Geriatric syndromes and frailty - the crucial points of geriatric medicine

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Ageing- definition

Inevitable physiological process, which is the last ontogenetic period of life. Over 75 y. break point of ontogenesis.
Old Age and Illness

- According to rising age the spectra of morbidity is changing
- ↑ risk of chronic and degenerative illnesses and death
- An old organism adapts badly to varying conditions of internal and external environment
European Population – Age Structure  
(Baltes: Gerontology 2003;49:123)
Population of the Czech Republic 1950 – 2008 - 2060
<table>
<thead>
<tr>
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<th>2008</th>
<th>2060</th>
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<tr>
<td>≥ 65 y.</td>
<td>14,6%</td>
<td>≥ 65 y.</td>
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<tr>
<td>≥ 80 y.</td>
<td>3,4%</td>
<td>≥ 80 y.</td>
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<td>≥ 85 y.</td>
<td>1,2%</td>
<td>≥ 85 y.</td>
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<td>LE:</td>
<td>♂ 73,5 y.</td>
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<td>♀ 79,7 y.</td>
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Age Categories – New Division

- **65 – 74 y.** „young seniors“
- **75 – 84 y.** „old seniors“  ↓ adaptability  
  ↑ vulnerability
- **85 + y.** „oldest old“  ↑ frailty  
  ↑ dependance
**Functional Categorization**

1. **Fit** seniors

2. **Independent** – fail only due to stress (illness, injury, surgery etc.)

3. **Frail** – risk even in normal conditions (falls, cognition, mobility, etc.)

4. **Bedridden** – immobile

Who is a geriatric patient?

- Biologically older patient
- Multi-morbid
- Disabled with functional limitations
- Need-specific geriatric mode

Difficulties of modern medicine in the care of seniors

- Atomization of medicine
- Absence of holistic approach
- Multi-morbidity – seemingly doesn´t belong anywhere
- ↑ socialization of health problems

The Main Aim of Geriatrics

1. To preserve the health of seniors

2. To live a high-quality and independent life as long as possible

3. Sustaining and protection of self-sufficiency

4. To minimize the period with sy of FTT

What is frailty?

- Medical syndrome ⇔ sarcopenia
- Neither multimorbidity nor disability
- Multidimensional phenomenon
- Prognostic negative factor
- ≥ 65y. ≈ 7%; ≥ 85y. ≈ 25%

*Handicapping at least in 2 of 4 areas: somatic, cognitive, nutritional, social.*

Disregulation HPA axis

- HPA axis dysregulation → ↑ Cortisol
- ↑ Cortisol → ↓ Lean body mass
- ↓ Lean body mass → ↑ IL-6
- ↑ IL-6 → Inflammatory alterations in Immune System
- Inflammatory alterations in Immune System → FRAILTY

FRAILTY
Illnesses and Age vs. frailty

MULTI-MORBIDITY

DEMENTIA

DEPRESSION

THYREOPAT.

SENSORY ORGANS

OSTEOPOR.

TUMORS

DM

Falls

Muscle strength

Physical activity

Sarcopenia

Disability
Frailty characteristics

- ↓ physical, mental and social capacities
- ↑ rise or deterioration of disability
- ↑ multimorbidity
- ↑ adverse effect of the drugs (AED)
- ↑ social isolation
- ↑ risk of institutionalization
- ↑ risk of death (>80 y. one of the main)

Frailty – relations to FD, FTT

Adaptability

AGE

ILLNESS

ENVIR.

SOCIAL

Physical capacity
cognition

nutrition

CLINICALLY EVALUABLE
deterioration

FUNCTIONAL DECREASE - FD

(disability)

GERIATRIC SYNDROMES

FTT - DEVELOPMENT
Transition to frailty (Tinetti, Wolf)

**FRAILTY**
- < 80y.
- sight
- cognition
- regular exercise
- sight disorders
- weakness LE

**ROBUSTNESS**
- > 80y.
- standing and walk disorders
- depression
- sedatives

**TRANSITION**

ZD: <2F a >3Z  **REVERSIBILITY?**  FR: >4F a <1Z
Geriatric giants

1. Instability
2. Immobility
3. Incontinence
4. Intellectual disorders
5. Iatrogenia?

*Weber P.: Postgraduální medicína, 6, 2004, č. 3, příloha, s. 13-17.*
Characteristics sy 5 I

- Multicausality
- Chronical process
- Decline of independence
- Impossibility of ordinary treatment

Instability

Closely related to such symptoms as:

balance, standing, walk, vertigo and their consequences – falls.
Mobility Disorders

- Over 65 yrs.  15 to 20 % persons – slow and difficult walk
- Over 75 yrs.  40 % walk: less than 1 mile
  1/3 difficulties with walking the stairs
  15 - 20 % need stick or assistance
  5 % confined to bed
Falls - characteristics

- 65+ y.- 25 - 35 % persons once a year at home
- 1/3 of them: repeated falls
- ↑ with age, maximum in 7\textsuperscript{th} – 8\textsuperscript{th} decade
- With risk factors 50%
- Only 1/4 of falls are registered by paramedics
- Elderly people don´t mention them – falls remind them of their helplessness
- Women: more frequently (↓ muscles, ↑ home activity)
Falls - reasons

1. Mechanic falls (external reasons) - 25 - 30%
   - slipping, tripping, etc.

2. Symptomatic falls (internal reasons) 70-75% - somatic illness consequence
   - Neurological, cardiovascular and psychiatric illnesses; musculoskeletal system disorders, sight and hearing; drugs, alcohol
**Immobility Syndrom**

- Long-term or permanent confinement to bed (contingently wheelchair) consequences.
- Main symptoms: decubitus, muscular atrophy, decondition, walking stereotype disruption, dehydration, etc.
Urinary incontinence – introduct.

