

Cardiac cachexia: diagnosis is more complicated than focusing on weight loss

Fitzsimons, D., Hill, L., Carson, M. A., Dixon, L., Donnelly , P., Piper, S. E., Thompson, G., McDonagh, T. A., & Reid, J. (2022). *Cardiac cachexia: diagnosis is more complicated than focusing on weight loss.* Poster session presented at Cross-sector Partnerships to Build Capacity for Palliative and End-of-life Care Research...

Document Version:

Publisher's PDF, also known as Version of record

Queen's University Belfast - Research Portal:

Link to publication record in Queen's University Belfast Research Portal

Publisher rights

Copyright 2022 the Authors.

General rights

Copyright for the publications made accessible via the Queen's University Belfast Research Portal is retained by the author(s) and / or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights.

Take down policy

The Research Portal is Queen's institutional repository that provides access to Queen's research output. Every effort has been made to ensure that content in the Research Portal does not infringe any person's rights, or applicable UK laws. If you discover content in the Research Portal that you believe breaches copyright or violates any law, please contact openaccess@qub.ac.uk.

This research has been made openly available by Queen's academics and its Open Research team. We would love to hear how access to this research benefits you. – Share your feedback with us: http://go.qub.ac.uk/oa-feedback





Cardiac Cachexia: Diagnosis is more Complicated than Focusing on Weight Loss

Donna Fitzsimons ¹, Loreena Hill ¹, Matthew A. Carson ¹, Lana Dixon ², Patrick Donnelly ³, Susan E. Piper ⁴, Gareth Thompson ¹, Theresa A. McDonagh ⁴, and Joanne Reid ¹





¹ School of Nursing and Midwifery, Queen's University Belfast; ² Royal Victoria Hospital, Belfast Health and Social Care Trust; ³ Ulster Hospital, South Eastern Health and Social Care Trust; ⁴ Kings College Hospital NHS Foundation Trust

Background

Cardiac cachexia is a complex catabolic disorder that may present in patients with advanced heart failure (HF)¹. This syndrome is characterised by weight loss, muscle wasting, and reduced quality of life¹. Clinical application of the recommended diagnostic criteria by Evans et al.² is challenging in HF because of fluid retention. This can 'mask' symptoms, preventing effective detection and management of cardiac cachexia by healthcare professionals in practice.

Purpose

To report the practical challenges of applying the Evans criteria within an advanced HF population.

Methods

A cross-sectional study was conducted in 200 patients with advanced HF. Patients were recruited from HF clinics and inpatient wards across the BHSCT and SEHSCT.

Table 1. Inclusion and exclusion criteria.

Inclusion Criteria	Exclusion Criteria
Age ≥ 18 years	Age < 18 years
Able to read, write and speak	NYHA class I-II
English	
NYHA class III – IV	
Physically and mentally capable	
of participation	
Willing to be involved	

Patients were assessed for cardiac cachexia based on the Evans et al.² diagnostic criteria.

Cardiac Cachexia - definition

Heart failure /

AND

Weight loss

(NYHA class III-IV)

of at least 5% in 12 months (or less) OR BMI <20 kg/m²

+ 3 of the following 5 criteria:

- Decreased muscle strength*
- Fatigue**
- Anorexia***
- Low fat-free mass index****
- Abnormal biochemistry:
 - Increased inflammatory markers (CRP > 10 mg/L)
 - Anemia (Hgb <12 g/dL)
 - Low serum albumin (Albumin <35 g/L)

Figure 1. Diagnostic criteria², adapted from Carson et al.³.

Results

30 out of 200 participants (15%) were identified with cardiac cachexia. The cachectic group showed significantly lower anthropometric measures (see Table 2), higher CRP (30.7 vs 15.3), lower albumin (37.9 vs 40.2), and lower RBC count (3.8 vs 4.2) than the not cachectic group.

Results cont.

Table 2. Anthropometric measures, adapted from Carson et al.³.

Outcome measure	All (n=200)	Not cachectic (n=170)	Cachectic (n=30)	Sig.
Weight (kg)	82.8 ± 24.9	86.7 ± 24.5	61.4 ± 13.9	<0.01
ВМІ	28.6 ± 7.6	29.9 ± 7.4	21.8 ± 4.4	<0.01
Non-oedematous weight loss 1 year (kg)	2.0 ± 3.6	1.1 ± 2.3	7.1 ± 5.4	<0.01
Mid upper arm circumference (cm)	29.9 ± 5.2	30.8 ± 4.9	25.1 ± 3.7	<0.01
Skinfold thickness (mm)	15.5 ± 6.7	16.2 ±6.67	11.5 ± 5.2	<0.01
Upper arm muscle circumference (mm)	250.9 ± 37.6	257.1 ± 35.5	215.4 ± 28.6	<0.01
Upper arm area (mm²)	73.5 ± 25.8	77.4 ± 25.3	51.4 ± 15.5	<0.01
Upper arm muscle area (cm²)	51.2 ± 15.5	53.6 ± 15.1	37.6 ± 10.1	<0.01
Upper arm fat area (cm²)	22.1 ± 12.5	23.6 ± 12.7	13.8 ± 7.5	<0.01
Grip strength right (kg)	16.2 ± 10.9	17.1 ± 11.2	11.4 ± 7.2	<0.01
Grip strength left (kg)	15.1 ± 10.5	16 ± 10.9	10 ± 6.3	<0.01

