mouth pain
  - **E** – economic hardship
  - **R** – reduced social contact
  - **M** – multiple medicine
  - **I** – involuntary weight loss
  - **N** – need assistance
  - **E** – elder years above age 80

How to recognize under-nutrition in older patients ? __clinical setting

MEALS ON WHEELS

- M: medications
- E: emotional (depression)
- A: alcoholism, anorexia, abuse of the elders
- L: late-life paranoia
- S: swallowing problems (dysphagia)
- O: oral problems
- N: no money (poverty)
- W: wandering and other dementia-related problems
- H: hyperthyroidism, pheochromocytoma
- E: enteric problems (malabsorption)
- E: eating problems
- L: low salt, low cholesterol diet
- S: shopping and meal preparation problems

3 common causes: malignancy, depression, GI problems

Anticholinergic drugs

The **Beers Criteria**
: do more than guide decisions about what drugs to use in older patients.
: also tell us what not to do
: American Geriatrics Society. the latest version released in January **2019**.

Table 7. Drugs With Strong Anticholinergic Properties

Antiarrhythmic	Promethazine
Disopyramide	Pyrilamine
	Triprolidine
Antidepressants	
Amitriptyline	
Amoxapine	
Clomipramine	Antimuscarinics
Desipramine	(urinary incontinence)
Doxepin (>6 mg)	Darifenacin
Imipramine	Fesoterodine
Nortriptyline	Flavoxate
Paroxetine	Oxybutynin
Protriptyline	Solifenacin
Trimipramine	Tolterodine
	Trospium
Antiemetics	
Prochlorperazine	Antiparkinsonian agents
Promethazine	Benztropine
	Trihexyphenidyl
Antihistamines (first generation)	
Brompheniramine	Antipsychotics
Carbinoxamine	Chlorpromazine
Chlorpheniramine	Clozapine
Clemastine	Loxapine
Cyproheptadine	Olanzapine
Dexbrompheniramine	Perphenazine
Dexchlorpheniramine	Thioridazine
Dimenhydrinate	Trifluoperazine
Diphenhydramine (oral)	
Doxylamine	Antispasmodics
Hydroxyzine	Atropine (excludes ophthalmic)
Meclizine	Belladonna alkaloids
Clidinium-chlordiazepoxide	Scopolamine (excludes ophthalmic)
Dicyclomine	
Homatropine (excludes ophthalmic)	Skeletal muscle relaxants
Hyoscyamine	Cyclobenzaprine
Methscopolamine	Orphenadrine
Propantheline	

How to recognize under-nutrition in older patients ? __clinical setting

- History taking
  - weight loss > 5% in 6 months without intention
  - vegetarian for many years → cyanocobalamin def.
  - chronic alcohol drinking → thiamin def., folate def.
- Clinical examination
  - protein def. → edema, muscle weakness & wasting, white nail
  - calorie def. → weight loss, muscle weakness
  - vitamin A def. → xerophthalmia, xerosis, corneal ulcer
  - vitamin B1 def. → high-output heart failure, ophthalmoplegia, neuropsychiatric symptoms
  - etc.

How to recognize under-nutrition in older patients ? __clinical setting

- Investigations : Anthropometry
  - Body mass index < 18.5 ? (decreased height during increasing age, inconvenient to measure esp. admitted case)
  - Mindex (woman) = body weight / demispan (m.)
  - Demiquet (man) = body weight / (demispan) ^{2}
  - Mid-upper-arm circumference
  - Skinfold thickness : triceps, biceps, subscapular, suprailiac

Alternative anthropometric measurement for older Thai people

- Demispan measurement

- cut-off point of Mindex for Thai woman

  55.95 kg./m.

- cut-off point of Demiquet for Thai man

  75.6 kg./$m.^2$

Assantachai P, et al. Asia Pacific J Clin Nutr 2006; 15: 521-7.

Alternative Anthropometric Indices to Identify the Neglected Under-nutrition in Older Adults.

Table 1. Comparisons of various nutritional variables between those who had normal nutritional status and those who had under-nutrition classified by Mindex and Demiquet.

	Older women		p	Older men		p
	Normal nutrition (n=2425)	Under-nutrition (n=69)		Normal nutrition (n=793)	Under-nutrition (n=42)	
Lean body mass	41.7 ± 5.9	28.5 ± 4.0	< 0.001	53.8 ± 7.8	38.9 ± 6.8	< 0.001
Body fat mass	17.9 ± 6.1	8.6 ± 2.5	< 0.001	11.9 ± 4.8	7.2 ± 3.8	< 0.001
Calcaneal bone mineral density	0.40 ± .09	0.25 ± .07	< 0.001	0.52 ± 0.11	0.40 ± 0.09	< 0.001
Hemoglobin	12.5 ± 1.2	11.8 ± 1.2	< 0.001	14.0 ± 1.4	12.9 ± 2.0	0.001
Total cholesterol	216.9 ± 40.8	205.9 ± 35.4	0.033	203.2 ± 40.7	193.3 ± 31.1	0.119
Triglyceride	147.4 ± 85.5	100.8 ± 36.5	< 0.001	156.5 ± 114.3	92.0 ± 32.7	< 0.001
Low density lipoprotein	129.9 ± 37.6	116.6 ± 33.5	0.005	121.6 ± 36.2	105.4 ± 27.1	0.001
Albumin	4.40 ± 0.25	4.32 ± 0.39	0.067	4.47 ± 0.26	4.36 ± 0.25	0.014

Assantachai P, et al. Siriraj Med J 2010; 62 (Suppl.1) : 65

How to recognize under-nutrition in older patients ? __clinical setting

Investigations : biochemical tests

- Protein calorie malnutrition : hemoglobin, albumin, transferrin, total cholesterol (<156 mg%), retinol-binding globulin, IGF-1, fibronectin, etc.

	Serum albumin	Serum transferrin
Normal	3.5 – 4.5	0.25 – 0.3
Mild	3.0 – 3.5	0.15 – 0.25
Moderate	2.5 – 3.0	0.10 – 0.15
Severe	< 2.5	< 0.10

How to prevent under-nutrition in various settings ? _primary prevention

- Energy requirement by body weight
  - low stress : 20 kcal. /kg./day
  - moderate stress : 25 - 30 kcal. /kg./day
  - severe stress : 35 kcal. /kg./day
- Harris-Benedict equation

men : 66.5 + (13.7 x BW) + (5 x ht. in cm) – (6.8 x age)

women : 655 + (9.5 x BW) + (1.8 x ht. in cm) – (4.7 x age)

How to prevent under-nutrition in various settings ? _tertiary prevention

- Nutritional supplement
  - General : Blendera® , Ensure ®, Isocal ®, Nutren ®, Panenteral ®, Prosobee ®
  - Specific : Neomune ®, Peptamen ®, Glucerna ®, Nepro ®
- Orexiginic drug
  - Megestrol acetate
  - Dronabinol
  - Anabolic agent
  - Antidepressant
  - Cyproheptadine ??
- Social input : home visit for those living alone, meals-on-wheel, health volunteer, national health policy, etc.

Anorexia in older people : take home message

- Anorexia & under-nutrition is commonly unrecognized in daily clinical practice. R-A-M-P-S
- Under-nutrition is very important among older patients
  - Common
  - Underlying causes of many common diseases among older people
  - Silent killer hidden in the dark
  - Easy to correct if do it in time
- Common causes of anorexia : 3 domains (physical, mental, social aspects) e.g. MEALS-ON-WHEEL
- Screening tools to detect anorexia & under-nutrition
  - Serial BW, Mindex, Demiquet

Thank You for Your Attention