NDT Plus (2011) 4: 278–280

NDT PLUS
Nephrology Dialysis Transplantation

Letters to the Editor

Advance Access publication 26 May 2011

Icodextrin-associated hepatotoxicity

Sir,

Abnormal liver function tests can be observed in peritoneal dialysis (PD) patients. The most common cause of these are viral infections, especially hepatitis B and C [1]. Icodextrin-based PD solutions (Extraneal; Baxter, IL, USA) are increasingly used in this patient population [2]. Several adverse reactions have been reported with icodextrin, mainly skin reactions (upto 15%) [3]. In the full prescription catalogue, it is said that it may lead to liver dysfunction, specifically alkaline phospahatase (ALP) and alanine transaminase (ALT) levels.

A 26-year-old male PD patient applied to our Transplant Unit to undergo renal transplantation from his mother. He had been on PD for the last 2 months and was treated with a 13 L of 1.36% glucose-containing PD solution and 2 L of Extraneal exchange. He was also on 80 mg/day furosemide. At the time of first visit, he had exfoliative eruptions on his back. Except for high ALT (295 mg/dL, normal <45) and ALP levels (390 mg/dL, normal 35–140), all other liver function parameters were normal. He did not have a history of liver disease and his liver function tests were normal until 2 months ago. His HbsAg, Anti-Hbs, Anti-Hbc, Anti-CMV IgM, Anti-EBV IgM antigen were negative and Anti-CMV IgG and Anti-EBV IgG were positive. Hepatitis C virus was confirmed to be negative by real-time polymerase chain reaction. Alpha-trypsin, ceruloplasmin and autoimmune marker levels were normal. Liver ultrasonography was normal with normal size, paranchyme and echogenity, gall bladder and bile duct was normal. Since there were no evident infectious, metabolic and toxic findings, the decision was made to perform a liver biopsy. However, the patient refused to undergo liver biopsy. After review of the literature on skin lesions and hepatic dysfunction in dialysis patients, we thought that both these signs (eruption and liver dysfunction) may be related to icodextrin use. As a trial and error approach, it was decided to discontinue icodextrin. On Day 3 of discontinuation, ALT levels decreased from 295 to 133 and on Day 11 to normal levels. Similarly, ALP levels decreased from 390 to 260 on Day 11. His previous ALT levels are depicted in Figure 1. Also, exfoliative eruptions disappeared. This trial and error approach showed that the icodextrin-based PD solution was the cause of liver dysfunction. The patient is now transplanted and his liver enzymes continue to be normal.

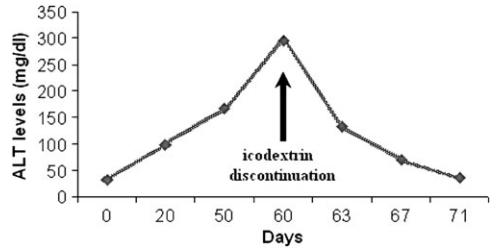

Fig. 1. Serum ALT levels upon icodextrin use and discontinuation.

Liver dysfunction was incidentally diagnosed in this case during his preoperative workup for renal transplantation. After exclusion of metabolic disorders, infectious agents, alcoholism and other causes of liver dysfunction, the focus was directed to prescribed drugs. Review of the literature directed us toward icodextrin-based PD solution while it has been linked to skin lesions in PD patients which was also present in our case. However, no valid data exists regarding liver dysfunction with icodextrin-based PD solution. Our trial and error approach showed that it was indeed related to this.

Icodextrin is reported as relatively safer compared to glucose-based PD solutions regarding adverse and side effects. The pathophysiological mechanisms underlying liver dysfunction with icodextrin use is unclear. Drug-induced hepatotoxicity can be due to various mechanisms: disturbances in intracellular ion shifts, bile duct injury, apoptosis, mitochondrial dysfunction and direct liver immune injury [4]. Which one/ones of these is responsible for icodextrin-related damage needs to be clarified.

As a conclusion, icodextrin may lead to hepatotoxicity, this may be more common than anticipated and shall be taken into account in the differential diagnosis of liver test abnormality in PD patients.

Conflict of interest statement. None declared.

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doi: 10.1093/ndtplus/sfr065