A691 - Performance of a pcr based syndromic panel compared to routine culture and microscopy in patients suspected of pneumonia

V Andrews ; M Pinholt ; U Schneider ; L Søes ; K Schønning ; G Lisby
Department of Clinical Microbiology, Hvidovre and Amager Hospital, Hvidovre, Denmark

Introduction:
Syndromic testing for lower respiratory tract infections with Biofire® Filmarray® Pneumonia Panel (BF) consists of a multiplex PCR with 27 pathogens and a turn-around-time of two hours. Routine diagnostic of bacterial pneumonia in the Capital Region of Denmark consist of culture preceded by microscopy for quality assessment of sputum. Turn-around-time and sensitivity of culture can be a limiting factor for targeted antimicrobial treatment. Hence, we evaluated BF performance against culture.

Methods:
From January to May 2019 298 samples were collected consecutively from hospitalized patients with suspected pneumonia. Samples were sent routinely to the Department of Clinical Microbiology for culture and additional testing by BF.

Retrospectively, patients were categorized into ‘pneumonia’, ‘probable pneumonia’ and “no pneumonia”. Analytical performance was evaluated by bacterial pathogen concordance between the two methods. Clinical performance was determined regarding pneumonia/not pneumonia and detection of a positive/negative bacterial pathogen and evaluated by sensitivity, positive predictive value (PPV), negative predictive value (NPV) and efficacy.

Results:
98 patients had pneumonia, 71 had probable pneumonia and 129 had no pneumonia.

Positive agreement between culture and BF was 42%. The rate increased to 67% when pathogens in lowest quantity in BF were excluded.

Sensitivity of BF was improved from 73% to 89%, and for culture from 43% to 58%, when only high quality samples were included. For BF, PPV: 50%, NPV: 69% and efficacy: 57% were comparable to culture (PPV: 52%; NPV: 62%; efficacy: 58%); this increased slightly for both BF (PPV: 55%; NPV: 76%; efficacy: 61) and culture (PPV: 55%), when only high quality samples were included.

Conclusion:
PPV and NPV of both BF and culture were low and are therefore best used in patients in whom the pneumonia diagnosis has been established clinically. Indiscriminate use may be diagnostically misleading and a cause of improper use of antibiotics.