HIV and frailty: Just another symptom?

Shaun Watson

Clinical Nurse Specialist (HIV Community)

Background

Frailty (Latin: *fragilita*; brittleness)

It seems obvious doesn't it: we get older we get frailer. But are the two things automatically connected, and what is frailty? To some it's generalised weakness, the inability to complete activities of living, or is it just an affliction of old age? Within HIV is it just a part of premature ageing associated with the virus, or is it something else? HIV goes through issue and symptom trends such as lipodystrophy, peripheral neuropathy, adherence, osteoporosis, cardiovascular disease, ageing, and frailty appears to be top of the list for 2015. With an older HIV-positive cohort is frailty part of the ageing process or is there more to frailty than just growing old with HIV?

Frailty can be described as a state of physiological exhaustion that increases the morbidity and mortality of HIV-infected patients. This process may be accelerated in HIV-infected patients, even in those taking antiretroviral therapy (ART) [1,2]. HIV is now a (fairly) manageable long-term, chronic illness and AIDS is therefore, in theory, preventable [3]. With the effectiveness of ART we now have an ageing HIV population. In the general population an estimated 50% of individuals over the age of 85 years have some degree of frailty, leading to a high risk for falls, disability, hospitalisation and mortality [4]. Early in the HIV epidemic, frailty was noted to be more common in those with advanced HIV disease, wasting and a low body mass index. However, with the widespread use of ART, recent studies suggest frailty in HIV is now associated with central adiposity (fat), sarcopenia (muscle wastage) and the density of muscle fat [5].

So what is the issue? Many people with multiple long-term conditions will also have frailty, which may be overlooked if the focus is on disease-based, long-term conditions such as diabetes or heart failure [6]. Frailty is associated with important adverse health outcomes, including increase in the risks of disability in older age (falls etc.) and of admission to long-term care and increased mortality. The association between frailty and adverse health outcomes carries significant health resource implications. Social care expenditure for older people in the UK is projected to rise from £5.9 billion in 2006 to £13.4 billion in 2026 [7].

We know we now have an ageing HIV-positive population and as such nurses are probably having to think way back to placements with elderly patients they may have worked with as a student nurse. But frailty, in general, is not an inevitable part of the ageing process; we all know older people who aren't frail, who live healthy independent lives. The press seems full of stories about 90-year-olds' world record times, 80-year-olds doing a marathon, or skydiving 70-year-olds. Unless we have had direct experience of elderly care or specific frailty training are we well placed to recognise frailty within our HIV cohort? We know that HIV has an ageing effect so we may notice a patient who is not looking as bright and lively as in previous face-to-face meetings. For those of us who see patients at home we may notice general untidiness, a lack of cleaning, self-care or other evidence of neglect. In the clinic you may notice patients who seem lethargic, who take longer to walk to the treatment room, who have lost weight without trying, whose handshake may not be as strong as before. As nurses we may have more time to talk over issues with patients or raise our concerns with them: 'You don't seem as active as you were before'; 'How are you coping at home/work?'; 'Have you lost weight?' Today, patients may only be seen once or twice a year for review, and changes may be more evident if they have consistent care and see the same team/nurse on a regular basis. But some may slip through the system, so an additional few questions at a review may well highlight issues around frailty. However, frailty within HIV, as mentioned before, may become muddied with other issues such as stigma, depression, anxiety, drug and alcohol use to issues around cognitive impairment. We don't expect anyone under 50 to be frail. We may even label them as moody, lazy or apathetic. But is there an underlying cause and is it something that the patient can highlight as an issue? Particularly as we grow older, is it something we just associate with ageing?

What distinguishes frailty from other illnesses, such as depression, that can exhibit most of the frailty phenotypes, or other illnesses that can cause exhaustion and low physical activity? Recreational drug use, excessive alcohol use and poor diet could also be taken into consideration as reasons for weight loss. Other issues, such as visual and auditory problems, could impact on balance and therefore increase the risk of falls. Low CD4 cell counts may lead to lethargy. Klotz and Mohler [8] believe that 'frailty' in HIV can be either a hyperinflammatory age-related loss of muscle mass and strength in some, or depression in others. Depression is highly linked with HIV. Klotz and Mohler also found that frailty in HIV-infected patients, particularly in the younger individuals,

was transient and eventually reverted to a pre-frail state. This is the opposite of the outcome for frail elderly patients where an increase in frailty would be expected. Klotz and Mohler also found that there was no relationship between frailty and age in HIV-positive patients, with no difference between people below or over the age of 50, and some evidence of lower incidence of frailty for those who had taken ART for long periods. A presentation at the 2014 CROI meeting reported an incidence of frailty phenotype of 9% in 142 HIV-infected individuals on ART with undetectable viral loads over the age of 50 years [9]. Frailty was also associated with a CD4 count less than 350 cells/mm^3, a viral load above 50,000 copies/mL and AIDS diagnosis [10].

