Multicenter validation of the Clearview® Exact PBP2a test

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Introduction and purpose

Early detection of methicillin resistant S. aureus (MRSA) infections and MRSA carriage represents a major issue in optimal patient management. Conventional methods for antimicrobial susceptibility testing in S. aureus isolates can take over 24 hours, and molecular tests are expensive and require technical expertise. The Clearview® Exact PBP2a test is a qualitative, immuno-chromatographic assay to detect the penicillin-binding protein 2a (PBP2a) directly from isolates identified as S. aureus. The aim of this study was to validate the Clearview® Exact PBP2a test in seven Belgian laboratories.

Methods

Seven Belgian laboratories (MCH Leuven, Imelda ziekenhuis Bonheiden, H. Hartziekenhuis Lier, LKO-LMC Sint-Truiden, AZ Sint-Maarten Mechelen, GZA Antwerpen, H. Hartziekenhuis Roeselare-Menen) analysed a total of 151 S. aureus strains. Both clinical isolates (n=136) and QC-strains (n=15) were cultured and identified following the standard procedures in each lab. The Clearview® Exact PBP2a test was performed in duplo with the currently used kit for PBP2a detection, all requiring a boiling and centrifugation step (Slidex® MRSA detection bioMérieux, MRSA-screen Denka Seiken, PBP2 Oxoid). Discrepancies were resolved using molecular testing.

Results

S. aureus colonies, originating from different culture media (blood agar, chromogenic SA agar, chromogenic MRSA agar, Mueller Hinton agar), were tested. On a total of 151 S. aureus strains, only one discrepant result was obtained. It concerned a S. aureus isolate positive with Clearview® Exact PBP2a but negative with MRSA-screen (Denka Seiken). The strain was confirmed as MRSA using molecular testing (Tuf, Nuc and MecA positive). In total, 116 MRSA-strains and 35 MSSA-strains were tested.

All the labs mentioned the problem of weak control lines, especially with positive isolates, and independently of the used culture media. When a smaller amount of isolate was used, the strength of the control line increased.

Conclusion

The Clearview® Exact PBP2a test provides an accurate, easy to use (no centrifugation or boiling stage required) and quick (<6 minutes) method to detect the PBP2a protein in S. aureus isolates.

The use of different culture media (including chromogenic agars) had no discernible effect on the performance of the kit.

Attention should be paid to over-inoculation of isolates positive for PBP2a, resulting in weak or even negative (and therefore invalid) control lines.