

EuroSciCon

26th International Conference on

Immunology and Infectious Diseases

Scientific Sessions

March 28-29, 2022

Webinar



Immunology & Infectious Diseases 2022

Persistence of clinically-relevant levels of SARS-CoV2 subgenomic RNA (sgRNA) in non-immunocompromised individuals

Merlin Davies¹, Laura R Bramwell¹, Nicola Jeffery¹, Ben Bunce², Ben P Lee¹, Bridget Knight², Cressida Auckland³, Jane AH Masoli^{1,4}, and Lorna W Harries¹

¹*Institute of Clinical and Biomedical Sciences, University of Exeter, UK*

²*Royal Devon and Exeter NHS Foundation Trust, Royal Devon and Exeter Hospital, UK*

³*Royal Devon and Exeter Foundation Trust, UK*

⁴*Healthcare for Older People, Royal Devon and Exeter NHS Foundation Trust, UK*

Prevention of ongoing transmission of SARS-CoV-2 is an essential component of managing the current pandemic. A key prerequisite for this is an accurate understanding the kinetics of viral clearance, likely infectious duration and the circumstances under which clinically relevant levels of active and potentially infectious virus may persist.

We carried out an assessment of E gene and sgRNA viral load as a function of disease severity in a retrospective collection of swab samples from 176 PCR-confirmed individuals. We then determined the viral clearance dynamics of E gene and sgRNA viral sequences in serial samples from a subset of 17 individuals, and assessed duration of positive test result in a further set of 65 E gene positive individuals and 32 sgRNA positive individuals.

We found that both E gene and sgRNA viral load correlated with the presence of COVID-19 symptoms, and that whilst sgRNA viral load declined before E gene viral load, some individuals retained both sgRNA and E gene positivity for extended periods of time of up to 68 days. 13% of sgRNA positive cases still exhibited clinically-relevant levels of virus after 10 days, and that these individuals were without clinical features previously associated with prolonged viral clearance times.

Our results suggest that care needs to be taken in the assumption

that people other than older adults with frailty or those with immunocompromise will be clear of infectious virus after 10 days. We have shown that active virus may persist after this period, which may lead to increased onward transmission risk. We suggest when onward transmission would pose a serious public health threat, for example return to residential care after hospitalisation, that inpatient hospital infection control policies should not be relaxed without evidence of negative test.

Biography

Merlin is a PhD student at the University of Exeter with Professor Lorna Harries. His PhD focuses on COVID mortality and the links with [ageing and metabolic diseases](#). This began with understanding the role that viral load may play in disease severity, alongside producing the first evidence that individuals may shed clinically relevant levels of potentially replicative competent SARS-CoV-2 beyond 10 days. Current and future work will assess the role of [immunosenescence](#) in SARS-CoV-2 infections and evaluate the potential of novel senotherapeutics in treating COVID-19 which may have implications for wider [viral infections](#) and general immunity.

Md550@exeter.ac.uk

Nutrition in COVID-19 survivors: What are the Complications and how to recover using foods?

***Seyedeh Zahra Hejazi Taghanaki, Amirreza Moravejolahkami**

Medical University of Isfahan, Iran

The novel coronavirus, Severe Acute Respiratory Syndrome CoronaVirus 2 (SARS-CoV-2), has spread to many countries since 30 January 2020 and claimed as an emergency global health condition. Age of more than 50 years old, type 2 diabetes, smoking, underlying respiratory disease, cancer, and cardiovascular disease are the most vital risk factors for COVID-19 (caused by SARS-CoV-2). Through boosting the immune function, Nutritional interventions may play a positive bilateral role, either during the treatment process or during the recovery phase of the disease. Furthermore, long-term complications of COVID-19 may be affected by dietary modifications. Inflammation-induced COVID-19 can also exacerbate the relevant complications.

Now, more than ever, conducting a healthy diet enriched by specific vitamins, minerals, and antioxidants reduces the severity of signs and symptoms during illness and after survival. Therefore, this study aims to review the preventing or recovering characters of micronutrients, focusing on changes each one has on the body immune system and dietary interventions in COVID-19 survivors.

Recent Publications

Mirashrafi S, Hejazi Taghanaki SZ, Sarlak F, Moravejolahkami AR, Hojjati Kermani MA, Haratian M. [Effect of probiotics supplementation on disease progression, depression, general health, and anthropometric measurements in relapsing-remitting multiple sclerosis patients: A systematic review and meta-analysis of clinical trials](#). International Journal of Clinical Practice. 2021 Aug 11:e14724.

Biography

Zahra Hejazi is Medical [nutrition and dietetics](#) student at Isfahan University of medical sciences, Iran. Her research interests include healthy [foods](#) and diets, diet in [chronic diseases](#) and [nutritional immunology](#).

s.zahrahejazi.t@gmail.com

Promoting isotype switching to IgG2c by IFN- γ , Is a key factor to overcome GAS infection in mice

*Shiva Emami, Jenny Persson, Bengt Johansson Lindbom

Lund University, Sweden

Introduction

Group A streptococcus (GAS) is a prevalent human pathogen, causing more than 700 million cases of mild infections annually and around 500 thousand annual deaths in the world. GAS is the cause of different human diseases, ranging from pharyngitis to autoimmune diseases. One of the most well-known virulence factors in GAS is M protein, a surface protein that facilitates bacterial invasion.

Methodology

In this study, we used a recombinant GAS strain (GAS2W) expressing M protein containing a hyper immunogenic peptide (2W). Mice were immunized three times with heat killed-GAS subcutaneously with three weeks interval. Three weeks post last immunization, mice were challenged intraperitoneally with a lethal dose of live-GAS.

