Mid and Later Life Reproductive Factors are Not Associated With Physical Frailty Among Women with Heart Failure

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BACKGROUND

- Nearly 50% of patients with HF are physically frail (1)
- Women are more likely to be physically frail in older adults in general (2)
- Frailty has been associated with younger age at menopause or history of hysterectomy in adults (3)
- The relationship between physical frailty and mid to later life reproductive factors might elucidate mechanisms of physical frailty among women with HF

We hypothesized that, among women with HF, physical frailty will be associated with history of hysterectomy, post-menopause, and reproductive cancer.

METHODS

- Secondary analysis collected from a study of gender differences in physical frailty in HF (n = 56 women)
- Reproductive factors of hysterectomy, menopause, and reproductive cancer history (cervical, uterine, ovarian, or breast) among women in the sample were analyzed
- Physical frailty measured using Fried's Frailty Phenotype Criteria(4) (handgrip strength, gait speed, weight loss, exhaustion, physical activity)
- Comparative statistics were used to compare reproductive factors with physical frailty
- Separate logistic regressions quantified associations between physical frailty and reproductive factors– accounting for age, etiology, reduced or preserved EF, and Charlson Comorbidity Index (5)

RESULTS

Table 1: Association with Physical Frailty	
Hysterectomy	$x^2 = 1.52$, p =0.22
Post-Menopause or Menopause Transition	$x^2 = 0.87$, p = 0.65
Reproductive Cancer	$x^2 = 0.19$, p = 0.67
Age	$x^2 = 2.23$, p= 0.14

Multivariate Logistic Regression of Physical Frailty and Reproductive Factors (Table 2)		
	Odds Ratio	[95% Confidence Interval]
Hysterectomy	1.75	[0.48, 6.34]
Post-Menopause or Menopause Transition	0.38	[0.03, 5.07]
Reproductive Cancer History	0.35	[0.4, 2.95]
Model chi 2 and values….		

Table 3: Descriptive Characteristics of Sample	
Age in years (mean ± SD)	56 ± 16.3
Charlson Comorbidity Index (mean ± SD)	3.05 ± 1.99
Non-Ischemic Etiology n (%)	47 (83.9)
HF Type n (%) Reduced Ejection Fraction Preserved Ejection Fraction	 34 (60.7) 22 (39.7)
Physically Frail n (%)	38 (58.9)
Characteristics of women with reproductive history available	
Post-Menopause or Menopause Transition n (%)	41 (82.2)
Hysterectomy n (%)	24 (44.4)
Reproductive Cancer History n (%)	6 (10.9)

DISCUSSION

- There was no significant association between physical frailty and age, hysterectomy, menopause, or reproductive cancer history (Table 1)
- Reproductive factors were not significantly associated with physical frailty in women, adjusting for age, comorbidities, HF etiology, or HF type (Table 2)
- A limitation of this secondary analysis is that we were unable to obtain complete reproductive histories from participants – highlighting an area for future research

CONCLUSIONS

- Mid and later-life reproductive factors, as well as age, do not appear to be significantly associated with physical frailty among women with HF
- Gender differences in physical frailty in HF are not well understood
- Women are underrepresented in HF studies(6), despite comprising 51% of HF population(7)
- **Prospective studies of HF should strive to include 50% women, and explore a comprehensive reproductive history – *including age of menarche, pregnancy, breastfeeding, menopause, and other reproductive life events***

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