Frailty and Depression in Older Adults: A High-Risk Clinical Population

Patrick J. Brown, Ph.D., Steven P. Roose, M.D., Robert Fieo, Ph.D., Xinhua Liu, Ph.D., Taina Rantanen, Ph.D., Joel R. Sneed, Ph.D., Bret R. Rutherford, M.D., D.P. Devanand, M.D., Kirsten Avlund, Ph.D.

Objective: *To identify salient characteristics of frailty that increase risk of death in depressed elders.* **Methods:** *Data were from the Nordic Research on Ageing Study from research sites in Denmark, Sweden, and Finland. Participants were 1,027 adults aged 75 years (436 men and 591 women). Time of death was obtained, providing a maximum survival time of 11.08 years (initial evaluation took place between 1988 and 1991).* **Results:** *Depressed elders showed greater baseline impairments in each frailty characteristic (gait speed, grip strength, physical activity levels, and fatigue). Simultaneous models including all four frailty characteristics showed slow gait speed (hazard ratio: 1.84; 95% confidence interval: 1.05−3.21) and fatigue (hazard ratio: 1.94; 95% confidence interval: 1.11−3.40) associated with faster progression to death in depressed women; none of the frailty characteristics in the simultaneous model was associated with death in depressed men. In women, the effect of impaired gait speed on mortality rates nearly doubled when depression was present (nondepressed women: no gait impairment = 26%; slow gait = 40%; depressed women: no gait impairment = 32%; slow gait = 58%). A similar pattern was observed for fatigue.* **Conclusion:** *The confluence of specific characteristics of frailty (fatigue and slow gait speed) and depressive illness is associated with an increased risk of death in older adults; this association is particularly strong in older depressed women. Future research should investigate whether multimodal interventions targeting depressive illness, mobility deficits, and fatigue can decrease mortality and improve quality of life in older depressed individuals with characteristics of the syndrome of frailty.* (Am J Geriatr Psychiatry 2013; ■:■−■)

Key Words: Depression, frailty, mortality

Received December 22, 2012; revised April 17, 2013; accepted April 18, 2013. From the Columbia University College of Physicians and Surgeons and New York State Psychiatric Institute (PJB, SPR, JRS, BRR, DPD), New York, NY; Sergievsky Center and the Taub Institute (RF), Columbia University College of Physicians and Surgeons, New York, NY; Division of Biostatistics (XL), Mailman School of Public Health, Columbia University, New York, NY; The Finnish Centre for Interdisciplinary Gerontology (TR), University of Jyväskylä, Jyväskylä, Finland; Queens College (JRS), City University of New York, New York, NY; Department of Public Health and Center for Health Ageing (KA), University of Copenhagen, Copenhagen, Denmark; and Danish Aging Research Centre (KA), Universities of Aarhus, Southern Denmark and Copenhagen, Denmark. Send correspondence and reprint requests to Patrick J. Brown, Ph.D., Division of Geriatric Psychiatry, Columbia University, New York State Psychiatric Institute, 1051 Riverside Drive, Unit 126, New York, NY 10032. e-mail: pb2410@columbia.edu

Supplemental digital content is available for this article in the HTML and PDF versions of this article on the journal's Web site (www.ajgponline.org).

http://dx.doi.org/10.1016/j.jagp.2013.04.010

INTRODUCTION

Frailty is a syndrome defined by weakness, fatigue, low physical activity, slowed gait, and unintentional weight loss. These declines across multiple physiologic systems[1] develop incrementally, with weakness emerging early in the process and weight loss and fatigue representing a final pathway toward frailty.[1–4] The syndrome, a clinical marker for disease and/or physiologic decline, is associated with greater depressive symptoms and disability.[1,5,6] Frailty characteristics are prevalent in the community, with estimates of prefrailty (one to two characteristics) or frailty (three or more characteristics) as high as 7% of community-dwelling elders over the age of 65 and 18% of those over the age of 80. Three-year follow-up data[2] showed that prefrail elders had more than a threefold higher risk of death compared with nonfrail elders; frail elders had a sixfold higher risk of death. Thus a significant proportion of community-dwelling elderly are at a "tipping point" toward dire outcomes.

Depression is another disease prevalent in older adults associated with disability and increased mortality. An estimated 2.6% of community-dwelling elders suffer from a mood disorder, a rate believed to be an underestimation due to under-diagnosis, the presence of subthreshold symptoms, and a lack of high-risk older adults assessed.[7] The diagnosis and treatment of late-life depression is complicated by increased risk of comorbid disability, medical disorders, and cognitive impairment.[8–15]

There is phenomenologic overlap between late-life depression and frailty, with symptoms common to both depression (weight loss, decreased physical activities, low energy) and frailty (fatigue, decreased leisure activities, weight loss).[16] The Cardiovascular Health Study[1] reported that the rate of depressive symptoms increased proportionally to the number of frailty characteristics present. Yet despite these associations, little research has focused on this high-risk clinical population.[16–21] Therefore, although characteristics of frailty have been predictive of mortality in nondepressed older adults, it is not known if these same characteristics are predictive in depressed elders or whether the presence of depression increases the risk of mortality in these individuals.

Using data from the Nordic Research on Ageing (NORA) study,[22–24] we investigated the effect of the presence of frailty characteristics on mortality in older adults with differing degrees of depressive symptomatology. We hypothesized that in the depressed sample, low grip strength and gait speed rather than fatigue and low physical activities (characteristics of frailty that overlap with symptoms of depression) would predict mortality.

METHODS

Participants

The purpose of the NORA study was to determine the functional capacity of 75-year-olds from Glostrup, Denmark; Göteborg, Sweden; and Jyväskylä, Finland.[5,22–24] Data were obtained in January 2012 for 1,204 older adults who were 75 years of age at the time of evaluation (conducted between 1988 and 1991). Participants were excluded because of missing baseline depression data or missing data on all four frailty characteristics.

Measures

Frailty characteristics. Individuals were coded as having a frailty characteristic if they scored in the bottom 25th percentile of the total sample of 1,027 older adults on that particular assessment.[1,2] Participants were coded as missing if they did not have a value on a frailty assessment. Missingness was coded for the survival analyses to investigate the potential meaning of missing data.

For grip strength, handgrip strength was assessed in kilograms of force. Men with grip strength 36.71 kg or less and women 20.90 kg or less were coded as having the frailty characteristic of low grip strength. One hundred seventy-three of 1,027 were coded as missing.

For gait speed, 10-m walking time was coded as meters per second. Men with gait speed 1.43 m/s or less and women 1.25 m/s or less were coded as having the frailty characteristic of slow gait speed. One hundred forty-five of 1,027 were coded as missing.

Fatigue was assessed by the Avlund Mob-T Scale that ranges from 0 to 6 with high scores denoting greater fatigue.[25] Participants who scored 4 or greater on the scale were coded as having the frailty characteristic of fatigue. One hundred eighty-eight of 1,027 were coded as missing.