



January 19-20, 2011, Athens, Greece
IAGG/WHO/SFGG Workshop n°3
“Promoting access to innovation and clinical
research for frail old persons”

Frailty of the elderly

Working document

Workgroup of the French Society of Geriatrics and Gerontology¹

¹ : Rolland Y, Benetos A, Gentric A, Ankri A, Blanchard F, Bonnefoy M, de Decker I, Ferry M, Gonthier R, Hanon O, Jeandel C, Nourhashemi F, Perret-Guillaume V, Retornaz F, Bouvier H, Ruault G, Berrut G. Frailty in older population: a brief position paper from the French Society of Geriatrics and Gerontology. *Geriatr Psychol Neuropsychiatr Vieil* 2011 ; 9 (4) : 1-4

Frailty, as a term depicting the condition of certain elderly people, first appeared in the 70s and designated institutionalization and the need for permanent care. In the 80s, the term referred more generally to disability, then with the advent of standardized geriatric assessment, to a complex state both medically and socially. Recent studies stemming from the observation of large cohorts of elderly persons have enabled to clarify the general outlines of frailty in which the latter rather represents an impending risk as opposed to a specific condition.

Frailty is therefore distinguished from other aspects of agedness such as vulnerability, insecurity, senescence or disability.

Co-morbidity in the field of healthcare represents both a cause and a consequence of frailty depending on whether frailty is regarded as a model of normal at-risk aging or as an intermediate state between normal aging and diseased aging.

Integrative model of understanding

Frailty represents both the result of factors occurring throughout life and the interrelationship of these factors. Study models of life course epidemiology allow to proposing a model associating 4 aspects of aging that are both distinct and interrelated: senescence, co-morbidities, disabilities and frailty.

Definition

Frailty is a clinical syndrome. It reflects a decrease in physiological reserve capacities, which alters adaptive mechanisms to stress. Its clinical expression is modulated by comorbidities as well as psychological, social, economic and behavioural factors. The frailty syndrome is a risk marker of mortality and of adverse events, including disabilities, falls, hospitalization and admission to an institution.

Age is a major determinant of frailty but does not, in itself, explain this syndrome. The management of the determinants of frailty can reduce or delay its consequences. Thus, fragility is part of a potentially reversible process.

Conventional aspects of a definition

Frailty which is present in all modes of aging, from usual aging to diseased aging, finds its clinical relevance in its asymptomatic-like presentation, thus revealing a subclinical risk that is not manifest to the non-geriatric practitioner or caregiver in a standard care management setting. In order to be distinguished from dependency and other situations of loss of functional autonomy and to better reflect usual aging, it is proposed to consider the frailty syndrome only in subjects over 65 years of age with no impairment of functional autonomy as assessed by ADL and IADL.

In order to circumvent the simultaneous variability of the level of vulnerability and level of aggression, which are interdependent, it becomes necessary to contextualize the frailty syndrome in a common setting of stress (adjusted hip replacement, lumpectomy for breast cancer, uncomplicated pneumonia, widowhood, social isolation, climatic conditions, rapid deterioration of economic conditions, for example).

Pathophysiology

There is no consensus as to the physiological processes at the source of the frailty syndrome in the elderly. Frailty appears to be integrated in a cycle of energy dysregulation associating a reduction in functional and muscle energy capacities and a deficient dietary intake in view of existing needs. One likely expression of this energetic frailty is sarcopenia, and is the result of two mechanisms that reinforce each other successively: a decrease in functional reserve and a reduction in physical activity.

Several mechanisms have been proposed: a chronic inflammatory state, alterations in endocrine and sex hormone regulatory mechanisms and increased pro-coagulant activity, to name a few.

Other pathophysiological mechanisms are also evoked involving mechanisms associated with cognitive impairment, psychological dimensions of the life experience of age, or environmental or socio-economic conditions. However, these mechanisms currently lack a sufficient level of evidence to be deemed the cause of the frailty syndrome and its consequences.

Definition criteria

Among the many simple or composite tools currently proposed, most are time-consuming and sometimes without suitable validation. Ideally, the tool should be reliable, validated, acceptable, sensitive (not necessarily specific), inexpensive, safe, fast and easy to use. Several tools can be developed according to their place of use, such as local or emergency medical consultation or non-geriatric specialties.

Two classes of criteria have been validated:

> Criteria based on energetic and motor pathophysiology, and termed frailty phenotype from the work by L. Fried. It includes five criteria:

- weight loss,
- slow walking speed,
- subjective exhaustion, mental and physical (Energy)
- low physical activity,
- muscle weakness

> Criteria based on the integration of cognitive and social factors, termed multidimensional frailty, from the work of K. Rockwood and H. Bergman. The Frailty Index, for example, has been validated and encompasses several domains: cognition, mood, motivation, mobility, balance, urinary continence, the capacity for daily living activities, nutrition, social status and co-morbidities.

Regardless of the model used, certain components have a prominent role, which may have led them to be considered as elements that can, on their own, define frailty. They include: grip strength, walking speed, functional decline, cognitive impairments and socio-economic vulnerability

Consequences of frailty

Frailty is a syndrome aggregating a level of risk. The consequences may hence be a component of its definition.

Amongst the events that have been subject to validation one of the criteria models, we find: overall mortality, loss of functional autonomy, falls, hospitalization and admission to an institution or other change in living place.

Detection situation of the fragility syndrome

Fragility must not be detected in the general population. Its detection should be made within a given context, such as an acute event regardless of type or planned management, especially if it is in a specialized non-geriatric setting, and when the presence of the frailty syndrome alters care management by modifying the risks.

The detection of frailty is relevant when a standardized geriatric assessment is not indicated. By convention, it is deemed that a subject over 65 years of age with no reduction in functional autonomy for simple (ADL) and instrumental (IADL) activities of daily living is eligible for detection of the frailty syndrome. Screening of the frailty syndrome must be context-adapted, offer feasibility for the observer and acceptability for the patient, and correspond to the expected standards of validation. The presence of frailty syndrome should lead to an assessment not only of the various multi-domain components of frailty but also the assessment of risks corresponding to those observed in the studies, within the given context.

Some issues to address during the Workshop

1 - Establishment of a simple frailty-screening tool

- . On which model
- . For which use

2 - Relevance of frailty for the assessment of

- . New treatments in geriatrics
- . Health care procedures
- . Medical and social welfare management schemes in the general population

3 - The place of frailty in prevention

- . Can frailty be proposed as a screening tool for the prevention of dependency?
- . Can frailty be proposed as an inclusion index in prevention campaigns by standardized geriatric assessment or by screening for certain diseases (Alzheimer's disease, cancer...)