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To the point of bloodshed - an inventive solution of AIHA-induced acute kidney injury

Kristína Liachovická

Fakultní Nemocnice, Czech Republic

Autoimmune hemolytic anemia (AIHA) can be associated with hematologic malignancies or with infections, tumors, drugs and autoimmune diseases. In intravascular hemolysis, erythrocytes disintegrate and free circulating hemoglobin precipitates in the kidney tubules, forming crystals and mechanically obturating them. Acute kidney injury (AKI) is a rare and potentially life-threatening complication of severe AIHA.

In this case report we describe a patient with lymphoma (in remission) and recurrence of severe autoimmune hemolytic anemia of unclear etiology, refractory to high doses of glucocorticoids and rituximab. The condition was complicated by acute oliguric kidney injury based on free haemoglobin obstruction induced tubulopathy. Due to this specific and rare etiology of AKI, we expanded conventional hemodialysis by the use of a medium-cut-off dialysis membrane (MCO). MCO membrane is uniquely designed to have pores larger than those of standard high-flux membranes but smaller than those of membranes used in hemodiafiltration. This optimal pore size allows efficient removal of the breakdown products of free hemoglobin without undesirable high albumin losses. We extended this therapy by incorporating plasma exchange with albumin replacement. The aim of this step was to remove whole free hemoglobin molecules that would not be efficiently filtered due to the physical properties of MCO. The resulting effect was surprisingly positive when combined with effective immunosuppression – renal functions have been almost completely repaired.

We suggest that using the unique combination of MCO membrane and plasma exchange in the setting of AIHA- induced acute kidney injury is an innovative, previously not described therapeutic approach.

Biography

Doctor since 2013 with 11 years of experience in internal medicine, intensive care medicine, nephrology and hemodialysis. My passion is nephrology intensive care. I spent many years in a larger district hospital where I met patients with a very wide range of diagnoses. Since 2022 I have worked in the department of nephrology - rheumatology and diabetology in the University Hospital in Olomouc, Czech Republic. I attended my internship in France in Clermont-Ferrand. I am a winner of various lecture awards and an enthusiastic mentor of medical students. My favourite topic in medicine is acute renal failure and sepsis.

kristina.liach@gmail.com

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