Category :**Renal issues & electrolyte disorders**

A69 - ***Hemoadsorption therapy in rhabdomyolysis: report of the international, prospective cosmos registry***

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Introduction:

Rhabdomyolysis with markedly elevated myoglobin is associated with acute kidney injury (AKI) and mortality. CytoSorb (CS) hemoadsorption has been used to remove myoglobin, but evidence remains limited. This study evaluated whether CS could reduce circulating myoglobin and therefore help to mitigate renal complications.

Methods:

The COSMOS Registry (NCT05146336) is a prospective, international observational study assessing CS hemoadsorption in critically ill patients. Data were collected 24 hrs before and after CS therapy, at ICU and hospital discharge, 90 days post-treatment. Changes in biomarkers were analysed with Wilcoxon signed-rank test. Results are reported as median [Q1, Q3] or mean ± SD. Only patients with fully monitored data were included in the analysis.

Results:

Forty-five patients (mean age 56 ± 20 years; 29% female; 11% trauma-induced) with rhabdomyolysis from 14 centers in 4 countries were included. Median APACHE II was 24 [18, 30]; 33% had pre-existing renal dysfunction (KDIGO 3 [1.5, 3.5]). CS was integrated into renal replacement therapy (RRT) in 88.6% and used stand-alone in 11.4%. Treatment significantly reduced median myoglobin (from 8,798 [4,232, 30,000] to 2,959 [774, 6,735] µg/L; $p < 0.0001$), with the percentage of critically elevated levels (>10,000 µg/L) decreasing from 48.3% to 10.3% ($p < 0.0001$, Figure 1). CK (9,826 [2,390, 31,273] to 4,130 [1,046, 8,764] IU/L; $p < 0.0001$) and creatinine (2.3 [1.5, 3.6] to 1.8 [1.1, 2.8] mg/dL; $p= 0.0004$) also decreased. Median ICU stay was 15 [9, 26] days and RRT duration 10 [4, 12] days. 32 (71.1%) out of 45 patients survived from ICU stay. The percentage of patients remaining dialysis dependent declined from 25% at ICU discharge to 8% at 90-days. No serious device-related adverse events occurred.

Conclusion:

CS hemoadsorption is associated with significant myoglobin reduction and may help to improve renal function in rhabdomyolysis. These real-world results require confirmation in controlled studies.

Image :

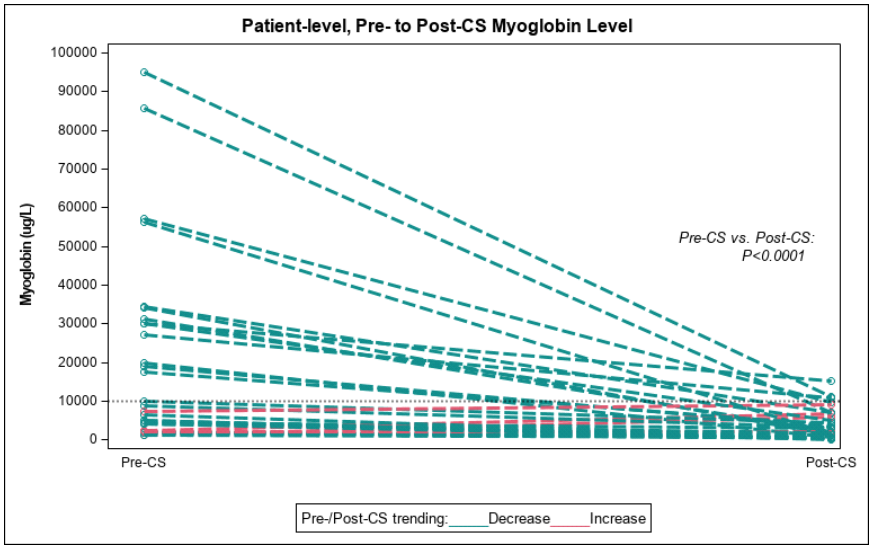
Patient-level, Pre- to Post-CS Myoglobin Level
Myoglobin (ug/L)
100000
90000
80000
70000
60000
50000
40000
30000
20000
10000
0
Pre-CS
Post-CS
Pre-CS vs. Post-CS:
P<0.0001
Pre-/Post-CS trending: Decrease Increase

Figure 1

Hemoadsorption Therapy in Rhabdomyolysis

Report of the International, Prospective **COSMOS** (**C**yt**OS**orb® Treat**M**ent **O**f Critically Ill Patient**S**) **Registry**

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INTRODUCTION

Rhabdomyolysis with markedly elevated **myoglobin** is strongly associated with acute kidney injury (AKI) and mortality. **CytoSorb (CS) hemoadsorption** has been used to remove myoglobin, but evidence remains limited. This study evaluated whether CS could reduce circulating myoglobin and therefore help to mitigate renal complications.

METHODS

The **COSMOS Registry (NCT05146336)** is a **prospective, international observational** study assessing CS hemoadsorption in critically ill patients. **Data were collected** within 24 hrs before and after CS therapy, at ICU and hospital discharge, and 90 days post-treatment.

Changes in myoglobin, creatine kinase (CK) and creatinine were analysed using the Wilcoxon signed-rank test. Results are reported as median [Q1, Q3] or mean ± SD. Only patients with fully monitored data were included in the analysis.