Damani *et al.* [11] studied a group of HIV-positive injecting drug users (IDUs) and identified a frailty prevalence of 12.3%, finding that HIV infection, particularly advanced disease stage with lower CD4 cell counts and the absence of ART or virological suppression, was strongly associated with frailty. They also found that HIV-infected IDUs with well-controlled HIV disease are no more likely to be frail than similar individuals without HIV infection, with the likelihood of frailty being significantly higher with advanced disease with inadequate HIV control. Again they supported the use of ART, stating that their results suggested that HIV infection without effective treatment may represent a significant, modifiable risk factor for frailty.

How is frailty recognised?

There are numerous tools and indexes to help recognise frailty. Fried *et al.* [12] looked at developing a frailty phenotype (a set of observable characteristics) and surmised that frailty can be assessed and defined with three or more of the following criteria:

- Unintended recent weight loss
- Low physical activity
- Self-reported exhaustion
- Weakness (grip strength)
- Slow walking time (time to walk 15 feet)

Pre-frail and frail older adults have a sedentary life, an involuntary weight loss, low physical activity, exhaustion and low strength. If they have one of the Fried frailty phenotypes, they are called pre-frail; if they have three or more, they are frail. There is some uncertainty about the relationship between frailty, cognitive impairment and dementia as Fried precluded those who had performed badly in mini mental state examination (MMSE) health scores from her study.

The British Geriatric Society 'Fit for Frailty' guidance (2014) [6] recommends the use of the Prisma 7 Questions (Table 1), which are self-completed, with a score of three or more needing medical review.

Table 1: Prisma 7 questions

(1) Are you more than 85 years?
(2) Male?
(3) In general do you have any health problems that require you to limit your activities?
(4) Do you need someone to help you on a regular basis?
(5) In general do you have any health problems that require you to stay at home?
(6) In case of need can you count on someone close to you?
(7) Do you regularly use a stick, walker or wheelchair to get about?

The Prisma 7 Questions therefore look at age, gender, health, dependence, isolation and ability as determinants for frailty. This may be useful for those living with HIV in later life but do we need an assessment that is tailored to HIV healthcare professionals' needs? You could also think about frailty syndromes which may raise concerns about underlying causes. These 'syndromes' include falls (legs gave way, found on the floor), immobility (gone off legs), delirium (confused, muddled), incontinence or susceptibility to side effects of medication. It would seem common sense to investigate (in the absence of obvious causes such as drugs or alcohol) and can be a warning of more serious problems.

The frailty index takes a contrasting view to frailty as a syndrome, seeing frailty instead as a state of vulnerability that arises in relation to the accumulation of health deficits. People with few deficits are relatively fit; those with many are relatively frail. The frailty index was introduced more than a decade ago and is a useful tool for assessing the health status of individuals, and for predicting an individual's risk of adverse health outcomes. A frailty index can be constructed as the proportion of age-related health deficits an individual has accumulated. Deficits can be any diseases, signs, symptoms, laboratory abnormalities, or functional or cognitive impairments, as long as about 30 measures are included which comprise a range of physiological symptoms. The more deficits one has, the higher the frailty index and the more vulnerable one is to adverse outcomes. The frailty index can be tailored to HIV but as a tool it's time-consuming and cumbersome to use.

Rockwood *et al.* [13,14] described both the Clinical Frailty Scale (see Table 2) and the Cumulative Deficit Model. The Cumulative Deficit Model assumes an accumulation of deficits (ranging from symptoms, e.g. loss of hearing or low mood, to signs such as tremor, to various diseases such as dementia) which can occur with ageing. The Clinical Frailty Scale may be an easier guide to use, a quick and easy snapshot on how a patient is living their life. The

scale focuses upon instrumental and basic activities of daily living. But the Clinical Frailty Scale should not be used as a method of identifying frailty without a clinical assessment as it was as designed to be used to measure the severity of frailty after a comprehensive medical assessment.

