

POSTER PRESENTATION

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0531. Cumulative effects of negative energy balance on myocardial deformity and diastolic function during the first week of ICU: a pilot study

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From ESICM LIVES 2014

Barcelona, Spain. 27 September - 1 October 2014

Objectives

- To evaluate whether a greater negative energy balance (NEB) accumulated during the first week of ICU correlates with worsening in longitudinal Strain (LS) and diastolic function (DF).
- To evaluate whether improvement in the nutritional status (NS) correlates with improvement in LS and DF.

Methods

We made an observational, analytical, prospective, longitudinal pilot study.

Dependents variables:

LS, echocardiographic parameter used to assess myocardial deformity (contraction). We considered as an improvement an increase $\geq 10\%$.

E/é ratio, parameter used to assess DF. A reduction of E/é ratio $\geq 10\%$ was considered DF improvement.

I. V.:

NEB during the first week of admission.

Improvement in the NS: assessed by an increase in at least one level of prealbumin nutritional scale (PNS) after 10 days of receiving 100% of estimated energy (EE) requirements (H. Benedict).

(PNS: Normal > 18 md/dl, mild undernutrition: 17.9-15, moderate: 14.9-10 severe < 10).

Convenience nonprobability sample.

S. analysis: The results were expressed as means with their ST deviations, %. Linear regression (LR) and Fisher test (FT) were used to analyze possible statistics associations, expressed with their CI and p values.

TTE were performed to patients admitted from July to October, 2013, in the first 24 h of admission, at 7th

and 10th days of receiving enteral and/or parenteral nutrition with 100% of EE. Acoustic catches are done in HQ digital format, f.r. > 100 Hz, for further analysis "of line" of LS. (Blind analysis).

Exclusion crit.: nephrotic syndrome, cirrhosis, chronic renal and HF.

PCR, MV (PEEP), PVC were recorded.

Results

10 patients, 60% male, mean age: 54 (27-75). 30% normal NS, 30% mild, 10% moderate and 30% severe undernutrition. 40% traumatic and 30% spontaneous ICH, 10% thoracic trauma, 10% cardiac arrest and 10% septic shock. 70% required MV, 20% norepinephrine.

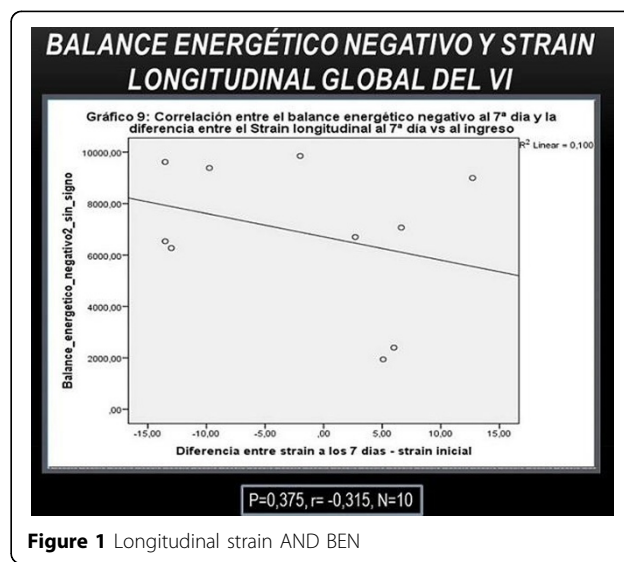


Figure 1 Longitudinal strain AND BEN

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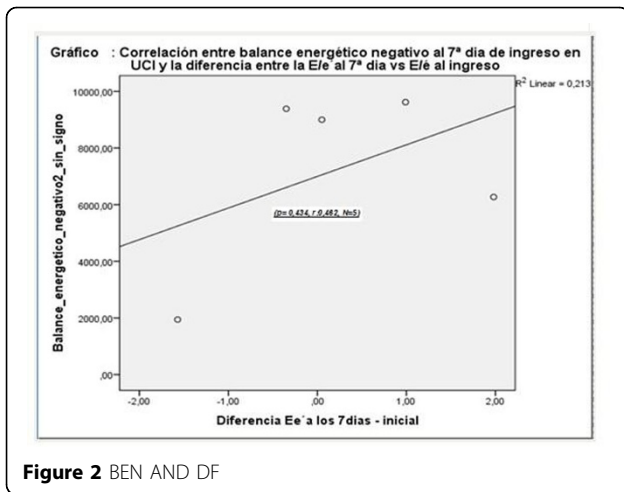


Figure 2 BEN AND DF

KS test: $p = 0.595$. We observe a tendency to an inverse relationship ($p = 0.375$, $r = -0.315$, $N = 10$) between NEB and LS but not s. significant. 40% of those who had improvement in at least 1 level of the PNS showed a 10% increase in LV LS at 10 days receiving 100% EE (FT: $p = 0.714$, OR: 0.667, 95% CI : 0.025 to 18.059).

