FALSELY ELEVATED SERUM DIGITOXIN CONCENTRATIONS MEASURED BY IMMUNOASSAY USING MURINE ANTIBODIES IN A CLINICALLY ASYMPTOMATIC PATIENT

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Objective

The low specificity of immunoassays compared to other analytical methods (HPLC, LC-MS) used for the routine Therapeutic Drug Monitoring of patients undergoing digitoxin therapy can lead to some pitfalls. We report about a highly elevated digitoxin serum concentration measured by an immunoassay method using murine antibodies (Advia, Bayer) in a clinically asymptomatic patient.

Case report

Patient: 70-year-old man
He stayed in hospital for treatment after a threefold coronary bypass operation. He received his last digitoxin medication in a therapeutic dose 3 weeks ago.

Clinical features:

- **ECG**
  In ECG a known normofrequent absolute arrhythmia was observed. Bloodpressure was 120/70 mm Hg and no clinical signs of digitoxin toxicity were seen in the patient during his stay in hospital over 3 weeks.
- **Laboratory findings:**
  The digitoxin serum concentration was **83.6 nmol/l** although the patient had received his last digitoxin medication in a therapeutic dose 3 weeks ago. After remeasurement of the same serum samples by another immunoassay not using murine antibodies (Dimension, Behring) the digitoxin serum concentration was **6.06 and 7.2 nmol/l** respectively.
- **Possible explanation:**
  As possible explanation for this phenomenon of falsely elevated digitoxin serum levels the generation of autoantibodies against murine antibodies in the patient was discussed because he had received murine antibodies (Abiximab) to prevent aggregation of thrombocytes in 1998. However, other substances (endogenous and nutritional) causing crossreactivity due similar chemical structure (Figure 1) have to be considered, as well.

During 2000 and 2004 5 cases with discrepancy between high digitoxin serum concentrations and no clinical symptoms of digitoxin intoxication were observed by our poisons information centre

<table>
<thead>
<tr>
<th>Case series</th>
<th>PIC Erfurt 2000 - 2004</th>
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Conclusion

Because of low specificity of immunoassays falsely elevated digitoxin serum concentrations can be observed in asymptomatic patients. In these cases a remeasurement by a specific method (HPLC, LC-MS) and a treatment according to the clinical symptoms is recommended.

Literature