Def.: inability to control the flow of urine and involuntary provable urination, which causes hygienical and social problems to the involved

Prevalence ♦ over 60 yrs. - 15 - 30% persons
♦ in very old - > 40%

Consequences ♦ life interference
♦ mental deprivation
♦ incontinence tools costs

Incontinence Occurrence

The graph illustrates the prevalence of incontinence by age for men and women. The prevalence increases with age, peaking at different stages for men and women. For men, the prevalence rises sharply from age 30, peaks around age 40, and then decreases before rising again later in life. For women, the prevalence curve is similar but reaches a peak at a younger age compared to men.
Specif�s of Incontinence in the Elderly

- The oldest old is ashamed of talking about incontinence, more than 1/2 persons conceal it.
- The physician has to ask the patient actively.
Dementia- characteristics

The most common diagnosis in the elderly

- heterogeneous group of illnesses with the global intellect disorder
- deterioration of some cognitive functions (memory, talk, thought, orientation, discretion)
- personality changes, affectivity, behaviour disorders
Dementia Classification (based on etiology)

- Primarily degenerative dementia 50-70%
  - Alzheimer senile and presenile – 50-60%;
  - others (m. Parkinson, etc.) – 5-10%
- Vascular dementia 15-30%
- Mixed dementia 10-20%
- Lewy body dementia 10-20%
- Frontotemporal dem. 3-5%
- Secondary dementia 3-5%
Delirium - characteristics

Def.: Unspecified reaction of the brain on various noxas

Alterations of the mental state – acute and temporary connected with inability to identify and react to environmental changes adequately.

Consciousness is blurred and the reduced quality of perception may fluctuate between the extremes – from total vigility to coma.
Epidemiology of delirium

- at home - 65 yrs. old - 1-2%
- at home - over 85 yrs. old - 10-13%
- acute dept. >75 yrs. on admission 10-15%
- acute dept. >75 yrs. during the hospitalization 20-30%
- gerontopsych. and institute for long-term patients (ILP) 30-60%
- after general surgeries-10%; heart-30% and hip up to 50%
Polypharmacotheraphy (PPT) definition

- Use of 3 or more drugs regardless of the age
- In CR especially in diagnosis:
  
  heart failure; atrial fibrilation; DM; stroke and TIA; chr. bronchitis
Pharmacotherapy in the elderly - specifics

1. hanged reaction to drugs ⇒ Changes of pharmacodynamics and -kinetics

2. ↑ AED in the elderly generally

3. ↑ non-compliance of seniors

4. ↑ appearance of pharmaceutical interactions
Iatrogenia

- 30% AED are predictable
- Up to 70% AED are dose dependent
- The treatment should be considered individually („tailor made“)
- AED reactions remind unspecific geriatric syndroms
Other geriatric syndromes

- Sy decondition and hypomobility (sarcopenia)
- Sy anorexia and malnutrition, dehydration
- Sy of dual deficit (sight, hearing)
- Geriatric maladaptive sy
- Sy of mistreatment, neglect and elder abuse
- Sy of the terminal geriatric deterioration - FTT

Sy decondition and hypomobility (sarcopenia)

- The principle is the limitation of kinetic activity due to sitting or lying, muscle atrophy of the lower extremities.
- The cause may be the loss of motivation, depression, nutrition disorders, kinetic dyscomforth.
Sy anorexia and malnutrition

- **Causes of anorexia:** tumors, depression, constipation, inadequate form of food
- **Causes of malnutrition:** bad denture or dysphagia, absorption disorders, poverty, immobility, dementia or neglect sy
Sy of dual sensory deficit (sight, hearing)

- 65-80 r. at home: 0,5%
- ≥ 85 r. at home: 6%
- With cognitive dysfunction: 6 – 13%
- In nursing institutions: 7 – 25%

Geriatric maladaptive syndrom

- Psycho-social maladaptation
- Maladjustment to new living conditions (e.g. nursing home admission, etc.).
- Somatization of difficulties (vertigo, heart palpitation, sweat, etc.).
- Drugs often worsen the situation.
Sy of elder abuse, neglect and mistreatment sy – EAN

- Intentional use or threat of use of physical powers or other instrument against himself, other person, against some group etc.
- All kinds of physical, mental and sexual mistreatment and abuse, acts of neglect and suicides and other forms of self-mutilation
- 5 - 20% seniors
Risk Factors of Sy of EAN

- Old age
- Disability
- Loneliness
- Intellectual dysfunction: dementia, depression (> 50%)
- Poverty
- Minorities; Ethnically different races
Sy terminal geriatric deterioration - FTT

- ↓ medical and functional status without an explicit pathological reason, refractory to the treatment

- ▲ loss of appetite, slimming, fatigue, activity limitation, apathy - immobility, confusion

- Heading for death up to ¾ cases

- over 85 yrs. it lasts 3-6 months in average
How to get old in a healthy manner?

GUIDELINES

Physical activity
- 30min./d. exercise
- Optimum BMI
- Osteoporosis prevention
- Sarkopenia prevention

Mental activity
- Brain gymnastics
- Reminiscences therapy

Nutrition
- ↓ FFA, chol. Na
- ↑ Fruits, vegetables, 1600-2000 cal.
- Vitamins, trace elements

Social activity
- Loneliness
- Socialization (communication)

Not to underestimate the ability to recover and live independent life in an acceptable condition.
A geriatric patient during the hospitalization or Out-patient check-up at GP´s or somewhere else

\[\downarrow\]

\textbf{CGA (incl. MMSE, ADL, etc.)}

\[\downarrow\]

Geriatric consultation $\iff$ multidisciplinary approach
...add life to years not years to life...