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P0541 Middle East respiratory syndrome coronavirus screening: isothermal vs real-time polymerase chain reaction

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Background: The recent emergence of Middle East Respiratory Syndrome Coronavirus (MERS-CoV) has caused significant mortality in patients with co-morbidities. Accurate and rapid detection of MERS-CoV infection is therefore critical to preventing outbreaks and spread of disease. Several molecular techniques have been developed for MERS-CoV diagnostics, with significant variability in test costs and detection times. We aimed to assess detection of MERS-CoV *upE* and *Orf1a* genes by isothermal PCR (POCKIT, Taiwan) compared with real-time reverse-transcriptase (rRT) PCR (Real-Star, Altona).

Materials/methods: One hundred and two (102) nasopharyngeal/oropharyneal specimens, including 43 from known MERS-CoV positive cases, were tested in parallel by POCKIT isothermal PCR and Real-Star MERS-CoV rRT-PCR. Nucleic acid extraction was performed on the TACO system (GeneReach, Taiwan) for the POCKIT PCR protocol, whilst the MagNA Pure 96 extraction system (Roche, Germany) was used for the Real-Star protocol.

Results: The POCKIT system performed relatively well. Out of 102 patients tested for MERS-CoV, 40 (39.2%) samples were true positives whilst 3 (2.9%) samples were false negatives by POCKIT- PCR. POCKIT-PCR sensitivity, specificity, positive predicted value, negative predicted value, and accuracy were 93.02%, 98.31%, 97.56%, 95.08%, and 96.08%, respectively. MERS-CoV diagnosis was two hours shorter with POCKIT PCR procedure compared to Altona real-time PCR.

Conclusions: Isothermal POCKIT-PCR was relatively fast, cheap and had high sensitivity rate. Although the sensitivity did not out-perform real-time PCR, POCKIT-PCR presents a good alternative for MERS-CoV diagnostics.