Validation of the new Inducible Clindamycin Resistance (ICR)-test on VITEK 2 cards for staphylococci (AST-P610)

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Introduction and purpose

Methylation by a ribosomal methylase, encoded by *erm* genes, results in resistance to macrolide, lincosamide and streptogramin B (*MLS*<sub>B</sub> phenotype). This phenotype can be expressed either constitutively or inducible (*iMLS*<sub>B</sub>). For the detection of *iMLS*<sub>B</sub> resistance in *Staphylococcus* spp., the Advanced Expert System (AES) of Vitek 2 (bioMérieux) uses a recently developed ‘Inducible Clindamycin Resistance’ (ICR)-test.

Our aim was to validate the ICR-test on AST-P610 cards, using the CLSI double disc method (D-test) as reference test.

Methods

95 consecutive patient samples with *Staphylococcus* spp. (54 *S. aureus* and 41 coagulase-negative staphylococci) were collected in our laboratory (MCH Leuven). The strains were identified with the GP card and tested for inducible clindamycin resistance by Vitek 2 ICR-test on the AST-P610 card. Disk diffusion using the D-zone test was used as reference method (CLSI M100-S20, M02-A10). Based on Cumitech 31 A, we used following validation criteria: very major errors (VME) (D-test +, Vitek 2 ICR-) ≤3%; major errors (ME) (D-test -, Vitek 2 ICR+) ≤3%; combination of ME and minor errors (MinE) ≤7%; categorical agreement (CA) ≥90%.

Results

We noted a sensitivity of 100%, a specificity of 98.7% and a categorical agreement of 98.9%. One major error (*S. cohnii*: D-test-, Vitek 2 ICR +) was noted but fell within our validation criteria (ME ≤3%).

<table>
<thead>
<tr>
<th></th>
<th>D-test +</th>
<th>D-test -</th>
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<tbody>
<tr>
<td>Vitek 2 ICR+</td>
<td>17</td>
<td>1</td>
</tr>
<tr>
<td>Vitek 2 ICR -</td>
<td>0</td>
<td>77</td>
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Conclusion

Clindamycin may be clinically ineffective in case of *iMLS*<sub>B</sub> resistance despite low minimal inhibitory concentrations and therefore should be reported by the laboratory (CLSI M100-S21; EUCAST expert rules 2008).

The Vitek 2 ICR-test on the AST-P610 card provided a reliable method to detect *iMLS*<sub>B</sub> resistance in staphylococci and was implemented in the daily routine of our laboratory.