Conclusion

Frailty and its causes are many and varied. There are numerous ways to help us recognise the signs (in the absence of all other causes). There is some evidence that the early use of ART is beneficial to prevent frailty in older adults living with HIV but we are also managing patients with multiple illnesses and complex needs, and frailty may be just a part of that complexity that could impact upon the individual's wellbeing.

Exercise appears, as it does for most of the population, to be part of the solution, especially for those who may be thought to be pre-frail. Resistance exercise (such as swimming, cycling, rowing) has been shown to have some benefit in the prevention and treatment of the physical component of frailty. Even the use of 'active' computer games such as 'Wii-hab' has been researched and shown to be successful [15]. As with most people the motivation to exercise may not be there and we may need to highlight the issues of frailty and the progression from pre-frailty to frailty so that patients living with HIV about whom we have concerns are fully informed and able to understand the repercussions of not addressing the first signs. We all have 'off days' and periods of lethargy and apathy, but for those living with HIV-related frailty it may be more important to be motivated to change. Fairhall *et al.* [16] looked into interventions for frailty and felt that adherence to treatment; a multidisciplinary approach; dealing with depression, poor cognition and goal setting, amongst others, were good tools to use.

So what can we do? A multidisciplinary, holistic approach is needed which starts with looking at the obvious causes such as:

Recognise the signs There may be a need to highlight the signs of frailty and add it to the assessment or for the annual review, especially for those over 50 years. Choose a tool that works for you; timing may be an issue. Recognising those who may be pre-frail may enable you to offer interventions that will help.

Ensure hearing and sight is tested Regular tests are necessary to eradicate issues of poor sight and balance as reasons for falls, confusion etc.

Issues of isolation The British Geriatrics Society 'Fit for Frailty' document [6] discusses the role of isolation and loneliness in exacerbating the symptoms of frailty. Within HIV there may be groups and organisations which can be accessed to support those at home, or internet resources such as Terrence Higgins Trust's 'MyHIV' may be useful. Having someone to motivate you may mean having a reason to go out for lunch, for shopping, a coffee or a walk. Having a dog may also give incentive to out and exercise.

Assess adherence issues This means not just to ART but to all medications. We tend to concentrate so many discussions on taking ART but many patients are on other medications and they may well take their ART but neglect or self-manage their antidepressants, statins, anti-hypertensives etc. They may view them as unimportant but there may be undesired effects if they are not taken correctly.

Small steps Starting with doing something every day, going for a walk or doing a chore such as cleaning or buying a newspaper may be the stimulus needed. Referral to a Positive Self-Management Programme (PSMP) or Expert Patient Programme (EPP) could be useful.

Table 2: Clinical Frailty Scale [13]

Category	Description	Details
1	Very fit	Robust, active, energetic, well-motivated and fit. Exercises regularly
2	Well	Without active disease but less fit than category 1
3	Managing well	Disease symptoms are well controlled compared with those in category 4
4	Apparently vulnerable	Although not frankly dependent, commonly complains of being slowed up or has disease symptoms
5	Mildly frail	Limited dependence on others for IADLs
6	Moderately frail	Help is needed with BADLs and IADLs
7	Severely frail	Completely dependent for all BADLs and IADLs
8	Very severely ill	Completely dependent, approaching end of life. Could not recover from even a minor illness
9	Terminally ill	Life expectancy less than 6 months but not otherwise frail

IADLs: instrumental activities of daily living; i.e. banking, transportation, cooking, cleaning, medication management, shopping.
BADLs: basic activities of daily living; i.e. feeding, bathing, dressing, toileting, ambulation.

Exercise Look for gyms with positive health programmes – some gyms offer tailored schemes for those with long-term conditions and GPs can refer on. Check out YMCA gyms as a good example.

Physiotherapy and occupational therapy If someone is frail and has fallen then a referral to physiotherapy or occupational therapy may be needed to look at assessing the home environment for hazards and make adaptations if needed. Or refer on to housing (if applicable).

Treat other issues Depression and all other issues that may impact on frailty, such as recreational drug and/or alcohol use, poor nutrition and hydration, reduced cognition, hearing and sight issues. If possible refer to drug and alcohol services for additional support if needed.

Finances Think about poverty; are they accessing the correct benefits that mean they can afford to eat properly or have the means to go out?

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Correspondence: Shaun Watson
56 Dean Street
London W1D 6AQ, UK
shaun.watson@chelwest.nhs.uk