

EXTRACORPOREAL BLOOD PURIFICATION THERAPY WITH CYTOSORB® FOR SEVERE HYPERBILIRUBINEMIA AND JAUNDICE IN DRUG-INDUCED LIVER INJURY



Diana D, Inguaggiato P, Daidola G, Gigliola G, Loi MR, Besso L

Nephrology and Dialysis unit, AO S.Croce e Carle – Cuneo

Background

Drug-induced liver injuries (DILI) are characterized by disproportionate elevation of alkaline phosphatase compared with the serum aminotransferases and elevation of serum bilirubin, (1). Anabolic steroids are a known cause of DILI generally arising within 1-4 months by start of therapy (2).

Methods

A previously healthy 46 years old man, developed jaundice with mild increase in liver enzymes, marked increase of alkaline phosphatase and severe mixed hyperbilirubinemia (12.5 mg/dl). Viral, infectious and immunologic causes were excluded as well as presence of biliopancreatic pathology. CT and MR scan showed a liver with slightly increased dimension without focal lesions.

A liver biopsy showed focal-sever cytoplasmic and intracanalicular cholestasis with limited focal hepatocyte necrosis, suggesting the hypothesis of a toxic hepatitis. Patient's assumption of anabolic drugs in the previous weeks for weight training and muscle bulk was ascertained. Bilirubin levels increased up to 40 mg/dl.

Results

Bilirubin rose despite forced diuresis and urine alkalinisation. Extracorporeal blood purification therapy (EBPT) with regional citrate anticoagulation in association with a sorbent cartridge (CytoSorb®) was performed. A first cycle of 72 hours (showing 50% reduction of bilirubin) and a further cycle of treatment of 24 hours were performed, without circuits clotting or other complications. The evolution of bilirubin levels in correlation with EBPT was showed in figure 1. Six months later the patient had normal hepatic enzymes and bilirubin values normal and no jaundice.

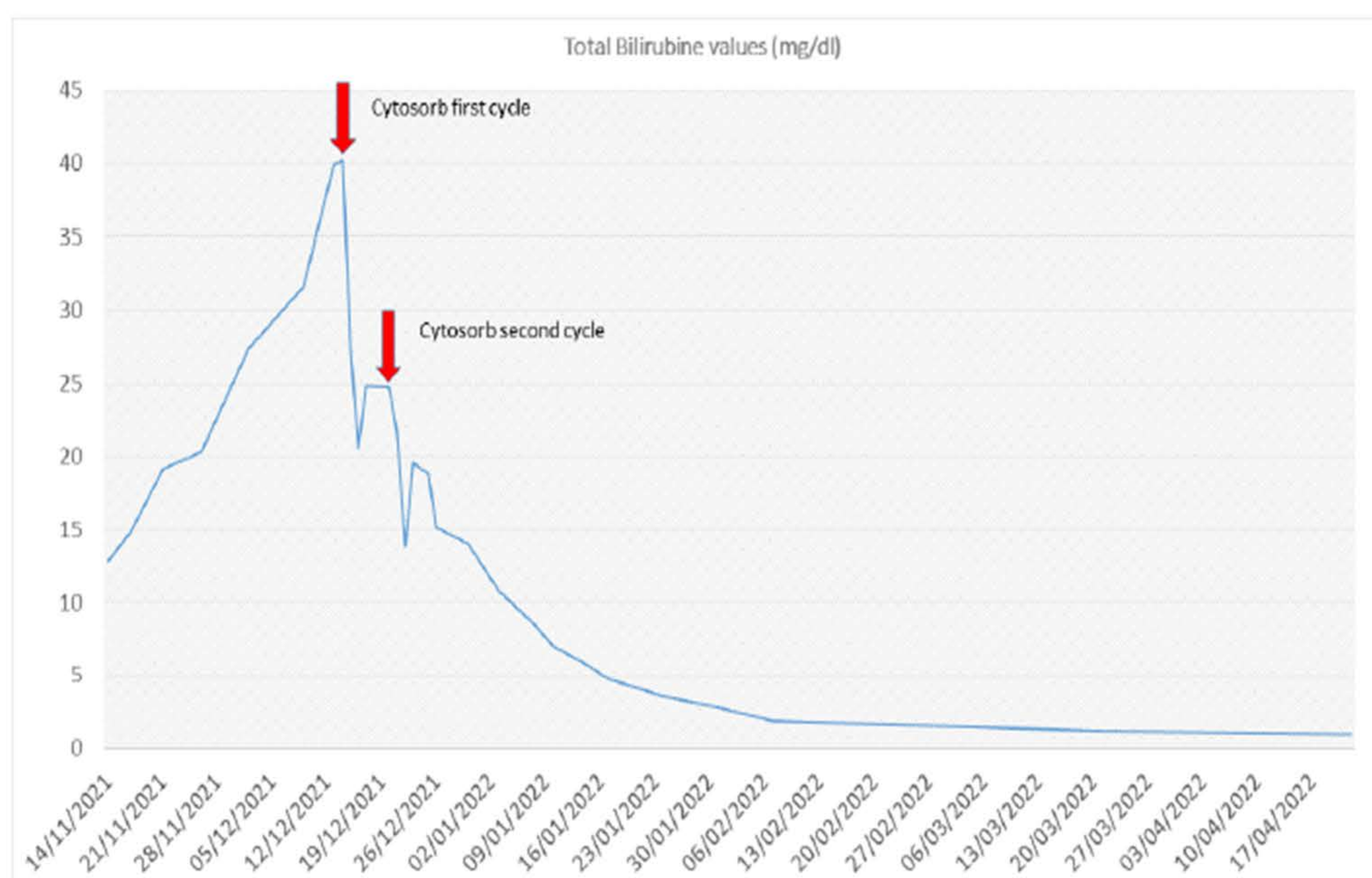


Figure 1: Bilirubin Levels in correlation with EBPT

Conclusions

Severe hyperbilirubinemia represents a potential life-threatening situation that, in the absence of acute liver insufficiency, does not have indication to liver transplant. CytoSorb is an extracorporeal blood purification device with a large sorbent surface that adsorb a wide spectrum of molecules up to 55 kDa. It is mainly used in septic shock. Some case series demonstrated the effective removal of bilirubin by CytoSorb (3). A recent analysis on 109 patients from CytoSorb international registry treated for liver indication confirmed a significant bilirubin removal (4). The use of EBPT in patients without renal dysfunction to provide support for other organs is highly debated due to cost, potential complications and logistic problems related to intensive care needed. A multidisciplinary assessment is mandatory. In this case, EBPT was a feasible bridge therapy due to the lacking of direct liver indication (e.g. Liver transplantation) and due to the intrinsic characteristic of DILI with improvement of the liver injury following to drug discontinuation.

Bibliography

1. Lee WM. Drug-induced hepatotoxicity. *N Engl J Med.* 2003 Jul 31;349(5):474–85.
2. LiverTox: Clinical and Research Information on Drug-Induced Liver Injury [Internet]. Bethesda (MD): National Institute of Diabetes and Digestive and Kidney Diseases; 2012-. Androgenic Steroids. [Updated 2020 May 30].
3. Tomescu D, Popescu M, David C, Sima R, Dima S. Haemoadsorption by CytoSorb® in patients with acute liver failure: A case series. *Int J Artif Organs.* 2021 Aug;44(8):560–4.
4. Ocskay K, Tomescu D, Faltlhauser A, Jacob D, Friesecke S, Malbrain M, et al. Hemoabsorption in "Liver Indication"-Analysis of 109 Patients" Data from the CytoSorb International Registry. *J Clin Med.* 2021 Nov 5;10(21):5182.