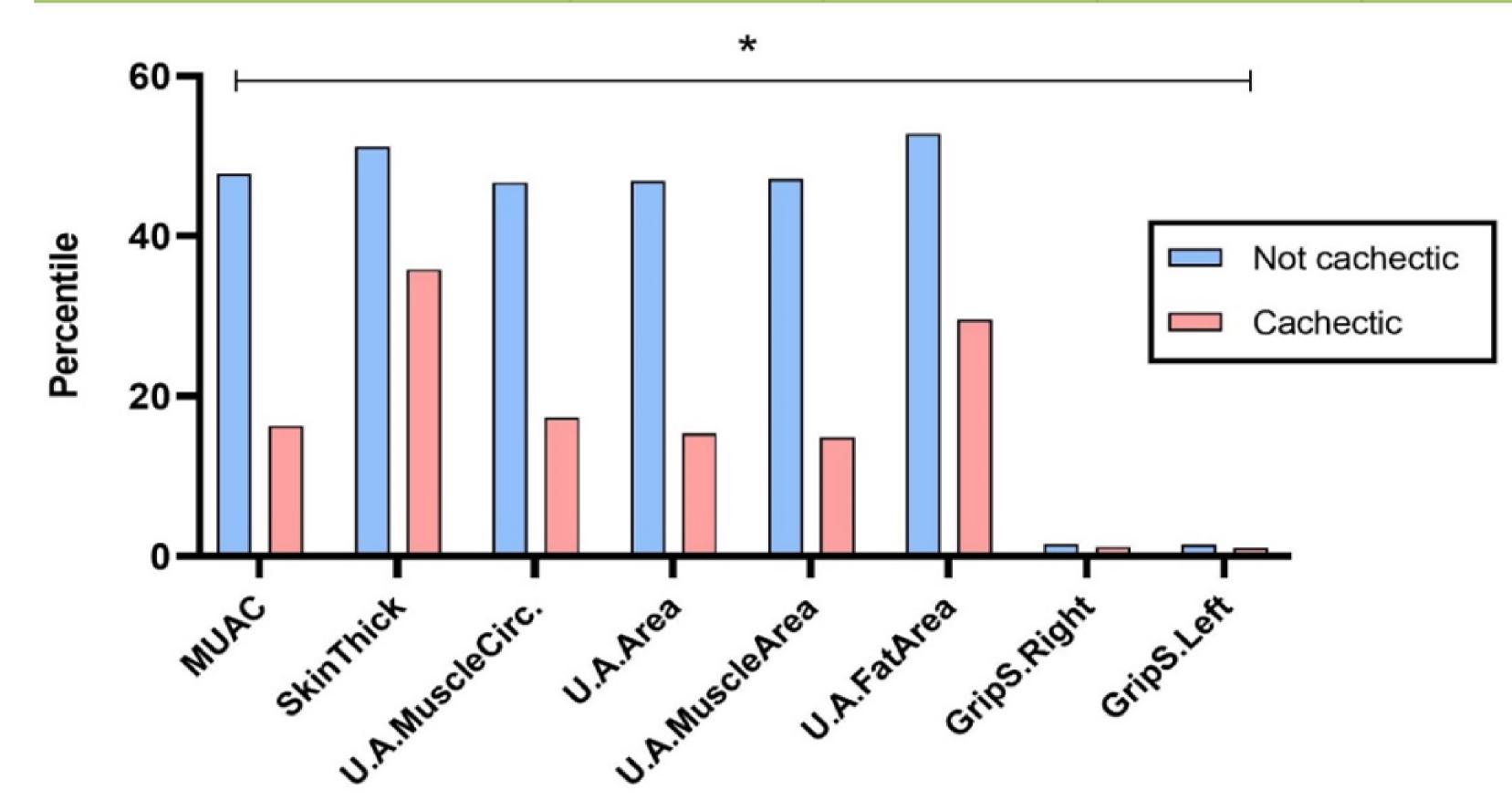


Figure 2. Percentile scores for anthropometric measures.

Oedema was present in 61% of the sample and 85% of patients possessed an average BMI of 29.9 kg/m² (borderline of obese classification). Only 11% of participants met the BMI cut-off of < 20 kg/m² from the cachexia diagnostic criteria. The most common diagnostic criteria displayed in the cachectic group were decreased muscle strength (80%), low muscle mass (77%), and abnormal biochemistry (74%).

Conclusion

The Evans criteria identified a 15% prevalence of cardiac cachexia. Weight loss, a primary indicator of cachexia, was challenging to detect, as 61% of the sample possessed oedema (fluid retention). Moreover, the BMI threshold for the diagnostic criteria was only met by 11% of patients, indicating a higher cut-off value may be warranted. However, decreased muscle strength, low muscle mass, and abnormal biochemistry were prevalent in the cachectic group. These measures may aid clinical identification of the syndrome. The Evans criteria are not specific to HF, with common comorbidities (i.e., fluid retention and elevated CRP) in this population potentially leading to misdiagnosis. Future research should explore HF-specific refinement of the Evans cachexia criteria to improve identification of the syndrome in clinical practice (e.g., biomarker discovery).

References

- 1) Lena A, Ebner N, Anker MS. Cardiac cachexia. Eur Heart J Suppl. 2019;21(Supplement_L):L24-7. 2) Evans WJ, Morley JE, Argilés J, Bales C, Baracos V, Guttridge D, et al. Cachexia: A new definition. Clin Nut. 2008;27(6):793–9.
- 3) Carson M, Reid J, Hill L, Dixon L, Donnelly P, Slater Paul, et al. Exploring the prevalence, impact and experience of cardiac cachexia in patients with advanced heart failure and their caregivers: A sequential phased study. Pall Med. 2022; 36(7):1118-1128.