Use of hemoadsorption in a case of severe hepatic failure and hyperbilirubinemia

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This case study reports on a 59-year-old male patient who presented for a follow-up check at the hospital after completion of therapy with rituximab and bendamustine for lymphoblastic lymphoma.

Case presentation
• Medical history included lymphoblastic lymphoma, morbid obesity (BMI 43), steatohepatitis, arterial hypertension, renal cysts, and laparoscopic cholecystectomy
• Laboratory testing revealed significantly elevated transaminases (GOT 241 U/L, GPT 196 U/L) as well as increased total bilirubin serum levels (2.3 mg/dL), while retention parameters were within the normal range
• In the further course, active hepatitis B was diagnosed (viremia >100,000 copies/mL) and therapy with entecavir was initiated
• At this time, bilirubin levels reached 39.5 mg/dL, GOT 988 U/L, and GPT 792 U/L
• On day 9 after admission, the patient developed acute kidney injury (oliguria <0.2 mL/kg/h, creatinine 2.79 mg/dL, KDIGO level 3) and was admitted to the intensive care unit for escalation of therapy (application of maximum therapy, advanced monitoring and use of extracorporeal organ support)
• In order to rebalance the excessive hyperbilirubinemia, hence to salvage kidney function, CVVH and CytoSorb were also initiated in combination

Treatment
• Seven consecutive treatments with CytoSorb (1st treatment for 24 hours, followed by 6 treatments for 18 hours each)
• CytoSorb was used in conjunction with CRRT (Multifiltrate, Fresenius Medical Care) performed in CWHD mode
• Anticoagulation: citrate
• CytoSorb adsorber position: pre-hemofilter

Measurements
• Bilirubin
• Inflammatory parameters (IL-6)
• Ammonia
• Liver transaminases (GOT, GPT)
Results

- Bilirubin levels could be reduced from a maximum of 39.5 to 17.3 mg/dL and continued to decrease over the following days
- IL-6 values diminished during treatment, however, the patient did not exhibit an acute inflammatory reaction at any time
- Initial hepatic encephalopathy (HE 2, CAM-ICU++) completely resolved during the treatment period and NH3 levels decreased to normal levels
- Liver transaminases continued to decrease until treatment day 7 (GOT 86 U/L, GPT 73 U/L) to values slightly elevated above the upper limit of normal
- Kidney function did not particularly improve during CytoSorb treatment

Patient Follow-Up

- Three days after completion of therapy, liver and kidney function improved and urine output reached stable values of 0.4 mL/kg/h while still receiving intermittent hemodialysis every 48 hrs
- However, despite intensive antiviral therapy, the deleterious progression of hepatitis B could not be stopped and the patient died a few days later

CONCLUSIONS

- This is the first clinical case report describing the use of CytoSorb hemoadsorption during hyperbilirubinemic hepatic dysfunction due to active hepatitis B infection
- A decrease in bilirubin and IL-6 levels in combination with an improvement in hepatic encephalopathy are the main results to be drawn from this report
- The treatment was safe and well tolerated