Board of Education and Assessment Trainee Poster Prize

ELTROMBOPAG: LIVER TOXICITY, KIDNEY INJURY OR ASSAY INTERFERENCE?

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Introduction: Eltrombopag is an oral thrombopoietin receptor agonist used for treatment of severe thrombocytopenia. Regular blood tests are essential to monitor for hepatotoxicity.

Case: A patient with myelodysplasia receiving eltrombopag had persistently undetectable serum total bilirubin (TB) (<2 µmol/L) with discordant icteric index (4+) on Beckman DxC600. Serum was dark green but normalised after addition of acid. Patient was clinically jaundiced, suggestive that the undetectable serum bilirubin was wrong. Measurements on six other different analysers gave discrepant serum TB ranging from <2 to 100 µmol/L and creatinine ranging from 30 to 149 µmol/L (eGFR ranging from >90 to 28 mL/min/1.73m²). LC-MS/MS creatinine was 56 µmol/L (eGFR 85 mL/min/1.73m²).

Discussion: Eltrombopag is a diacid which causes brownish red colour in spiked serum which disappears on acidification.¹ It is therefore logical that the degree of interference depends on the actual pH and measurement wavelength of the specific spectrophotometric assays. Patients on eltrombopag may receive sufficiently erroneous laboratory results such that they receive inappropriate management.

Conclusion: Clinicians and the laboratory must be vigilant against potential drug interference in laboratory assays. There are implications for manufacturers of the most affected analytical methods. Warnings might also be considered in the drug product information literature.

Reference

1. Cardamone D, Milone MC, Glaser L, *et al.* Eltrombopag and serum of a different hue. *Arch Pathol Lab Med* 2013; 137: 1175.

UTILITY OF DIRECT SUSCEPTIBILITY TESTING FOR BLOOD CULTURES

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Aims: To assess the clinical utility of direct susceptibility results for blood cultures and their correlation with formal testing methods.

Methods: Retrospective review of 260 bacteraemia episodes. Antibiotic choice and timing data were collected. Direct disc testing was performed by placing 1–3 drops of blood culture broth into 1.8 mL 0.45% saline then inoculating Mueller-Hinton agar (+5% Sheep Blood for streptococci). Zone sizes were

measured the following day after incubation at 35°C. Formal susceptibility testing from overnight cultures was performed with VITEK®2 broth microdilution (bioMérieux) and penicillin Etests (bioMérieux) for streptococci. CLSI 2010 guidelines were used to interpret results.

Results: Antibiotics were modified in 57/260 (27.9%) cases as a result of direct susceptibilities, decreasing time to targeted antibiotics in 7.4% of cases and effective antibiotics in 14.7% of cases. Inappropriate antibiotics were administered based on direct sensitivities in 10 (4.9%) cases but only 2 received ineffective (as opposed to unnecessarily broad) antibiotics. There was a 9.1% error rate (59/648 antibiotic combinations, in 46/160 cases) in direct sensitivities, particularly with nitrofurantoin for enterococci, and piperacillin-tazobactam and cefepime for Gram-negatives.

Discussion: Although direct susceptibility testing has reduced accuracy due to non-standardised inoculums, facilitation of earlier targeted and effective antibiotics justifies its ongoing use.

EVALUATION OF RAPID ANTIGEN TESTING FOR DIAGNOSIS OF RSV AND INFLUENZA IN PAEDIATRIC HOSPITAL PATIENTS USING FLOCKED SWABS AND NASOPHARYNGEAL ASPIRATES

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Background: Rapid antigen tests for respiratory syncytial virus (RSV) and influenza A&B offer improved turnaround time but have shown variable sensitivity compared with the gold standard of reverse transcriptase PCR (RT-PCR). Nasopharyngeal flocked swabs are less invasive than nasopharyngeal aspirates (NPA) and less prone to spread infection. There are no published studies evaluating the use of flocked swabs for paediatric influenza rapid antigen testing or for the BinaxNOW RSV assay.

Methods: We evaluated the sensitivity of rapid antigen testing (BinaxNOW) compared with RT-PCR for RSV and influenza A&B in paediatric patients at five metropolitan hospitals using nasopharyngeal flocked swabs and NPA (*n*=1111).

Results: Sensitivity of antigen testing for RSV was significantly higher for NPA (80.0%) than flocked swabs (52.6%) (*p*<0.0001). For influenza A, there was a trend towards higher sensitivity for NPA (77.5%) than flocked swabs (61.6%) (*p*=0.09). This was confounded by a significantly younger cohort for NPA versus flocked swabs (13–14 months vs 30–32 months) (*p*<0.0001). Sensitivity for influenza B was poor on both specimen types (28–30%).

Discussion: The use of rapid antigen testing offers faster turnaround time at the cost of lower sensitivity than RT-PCR. Improved sampling technique may increase the sensitivity of flocked swabs in this population.