P3372 : Ultrasound lung comets for serial assessment of pulmonary congestion in heart failure

Authors:
Gargani (Pisa /Italy), Frassi (Pisa /Italy), Prado (Pisa /Italy), Tesorio (Mercogliano /Italy), Soldati (Lucca /Italy), Viola (Mercogliano /Italy), Porcari (Mercogliano /Italy), Mottola (Mercogliano /Italy), Picano (Lucca /Italy)

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Background: Serial chest radiographs are too insensitive and therefore NOT recommended for monitoring pulmonary congestion in heart failure patients (AHA/ACC guidelines 2006). Ultrasound lung comets (ULCs) are a simple, quantitative chest sonography sign of pulmonary congestion, originating from water-thickened interlobular septa, and might represent a convenient alternative to chest x-ray in this clinical setting. Aim: To assess whether dynamic changes in ULCs could mirror variations in clinical status and natriuretic peptides.

Methods: 104 patients (28 females; age 70±11 years) admitted with dyspnoea (NYHA class ≥II) to a Cardiology or Emergency Department were evaluated. NT-proBNP assessment and ULC were independently performed at admission and again before discharge. A patient ULC score was obtained by summing the number of comets from each of the scanning spaces from second to fifth intercostal spaces on anterior chest. Patients were considered "responders" to therapy when NYHA class decreased ≥1 grade at discharge.

Results: Responders (group I, n=90) and non-responders (group II, n=14) had similar NT-proBNP (I=5560±6643 vs II=5470±4047 ng/l, p=.313), and ULCs number (I=27±34 vs II=34±24, p=.133) at admission. At discharge, responders had lower NT-proBNP (I=3633±5194 vs II=4654±3366 ng/l, p<.05) and ULCs (I=11±12 vs II=28±32, p<.01, see figure) when compared to non-responders. Variation in NT-proBNP somewhat mirrored variations in ULCs (r=.322, p<0.0001).

Conclusions: ULC variations mirror changes in clinical functional class and natriuretic peptides in patients hospitalized with acute dyspnoea. ULCs represent an objective parameter of clinical improvement, useful for serial assessment of extra-vascular lung water in patients admitted with acute dyspnoea.