Dexamethasone in acute cardiopulmonary syndrome with hyperinflammatory state

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Introduction: Elderly patient hospitalized due to acute heart failure often have a concomitant acute lung disease (acute bronchitis, pneumonia, chronic obstructive pulmonary disease-COPD- exacerbation). Establishing the role of each disease in a clinical picture of acute cardiopulmonary syndrome can be challenging. Procalcitonin has been used as a guide to antibiotic therapy with contrasting results. A common thread of these diseases is inflammation; a hyperinflammatory response determines more serious symptoms and a worse prognosis.

Purpose: We evaluated the effectiveness of a treatment with dexamethasone in patients with acute cardiopulmonary syndrome and a strong inflammatory response.

Materials and methods: We evaluated 157 consecutive HFPEF (heart failure with preserved ejection fraction) patients ≥80 years of age, with concomitant symptoms attributable to acute bronchitis, pneumonia, or COPD exacerbation, hospitalized due to worsening dyspnoea, with an NT-proBNP ≥3,000 pg/ml, and a finding X-ray of lung congestion with or without a consolidation. Reactive C Protein was measured. Patients with SARS-CoV-2, indication to corticosteroids use for other clinical conditions or need for mechanical ventilation were excluded. The 96 patients with values>20 mg/dl were randomized into 2 groups: 48 patients were treated open-label with dexamethasone at a dose of 8 mg iv/day for a maximun of ten days, in addition to the usual therapies for acute heart failure and lung disease, while the same number of patients were treated with the usual therapy. In both groups the antibiotic was administered only if the procalcitonin was≥0.25 µg/L. Clinical recovery time, length of hospitalization, in-hospital mortality, the need for a new hospitalization and mortality at one month were evaluated.

Results: The mean age of the patients was 88±4 years in the dexamethasone group and 87±5 in the usual therapy group. The results are shown in Table 1. Patients treated with dexamethasone experienced a faster clinical recovery and a shorter length of hospitalization. No significant differences were found regarding either in-hospital mortality or need for rehospitalization and mortality at 30 days.

Conclusions: Very elderly patients with acute cardiopulmonary syndrome and hyperinflammatory state associated with an excessive increase in Reactive Protein C have a favorable response to dexamethasone therapy in addition to the usual therapy in terms of clinical improvement and length of hospitalization. Our case history is small to evaluate a possible improvement in mortality. These findings need to be consolidated from double-blind randomized controlled trials

END POINTS	DEXAMETHASONE	USUAL TREATMENT	P
Improvement in dyspnea VAS score (Mean change in mm at 24 hours)	28	23	< 0.01
Length of hospitalization	7±2	10±2	< 0.01
In-Hospital mortality	2 (4.1%)	3 (6.2%)	NS
Rehospitalization at 30 days	2 (4.3%)	2 (4.4%)	NS
30 days Mortality	4 (8.3%)	5 (10.4%)	NS

Table 1