

# Early use of endotoxin absorption by hemoperfusion combined with oXiris in septic shock after stem cell transplantation: a case report

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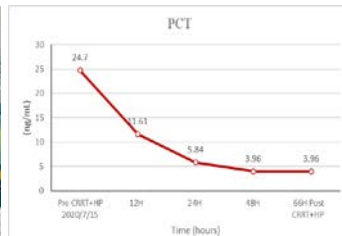
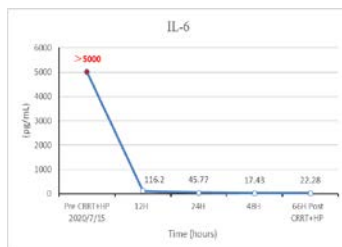
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**OBJECTIVE:** Endotoxin with secondary release of cytokines can progress to shock and multiple organ failure. We reported an acute lymphoblastic leukemia patient with severe pneumonia and septic shock after stem cell transplantation, which was the case successfully treated with hemoperfusion(HP) combined with continuous renal replacement therapy (CRRT) and a newly designed endotoxin adsorption system oXiris with HP(380).

**METHOD:** A 49-year-old woman with acute lymphoblastic leukemia received stem cell transplantation. After 13 days' transplantation her body temperature was still very high and her blood pressure decreased to 72/45 mmHg with oliguria and cardiopulmonary insufficiency, requiring extracorporeal respiratory support and large doses of noradrenaline for resuscitation. Her B-type natriuretic peptide was 32200ng/L, while white blood count was  $1.05 \times 10^9/L$ , percentage of neutrophils was 81.0%, and plasma procalcitonin (PCT) was 24.70ng/mL, interleukin-6(IL-6) levels above 5000pg/mL. Since blood culture returned positive for Methicillin-resistant coagulase-negative staphylococci and the bacterial culture of sputum subsequently showed growth of Carbapenem-Resistant Pseudomonas aeruginosa, and the patient had severe low blood pressure, hypoxemia and oliguria, combined with the laboratory tests results, he was diagnosed with septic shock, acute kidney injury, and multiple organ failure. It was performed to undergo hemodialysis therapy with hemoperfusion(HA380) combined with CRRT (oXiris) .

**RESULTS:** After 12 hours of blood purification therapy with a oXiris filter plus hemoperfusion with a HA380, IL-6 decreased from above 5,000 pg/mL to 116.20 pg/mL and also PCT decreased sharply from 24.70ng/mL to 11.61pg/mL. The duration of blood purification therapy was 66 hours with hemoperfusion(HA380) combined with CRRT (oXiris) , and hemoperfusion was performed for four times, significant decrease in PCT (3.96ng/mL) and IL-6 (22.28 pg/mL) were observed. Treatment with antibiotics and other drugs were also applied to the patient at the same time. The total sequential organ failure assessment (SOFA) score decreased from 13 to 7. Urine output steadily increased to 250 mL/h, and vital signs and blood pressure were stable without noradrenaline. In the end, her kidney function had completely recovered and she successfully attempted separation from the ventilator.

**CONCLUSION:** CRRT (oXiris) combined with hemoperfusion(HA380) which had strong capacity of endotoxin and cytokines adsorption appeared to accelerate improvement in organ dysfunction and ultimate survival in our patient. This could be an important therapeutic method supplement to control infection in critical patients with septic shock after stem cell transplantation for leukemia. Our experience suggests that oXiris CRRT combined with hemoperfusion (HA380) therapy is an effective treatment for septic shock after stem cell transplantation.



Graph 1. PCT and IL-6 levels pre and post CRRT+HP

38<sup>th</sup> Vicenza Course on AKI&CRRT  
a week of virtual meetings

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