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Is There a Relationship Between Heart Failure and Fractures?

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Background: Recent findings suggest a role for heart failure (HF) in the etiology of osteoporotic fractures, but the nature of the relationship is unclear and community-based data are lacking.
Methods and Results: Using the resources of the Rochester Epidemiology Project, we conducted a 2-phase study: A case-control study compared osteoporotic fracture history among Olmsted County, Minnesota, residents newly diagnosed with HF in 1979-2002 (cases) to age- and sex-matched community controls without HF (961 pairs; mean age: 76 years; 54% women). Both cases and controls were then followed forward in time to July 2009 to evaluate their fracture risk using a cohort design. Prior fractures were more frequent in HF cases than controls (23.1% versus 18.8%, P = 0.02). The adjusted odds ratio (OR) for HF associated with any osteoporotic fracture was 1.39 (95% CI: 1.07-1.81), mainly driven by hip fractures (OR: 1.82; 95% CI: 1.25-2.66); there was little or no association with other fractures. Over a mean follow-up of 7.5 years, 444 individuals developed osteoporotic fractures. The adjusted fracture risk was elevated in HF patients compared with controls (hazard ratio [HR]: 1.32; 95% CI: 0.98-1.79), again largely attributable to hip fractures (HR: 1.58; 95% CI: 1.03-2.41).
Conclusions: Prior fracture is associated with HF at least as strongly as HF is associated with subsequent fracture. In both instances, the increased risk is driven by hip rather than other fractures. These findings suggest common underlying mechanisms of HF and hip fracture, which in turn may define prevention opportunities.