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BRIDGING THE DIAGNOSTIC KAWASAKI DISEASE GENE EXPRESSION PROFILING CLASSIFIER FROM MICROARRAY TO A CLINICALLY APPLICABLE MULTIPLEX QRT-PCR ASSAY (KIDS-GEP)

E-Posters
POSTER DISCUSSION SESSION 09: BIOMARKERS & SEPSIS

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Backgrounds: Kawasaki disease (KD) is a systemic vasculitis that is most prevalent in children under 5 years of age and can result in the development of coronary artery abnormalities (CAA). Early treatment with intravenous immunoglobulin is effective, but diagnosing KD can be challenging. Timely diagnosis of KD may become more straightforward with the recent discovery of a microarray-based host response classifier that discriminates KD patients from patients with other febrile conditions. As a microarray is not suited for the acute clinical care setting, we bridged this microarray-based classifier to a clinically applicable One-step multiplex qRT-PCR assay: the Kawasaki Disease Gene Expression Profiling (KiDs-GEP) classifier.
Methods: A qRT-PCR assay was designed and optimized, and subsequently applied to RNA isolated from whole blood samples of KD patients and febrile controls. The results were used to reweight the original classifier.
Results: The performance of the bridged KiDs-GEP classifier was comparable to the original classifier with a cross-validated area under the ROC curve (AUC) of 0.964 [95%CI: 0.924-1.00] vs 0.992 [95%CI: 0.978-1.00] respectively. Both classifiers demonstrated similar trends over various disease conditions, with the clearest distinction between individuals diagnosed with KD and viral infections.
Conclusions/Learning Points: In conclusion, we successfully bridged the microarray-based classifier into the qRT-PCR KiDs-GEP classifier: a more rapid and less costly assay that brings the host response clinical test for KD closer to the hospital clinical laboratory, enabling earlier diagnosis, treatment and better prevention against CAA.