

Imipenem+Cilastatin interfering with creatinine estimation in Jaffe's Kinetic method

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False serum creatinine estimates have been discovered as a result of interference by both endogenous and exogenous substances, which have been attributed to factors such as decreased or inhibited tubular creatinine secretion, interference with serum creatinine assays, and increased creatinine production [1,2]. A patient admitted to our intensive coronary care unit recently had a serum creatinine level of 7.0 mg/dl. His serum urea was normal, but his serum sodium was abnormally high. As a result of the suspicion of a faulty blood sample, another blood sample was collected. The serum creatinine level in this new sample was 1.0 mg/dl, and the sodium level was within normal limits. We later discovered that the previous blood sample had been collected by the nurse from the indwelling catheter.

The patient was being treated with three intravenous antibiotics: Levofloxacin, Linezolid, and Imipenem + Cilastatin. As a result, the three antibiotics were tested for their ability to interfere with Jaffe's kinetic method. The results revealed that the interference was caused by Imipenem + Cilastatin. Imipenem + cilastatin interference was very high at 500 mg/10 ml, which could be due to non-creatinine chromogen formation with alkaline picrate reagent. However, at 500 mg/dl, it was negligible (the dilution generally used for infusion). The high serum creatinine level in the concerned patient could be due to improperly dissolved antibiotic powder during infusion, which could have deposited in the catheter and mixed with the blood when the nurse collected the blood from the indwelling catheter.

The interference caused by Levofloxacin and Linezolid was insignificant. However, it was unclear whether the interfering agent was Imipenem or Cilastatin. Furthermore, the high serum sodium in the faulty blood sample could be due to Cilastatin sodium salt. This is a preliminary investigation. As a result, more research with other antibiotics that have not been studied for their interaction with Jaffe's, as well as an enzymatic method for creatinine estimation, is required.

Conclusion

The purpose of this letter is to inform analysts that if unusually elevated levels of serum creatinine are found that do not correlate clinically, the best option is to repeat the test with a fresh blood sample. Furthermore, personnel collecting blood samples should be strictly instructed not to collect blood from indwelling catheters. It is also necessary to determine the timing of blood collection in patients who are receiving antibiotics.

References

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