EDITORIAL

Frailty and ageing

"...Last scene of all,
That ends this strange eventful history,
Is second childishness and mere oblivion,
Sans teeth, sans eyes, sans taste, sans everything."

William Shakespeare, As You like it.

Most elderly people are not at all sans everything and lead full and active lives at home. However, as any organism ages it becomes less and less able to adapt to challenges from the internal and external environment. Initially this may manifest itself only under circumstances of extreme stress and be reflected in an increased likelihood of death following major events such as severe trauma, overwhelming sepsis or heroic surgery. As adaptability fails even more with progressive ageing, minor events—such as less severe injury, relatively trivial infections or injudicious use of drugs—may precipitate catastrophic functional failure.

Over the years, gerontological researchers have attempted to separate the effects of 'true' ageing from the effects of age-related disease, although the practical usefulness of these efforts has been questioned by several authorities [1]. In addition, geriatricians have recognized a clinical presentation characterized by 'a multisystem reduction in physiological capacity' and not necessarily related to a specific single disease process. A variety of terms have arisen to describe this or similar syndromes [2, 3], but 'frailty' is perhaps the most commonly used.

Two problems arise with the concept of frailty: the first is one of definition—whilst most doctors use the term 'frail', there is considerable variation in what they mean by it. In particular, a geriatrician's concept of 'frail' may be very different to that of a gastroenterologist or an orthopaedic surgeon. The second problem is one of quantification—exactly how frail is 'frail'? clearly it is not an all-or-none phenomenon and different patients will exhibit different degrees of frailty.

These issues are well demonstrated in the field of geriatric pharmacology. Many early studies of drug metabolism in elderly people used geriatric patients and demonstrated a dramatic reduction in drug clearance compared to young volunteers (see [4] for review). It was soon realized that these changes were due more to concurrent disease and 'frailty' than to age per se [5]. As a result, more recent studies have used well-screened 'fit' older people—the problem here being that the screening is sometimes so stringent that we are investigating the 'super-old', who really do not represent the general elderly population at all.

In an attempt to overcome at least some of these problems, a group of geriatricians and pharmacologists proposed a working definition of 'frail' and 'fit' almost 10 years ago [6]. This definition was based almost entirely on function and the ability (or not) to perform activities of daily living (ADL). It did not pretend to quantify frailty, merely defining the ends of a spectrum; similarly it did not purport to identify the multiplicity of physiological deficits underlying the condition. Nonetheless, this simple and pragmatic definition has provided a useful tool to investigate the factors which are important in determining drug handling in elderly subjects.

The problems mentioned above are compounded by the fact that 'frailty' may not be static—again, using drug metabolism as an example, events that increase 'frailty' may have a profound effect on some drug metabolizing enzymes, with a return towards normality on recovery [7].

Over the past decade, various groups have advanced the concept of frailty. In particular, attempts have been made to more clearly conceptualize and define the problem [8-10], to quantify the level of defined frailty and to use such quantified measures to predict either risk of disability or medico-social outcome [10-12].

The paper by Campbell and Buchner in this issue of Age and Ageing [13] usefully extends the debate on 'frailty'. They define frailty in a systematic way and emphasize the difference between the frail patient and someone who is simply disabled. They argue that the condition of frailty can be diagnosed clinically by measuring certain parameters which are essential for successful interaction with the environment. Their measures include several measures of physical performance, an exercise test, Mini-Mental State Examination (MMSE) and anthropometric measurements. However, a scoring system based on this combination of specific measurements has yet to be evaluated in a widespread manner.

Recent cohort studies have begun to evaluate the usefulness of various combination scores of 'frailty' in predicting outcome and in identifying at-risk patients. In a prospective multi-centre cohort study of patients aged 70 years and older hospitalized for acute medical illness, Sager and co-workers identified three patient characteristics that were independent predictors of functional decline: increasing age, lower admission MMSE scores and lower pre-admission levels of ADL scores [14]. A scoring system based on these three
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predictor variables allowed patients to be classified into low-, intermediate- and high-risk categories. The rates of ADL decline at discharge for these categories were 17, 28 and 56% in the development cohort and 19, 31 and 55% in the validation cohort [14]. Another cohort study of 1486 men and 2630 women aged 71 years and older, followed for a mean of 3.7 years, found that a 15-level combination score derived from serum albumin and disability levels revealed a strong gradient in mortality risk [11]. Combination scores such as these can thus be useful in characterizing older populations.

No discussion of frailty would be complete without consideration being given to psycho-social aspects of an individual's interactions with his or her environment. Schulz and Williamson emphasize the importance of psycho-social and behavioural aspects of physical frailty in determining the impact of illness and disability on patient and family [15]. Not only do psycho-social factors predict adverse outcomes, including death, in older adults but many of these factors are modifiable and could be targeted in intervention programmes. Psycho-social factors known to determine adverse outcomes for elderly people range from patient factors (including depression [2]), to caregiver problems [16] and housing conditions [17].

Widespread agreement on the concept of 'frailty' is long overdue. The issue certainly merits further discussion. The paper in this issue of Age and Ageing forms a sound basis for such, and the correspondence columns of the journal would seem to be a most appropriate forum for this debate.

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References