RESULTS

Forty-five patients (mean age 56 ± 20 years; 29% female; 11% trauma-induced) with **rhabdomyolysis** from 14 centers in **4 countries** were included. Median **APACHE II** was 24 [18, 30]; 33% had pre-existing renal dysfunction (KDIGO 3 [1.5, 3.5]). **CS was integrated** into renal replacement therapy (RRT) in 88.6% and used stand-alone in 11.4%.

Treatment significantly reduced median **myoglobin** (from 8,798 [4,232, 30,000] to 2,959 [774, 6,735] µg/L; $p < 0.0001$), with the percentage of critically elevated levels (>10,000 µg/L) decreasing from 48.3% to 10.3% ($p < 0.0001$, see also Figure 1).

CK (9,826 [2,390, 31,273] to 4,130 [1,046, 8,764] IU/L; $p < 0.0001$) and creatinine (2.3 [1.5, 3.6] to 1.8 [1.1, 2.8] mg/dL; $p= 0.0004$) also decreased. Median **ICU stay** was 15 [9, 26] days and **RRT duration** 10 [4, 12] days. ICU mortality was 28,9%. The percentage of **patients remaining dialysis dependent** declined from 25% at ICU discharge to 8% at 90-days.

No serious device-related adverse events occurred.

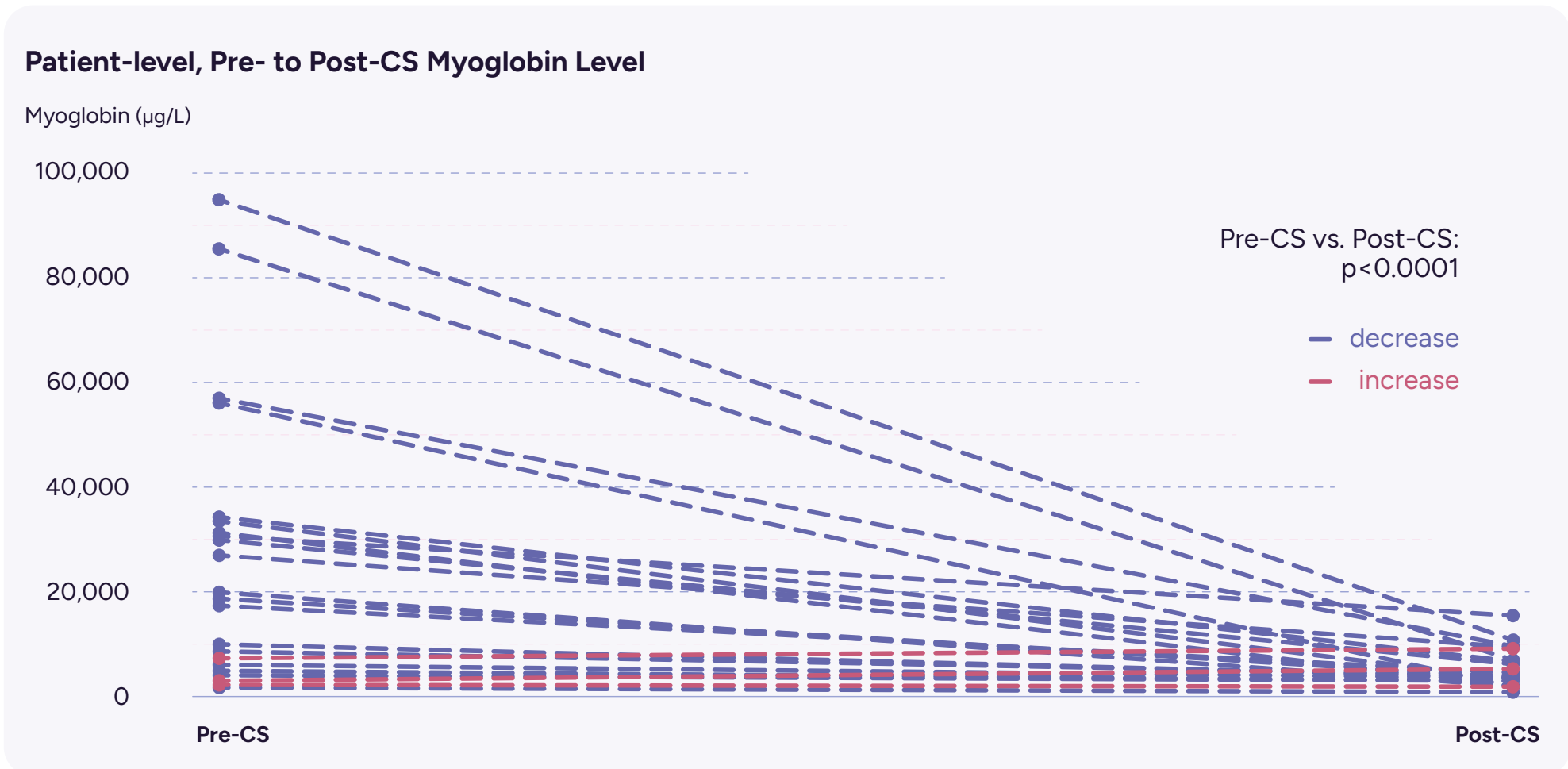

Figure 1. Patient-level myoglobin changes from pre-CS to post-CS Therapy.

CONCLUSION

CS hemoadsorption is associated with **significant myoglobin reduction** and therefore may help to improve renal function in rhabdomyolysis. These real-world results require confirmation in larger controlled studies.

COSMOS Registry is a company sponsored registry by CytoSorbents Corporation and CytoSorbents Medical Inc., New Jersey, USA.

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