Evaluation of malnutrition using 6 screening tools in patients with chronic heart failure.

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Introduction:
Malnutrition is common in chronic heart failure (CHF) patients and is associated with adverse outcome. However, there is no standard method of evaluating malnutrition in patients with CHF.

Objectives:
To report the prevalence of malnutrition and classification performance of 6 screening tools in patients with CHF.

Methods:
We evaluated malnutrition using 3 simple and 3 multidimensional screening tools. Simple screening tools include: Controlling nutritional status index (CONUT), geriatric nutritional risk index (GNRI) & prognostic nutritional index (PNI). Multidimensional screening tools include: malnutrition universal screening tool (MUST), mini nutritional assessment-short form (MNA-SF) & subjective global assessment (SGA). Since there is no "gold-standard" for malnutrition evaluation, for each of the malnutrition tools, we used the results of the other 5 tools to produce a standard combined index. Subjects were ‘malnourished’ if so identified by = 3/5 tools.

Results:
We studied 467 consecutive ambulatory CHF patients (67% male, median age 76 (IQR: 69-82) years, median NTproBNP 1156 (IQR: 469-2463) ng/L) and 87 controls (79% male, median age 73 (IQR: 69-77) years). The prevalence of at least moderate malnutrition ranged between 3-9% in patients vs 0-2% in controls. Amongst the simple tools: CONUT; and amongst the multidimensional tools: MUST score classified the highest proportion of subjects as having at least moderate malnutrition. (Figure 1)

The prevalence of at least moderate malnutrition was similar in CHF patients with reduced vs normal ejection fraction and in patients with atrial fibrillation vs sinus rhythm. Malnourished patients tended to be older, have worse symptoms, higher NTproBNP and more co-morbidities.

Of the simple screening tools, GNRI had the highest, and CONUT score the lowest agreement with multidimensional screening tools in identifying at least moderate malnutrition in patients with CHF. (Kappa coefficients (K) for GNRI: 0.34-0.43; K for CONUT: 0.26-0.36, all p <0.001)

Of all 6 tools, CONUT had the highest sensitivity (80%); MNA-SF and SGA had the highest specificity (99%) and MNA-SF had the lowest misclassification rate (2%) in identifying at least moderate malnutrition in patients with CHF as defined by the combined index.

Conclusion:
Malnutrition is common in CHF patients and is associated with increasing age, co-morbidities and HF severity. The prevalence of malnutrition is variable and is dependent on the tool used. The agreement amongst tools was heterogenous, suggesting that they are likely to measure different aspects of malnutrition. Further work is required to compare the prognostic value of malnutrition tools in patients with CHF.
Conclusion:

Malnutrition is common in CHF patients and is associated with increasing age, co-morbidities and HF severity. The prevalence of malnutrition is variable and is dependent on the tool used. The agreement amongst tools was heterogenous, suggesting that they are likely to measure different aspects of malnutrition. Further work is required to compare the prognostic value of malnutrition tools in patients with CHF.