Frailty and Falls

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Frailty definition

Biological syndrome of decreased reserve and resistance to stressors, resulting from cumulative declines across multiple physiologic systems, and causing adverse outcomes. This concept distinguishes frailty from disability and ...

Frailty

and/or Disability, Long term conditions, Chronic Disease Multi-morbidity
Frailty definition

• ‘a condition or syndrome which results from a multisystem reduction in reserve capacity to the extent that a number of physiological systems are close to, or past, the threshold of symptomatic failure. As a result, the frail person is at increased risk of disability or death from minor external stresses’
Frailty

Co-morbidity

Disability

Physiological changes of Ageing

Homeostatic Reserve
Avalanche Of Frailty:
Loss of Resistance to Stressors

Diminished Homeostasis  Failure to Withstand Environmental Stresses

Accumulation of Deficits and Decreased Functional Ability

Driven By Stressors:
- Pain, acute illness, changes in medications, social support, mood, environment, bereavement
Two models for Frailty - Phenotype Model

Fried, Cardiovascular Health Study, US

- underlying physiological and metabolic changes, which may be inter-related

• unintentional weight loss
• reduced muscle strength
• reduced gait speed
• self-reported exhaustion
• and low energy expenditure

Key physiological feature
• loss of skeletal muscle function (sarcopenia)

Measurement

• Self-report 4.5kg in the past year
• Grip strength Dynanometer
• Timed 5 metre walk
• ‘trouble getting going’
• Self-report: number of calories expended

Lowest 10-20% in population as cut-off for continuous variables

0/1 = robust, non-frail
2 = “pre-frail”
3+ = frail
Two models for Frailty - Deficit Model
Rockwood, Canada

- Frailty – state of vulnerability that arises in relation to the accumulation of health deficits
- Broader - more than physical function / impairment
- Incl cognition, mood, outside help, social
- “Frailty Index”
  - Scale 0 to 1
  - Up to 100 deficits can be measured, included in models
  - 20 / 92 variables in original study
- Clinical Frailty Scale, 1-9
  - 1 “very fit”
  - 8 “very severely frail”
  - (9 terminally ill, prognosis < 6mo)
A ‘Stressor’ + Frailty = A Geriatric Giant
“Geriatric Giants”
Frailty Syndromes

• Falls - collapse

• Delirium
  and or Dementia (crisis)

• Immobility, off legs

• Drug susceptibility

• Incontinence
  – “UTI”, caution ++
Frailty in more routine settings

- PRISMA 7 Questionnaire
- Walking speed (gait speed)
- Timed up and go test – TUGT measured in seconds
- Self-Reported Health
- GP assessment
- Multiple medications (polypharmacy) - five or more medications.
- The Groningen Frailty Indicator questionnaire
Frailty recognised, now what?

- CGA - Comprehensive Geriatric Assessment
  - Medical (incl cognition)
  - Functional
  - Social
  Address ‘reversible’ illness
- Exercise programmes
- Optimise health – clinical judgement, individual goals vs guidelines, multimorbidity.
- Medication review – STOPP criteria for reduced meds
- Discuss Prognosis – last 12 months life – healthcare spending
- Advance Care planning
“Geriatric Giants”
Frailty Syndromes

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- Another Frailty feature, syndrome
  - Susceptibility to, or potential for healthcare adverse effects, harm
Falls

• Very common
  – 1/3 community-dwelling >65yr fall each year
  – Increase with age
  – Care Homes & Hospitals

• Consequences
  – Trivial to disabling,
  – Injury / fracture / death
  – lifestyle restriction, fear of falls
  – institutionalisation
Falls

- Healthcare cost associated with fragility fractures is estimated at £2 billion a year
- Injurious falls, including over 70,000 hip fractures annually, are the leading cause of accident-related mortality in older people
- Falls often lead to reduced functional ability and thus increased dependency on families, carers and services
- Ageing population means rate of falls and fractures are increasing
Falls

• 35% of over 65s experience one or more falls a year

• 10-25% sustain a serious injury

• 80% of older women would rather be dead then fracture their hip and then be admitted to institutional care

• ‘Falls’ as a word have many connotations hence a focus on using the word ‘balance’ or ‘strength’
What Do You Ask in a Falls History?
‘Causes’ of falls

• Rarely single
• Non-syncopal more common
• Collection of factors
• Modifiable & non-modifiable factors
• Age related changes
• Disease / illness
Identified Risks

- History of Falls
- Muscle weakness
- Gait deficit
- Balance impairment
- Use of aids
- Visual impairment

- Depression
- Cognitive impairment
- Age > 80 yrs
- Arthritis
- Impaired ADL
- Multiple meds
Other risks

• Postural hypotension
• Psychotropic meds
• Environmental hazards
• Cardiovascular (Syncopal)
  – Carotid sinus syndrome, vasovagal syncope, postural hypotension
  – Others, arrhythmia,
Falls Clinic

• CGA:
  – Geriatrician, Integrated Falls and Bone Health Assessment
  – Physio
  – OT
  – Nurse
  – visual acuity, postural BP

• Most frequent intervention: Balance training- Otago Programme

  And uncommonly

• Syncope Clinic- Tilt Table Testing and Carotid Sinus Massage
Falls Assessment

- Hx of falls (often unwitnessed)
- General medical exam
- Cognitive assessment
- Neurological
Falls assessment

• Look for Multiple risks
  – Medications
  – Gait balance mobility
  – Neuro impairment, incl cognition
  – Vision
  – Muscle strength
  – Cardiovasc – rate rythm, postual BP
  – Feet / footware
  – Environmental hazards
Assess gait and balance

• Timed up and go
  – high tech!
  – Chair, measuring tape
  – Watch

• Observe
  – use of arms,
  – stride length,
  – base of support,
  – steps to turn 180,
  – Time, healthy women 80yr+, <12sec
Tilt table testing

• Resting supine then Head up (70°)
• Carotid sinus massage
• Stroke, MI, <6/12, arrhythmia, bruit
Syncope Investigations

- Beat-to-beat BP and heart rate monitoring
- Changes in BP rather than absolute value
Interventions

- Evidence for effectiveness from RCTs
- Multiple different interventions
  - ?which intervention work
- Exercise & Education
  - NB Strength & Balance
  - 12 weeks, 3 times a week, group, home based,
  - Adherence, persistence
Interventions

• Medication review
  – Psychotropic
  – CV meds
  – Antihypertensives

• ‘Treat’ postural hypotension vs stroke prevention etc
  – Improved BP control can lessen BP drop
Interventions

• Visual acuity
  – Optician +/- Ophthalmology - cataracts
• Chiropody
  – Footwear
• Cardiovascular
  – Pacemaker for cardioinhibitory CSH or other bradarrythmia
• Restraints
  – Care Homes / Hospitals – Cot sides
Intervention - Injury reduction

- Osteoporosis
  - Prevention & treatment
  - Calcium & Vitamin D
  - Bisphosphonates