As in the Hammer et al study [1], in which acute progressive caloric restriction in young healthy men

correlated with impaired DF, we observed a direct relationship ($r = 0.462$, $p = 0.434$, $N = 5$) between NEB and E/e', but not s. significant. The 50% who had an improvement in NS showed a 10% reduction in E / e' (FT: $p = 1.00$, OR 1.00, 95% CI : 0.03 to 29).

Conclusions

Patients with higher cumulative NEB during the first week of ICU had a decrease in LS and an increase in E/e' but not s. significant. Given the limitations of this research (being a pilot study of a topic not addressed in ICU with few patients) should be carried further study with sufficient power to test this hypothesis.

Published: 26 September 2014

Reference

1. Hammer et al: Progressive caloric restriction induces dose-dependent changes in myocardial triglyceride content and diastolic function in healthy men *J Clin Endocrinol Metab* 2008, **93**(2):497-503.

doi:10.1186/2197-425X-2-S1-P31

Cite this article as: Blizniak et al.: 0531. Cumulative effects of negative energy balance on myocardial deformity and diastolic function during the first week of ICU: a pilot study. *Intensive Care Medicine Experimental* 2014 2 (Suppl 1):P31.

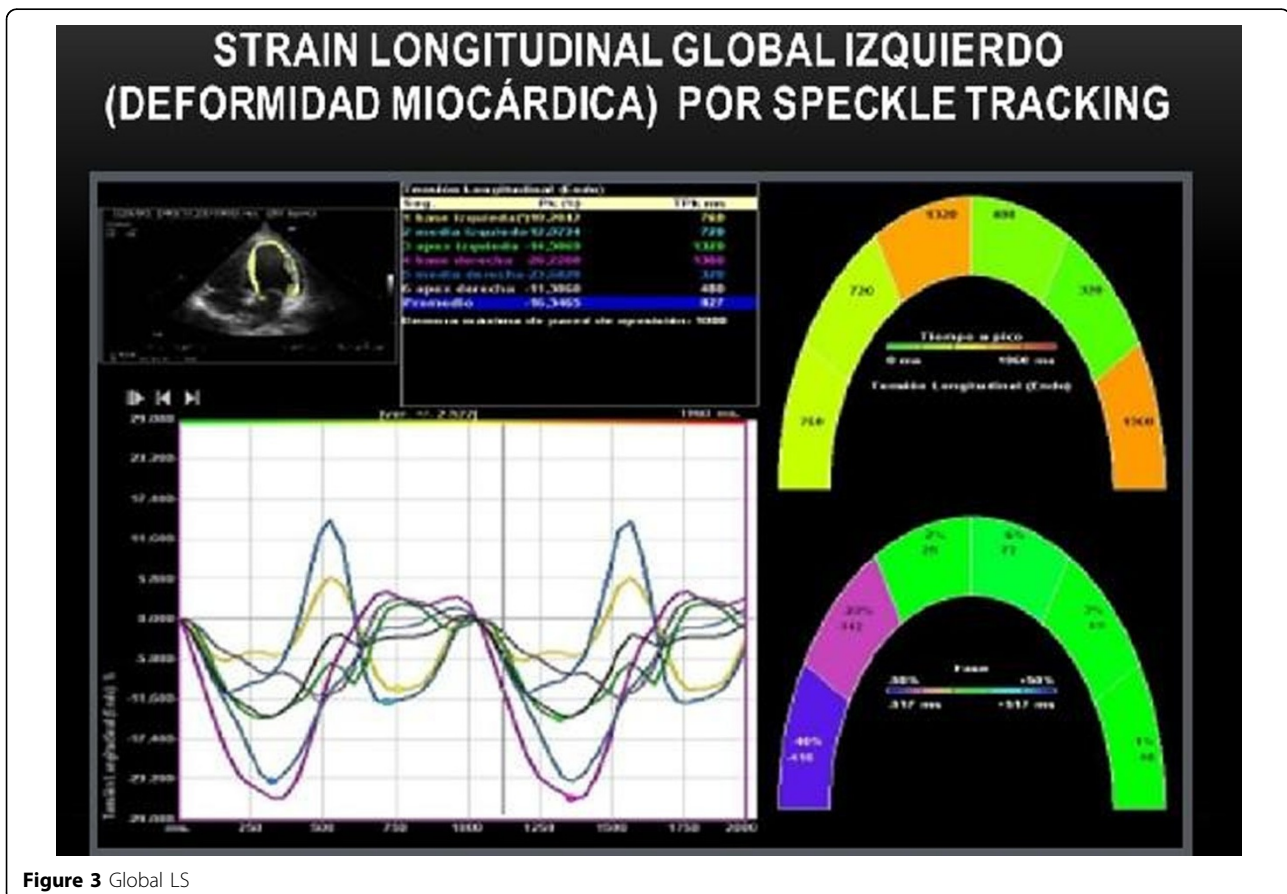


Figure 3 Global LS