

Use of Cytosorb for the resolution of a severe simultaneous intoxication case of apixaban and digoxin

Fulvia Zappulo¹ | Laura Martano² | Ines Ullo¹ | Veronica Catalano² | Sara Donini² | Anna Scrivo¹ | Anna Laura Croci Chiochini¹ | Gaetano La Manna^{1,2}

¹Nephrology, Dialysis, and Kidney Transplant Unit, IRCCS Azienda Ospedaliero-Universitaria di Bologna, Bologna, Italy

²Department of Medical and Surgical Sciences (DIMEC), Alma Mater Studiorum - University of Bologna, Bologna, Italy

Introduction

Digoxin is a drug used for heart failure and arrhythmias and Apixaban is an anticoagulant used for atrial fibrillation. Both substances are normally eliminated by the kidneys, but they cannot be removed by standard dialysis as they are hydrophobic compounds bound to proteins. CytoSorb® is useful in cases of drug intoxications involving hydrophobic molecules to remove excess substances while simultaneously treating some secondary complications, such as liver failure, hyperinflammation, or rhabdomyolysis.

Methods

A patient with type II diabetes, chronic kidney disease, atrial fibrillation, and cognitive impairment was hospitalized for vomiting and diarrhea. During the episode, the patient continued taking Metformin, Apixaban, and Digoxin, developing MALA, AKI, and hyperkalemia, in addition to severe digoxin intoxication (3.4 ng/mL) and Apixaban overdose (106 ng/mL). Due to the persistence of oliguria and lactic acidosis, hemodialysis was attempted but failed due to hemodynamic instability. SLED with CytoSorb® (8 hours) was then chosen.

Results

The use of CytoSorb allowed a reduction in Apixaban (-46.8%) and digoxin (-25%) without albumin loss. The patient showed improvement in hemodynamics and ECG, with resolution of the junctional rhythm. The recovery of diuresis allowed the definitive suspension of dialysis the following day after the end of Cytosorb treatment.

Conclusions

The treatment with CytoSorb® showed effectiveness as early as the first 4 hours, with a rapid reduction in serum levels of Apixaban and Digoxin (46.7% and 16.6% reduction from baseline, respectively), while a steady state was reached in the last 4 hours (Figure 1-A). A reduction in Interleukin-6 (IL-6) and free light chains (FLC) K and λ levels was also observed, particularly in the first 2 hours of treatment (Figure 1-B). These results suggest that CytoSorb® is effective when combined with SLED in patients who do not require intensive care.

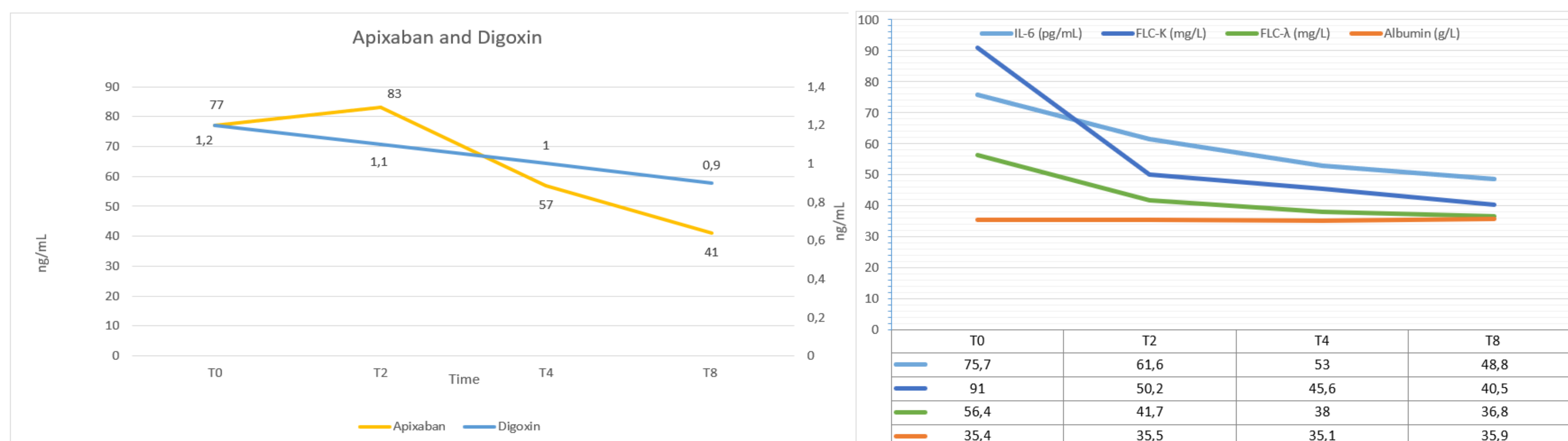


Figure 1-A,B