Correlation between pleural comets and spectroscopy bioimpedance in hemodialysis patients

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**Introduction and Aims:** Pleural B-lines, also known as pulmonary or pleural comets, appear in the presence of extravascular pulmonary fluid (EVLW), however it has not been studied if this technique has relationship with the results obtained by electrical bioimpedance analysis in the estimation of overhydration in hemodialysis patients.

**Methods:** Study design: Unicentric, prospective, analytical observational cohort. Methods and participants: Hydration status was assessed by means of bioelectrical impedance analysis (BIA) and pulmonary ultrasound (US) in 17 patients who received HD for at least 6 months, without amputations, metal prostheses or pacemakers, with ejection fraction of left ventricle (LVEF) $>$ 50%, without severe heart failure or any history of cardiovascular or pulmonary decompensation in the last 3 months. **Objective:** The primary objective was to assess the correlation between pleural B lines and the overhydration by BIA in hemodialysis patients.

**Results:** The mean age was 44.1 years, 76.47% were hypertensive and 41.18% were diabetics. 23.53% of the patients presented edema of the lower extremities. In terms of nutritional status, normal weight was present in 41.18% of the patients and only 4 (23.53%) followed the nutrition recommendations. Patients received an average of 2.82 HD sessions per week, with equal sodium conductivity in all cases (13.6 mS/cm) and an average UF of 1.94 Kg. A positive correlation was found between overhydration and the number of B lines, with a correlation coefficient ($r$) of 0.62, $r^2$ 0.38, $p = 0.008$. No correlation was found between the dry weight and the number of B lines. The distribution of BNP in the sample ranged between 12-5000 pg/ml, showing a correlation coefficient ($r$) with the number of B lines of 0.7, $r^2$ 0.52, $p = 0.001$. Other parameters that were positively correlated with the number of B lines were the systolic BP ($r$) of 0.71, $r^2$ 0.21, $p = 0.001$

**Conclusions:** There is a positive correlation between overhydration measured by BIA, BNP and systolic BP with the number of B lines of pulmonary ultrasound, these findings suggest that the B lines of pulmonary ultrasound can be used to estimate water overload in hemodialysis patients, with the advantage of being an affordable, accessible method that can be performed at the patient’s bedside.