DETERMINING VIRAL ETIOLOGY: TRAIL BIOMARKER LEVELS AND MOLECULAR VIRAL DETECTION IN THE AUTOPILOT-DX STUDY

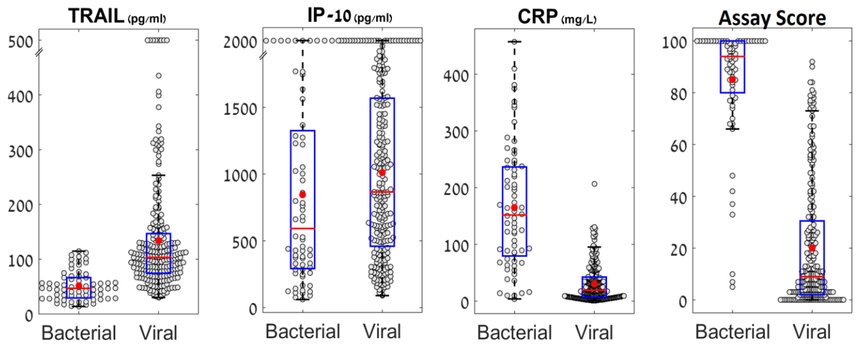
Niv Mastboim[1], Edoardo Farinelli[2], Cihan Papan[3], Liat Etshtein[1], Asi Cohen[1], Einav Simon[1], Olga Boico[1], Liran Shani[1], Tanya Gottlieb[1], Kfir Oved[1], Eran Eden[1], Ilaria Testa[2], Alberto Argentiero[2], Maria Bruna Pasticci[2], Daniele Mezzetti[2], Katia Perruccio[2], Marian Porwoll[3], Ummaya Hakim[3], Arne Simon[4], Johannes G. Liese[5], Markus Knuf[6], Sven Schneider[7], Tobias Tenenbaum[3]*, Susanna Esposito[2]

[1]MeMed Diagnostics, Tirat Carmel, Israel, [2]Pediatric Clinic, Università degli Studi di Perugia, Perugia, Italy, [3]University Children's Hospital Mannheim, Mannheim, Germany, [4]Pediatric Oncology and Haematology, Saarland University Hospital, Homburg, Germany, [5]Department of Pediatrics, University of Würzburg, Würzburg, Germany. [6]Children's Hospital, Dr. Horst Schmidt Klinik, Wiesbaden, Germany, [7]Institute for Clinical Chemistry, University of Heidelberg Medical Faculty Mannheim, Mannheim, Germany. *shared senior author

Background

TRAIL serves as a useful biomarker for distinguishing between bacterial and viral infections when combined with IP-10 and CRP (ImmunoXpert™)

Name	Curiosity	Pathfinder	Opportunity
Target population	Adults and pediatric with acute infection	Pediatric with acute infection	Pediatric with FWS or RTI
Potentially eligible patients (n)	1002	597	777



* Oved et al., PLoS ONE, 2015
* Srugo et al., Pediatrics, 2017
* Van Houten et al., Lancet ID, 2016

AutoPilot-Dx study primary objective

To validate the diagnostic accuracy and potential clinical utility of the host-immune signature (ImmunoXpert™).

Design

Sub-analysis goal

To evaluate TRAIL levels in children with acute bacterial or viral expert diagnosis and nasopharyngeal PCR virus detection

830 Children
Prospectively recruited so far as part of the 'AutoPilot-Dx' study (NCT03052088)

↓

Virus detection
Multiplex-PCR applied to nasopharyngeal swabs (Allplex™, Seegene)

+

Expert diagnoses
Based on a review of patients' clinical, laboratory, radiological, microbiological and follow-up data.

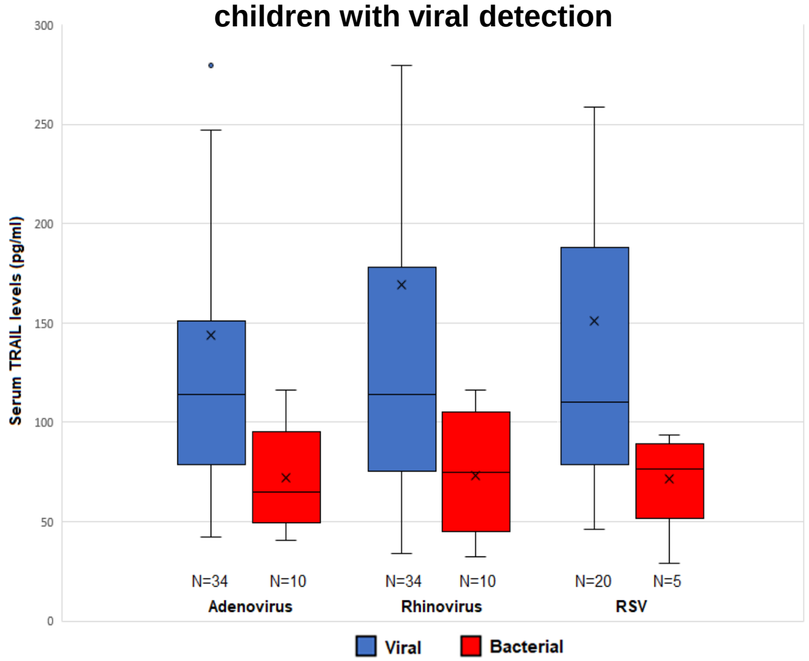
↓

159 virus detections in children with confirmed etiology determination

Viral	Bacterial
126	33

Results and conclusions

TRAIL levels has potential to correctly classify febrile children with viral detection



These are the three most frequently detected viruses, accounting for a total of 113 out of the 159 viruses detected.

Bacterial expert diagnosis was assigned to 29%, 29% and 25% of patients with adenovirus, rhinovirus and respiratory-syncytial virus detection, respectively, highlighting that viral detection may not necessarily indicate underlying etiology.

TRAIL levels were significantly increased in viral patients as compared to bacterial patients, irrespective of virus detection.

Conclusion: The differential expression of TRAIL in response to viral versus bacterial infections can complement molecular viral detection in the classification of febrile children.

Medizinische Fakultät Mannheim der Universität Heidelberg
Universitätsklinikum Mannheim
UMM UNIVERSITÄTSMEDIZIN MANNHEIM
European Commission | Horizon 2020 European Union funding for Research & Innovation
MeMed