Result

In order to investigate the impact of IFN- γ and antibodies in protection against GAS infection, we used a mouse model knock-out for IFN- γ (IFN- γ KO). We observed immunization with GAS2W strain can increase protection against GAS infection in mice compared with the original GAS strain. Higher levels of antibodies against M1 protein were measured in GAS2W-immunized mice. There was also a significant increase in IgG2c response in mice immunized with GAS2W. By using IFN- γ KO mice we showed that not a high level of total IgG, but IgG2c was correlated with protection through the i.p challenge. It also emphasizes the importance of IFN- γ cytokine to combat GAS by isotype switching to IgG2c (which is opsonic for phagocytosis).

Conclusion

Our data indicate the crucial role of IFN- γ in the protective immune response that together with IgG2c can induce protection against GAS.

Publications

1. Emami, Shiva & Eftekhari, Fereshteh. (2015). [The Correlation Between Biofilm Formation and Drug Resistance in Nosocomial Isolates of *Acinetobacter baumannii*](#). *Avicenna Journal of Clinical Microbiology and Infection*. 2. 10.17795/ajcmi-23954
2. Emami, Shiva & Eftekhari, Fereshteh. (2015). [The Correlation Between Biofilm Formation and Drug Resistance in Nosocomial Isolates of *Acinetobacter baumannii*](#). *Avicenna Journal of Clinical Microbiology and Infection*. 2. 10.17795/ajcmi-23954.

Biography

I am Shiva Emami, a PhD student who recently finished the third year of her study. I am working with Group A streptococcus in Lund University, Sweden, under supervision of Bengt J. Lindbom and co-supervision of Jenny Persson. I studied master in the field of microbiology, Shahid Beheshti University, Tehran, Iran. I also worked as a research assistance for one year in Iran and 6 months in Sweden, before starting my PhD and I gained lots of experiences during that time. Since I was very interested in Immunology, I started my PhD in the field of Adaptive Immunology with a focus on immunity to infectious disease.

Shiva.emami@med.lu.se

Epidemiological investigation of Norovirus in children and its associated risk factors in district Lahore, Punjab Pakistan

Ammar Yasir

University of Veterinary and Animal Sciences, Pakistan

Statement of the Problem

Diarrheal diseases are responsible for a significant amount of children deaths. Although, rotavirus is recognized as a major cause for pediatric diarrhea, but the role of other viruses especially norovirus is still unrecognized for the Pakistani population. Norovirus is very contagious and can affect a vast range of species ranging from cattle, pigs, dogs, mice, cats, sheep, lions to humans. In humans it causes vomiting and diarrhea and can affect the people of all ages but mainly the children with less than five years of age. There is no significant data available regarding the prevalence and genetic variability of norovirus in Pakistan.

Method

This study was based on hospital surveillance, from December 2019 to September 2020 for the detection of noroviruses in children of less than five years of age. Total 100 samples were collected with predesigned questionnaire to assess the risk factors and clinical characteristics related to noroviruses.

Conclusion & Significance

Total 15% samples were detected positive by the confirmation of RT-PCR for genogroup GII (G2SK) which is most prevalent. From all the risk factors including age, gender, vomiting, fever, type of milk, water and meal consumption, habit of hand, vegetables and fruits washing; only the contact of patient with an acute gastroenteritis patient was found significant. The remarkable cases of childhood diarrhea associated with noroviruses calls for the large-scale epidemiological surveys to calculate the burden of noroviruses and assess the risk factors. As it is a food borne pathogen so there is also a need to follow the strict hygienic measures during the processing of food items.

Recent Publications

Ahmed, T., Hussain, S., Rinchen, S., Yasir, A., Ahmed,

S., Khan, W. A., ... & Ricketson, R. (2020). [Knowledge, attitude and practice \(KAP\) survey of canine rabies in Khyber Pakhtunkhwa and Punjab Province of Pakistan](#). BMC public health, 20(1), 1-12.

Biography

Ammar Yasir is working as a research associate in the Department of Epidemiology and Public Health, at the University of Veterinary and Animal Sciences, Pakistan. Recently, he has also completed his MPhil Degree in the same department.

ammam.yasir@uvas.edu.pk

Peripheral Neuropathic Pain: A multispecialist approach to pain management

Adam Woo

Kings College London, UK

Statement of the Problem

Neuropathic Pain is a difficult pain entity to diagnose, classify and treat. Diagnosis, especially with small fibre neuropathy is unsatisfactory and based on basic clinical signs and symptoms. First line treatments often include antineuropathics such as gabapentinoids and tricyclics which have a high NNT, with most imparting unacceptable side effects. Clinical Practice: At Kings College Hospital the Pain Management Department have teamed up with two peripheral neuropathy specialists to diagnose and form treatment plans for this group of patients. Diagnosis is done at Kings College London University using microneurography and skin biopsies for confirmation. Treatment plans are steered in a multimodal direction including avoidance of regular medications if possible. These include Capsaicin 8% patches (Qutenza), intravenous lidocaine and ketamine burst infusions and pulsed radiofrequency of relevant nerves using X-ray or ultrasound. Biopsychosocial assessment also allows recognition of psychosocial factors and treatment such as depression and anxiety.

Conclusion & Significance

Multispecialty assessment allows firm diagnosis and efficacious and tailor made treatment plans to be made for this difficult group of patients. Avoidance of regular antineuropathics is a key component, preventing development of side effects which decrease quality of life.

Recent Publications

Z Oon and A Woo [Should thoracic epidurals be routinely sited in patients having cardiac surgery?](#) British Journal of Hospital Medicine 2017 78:12, 730-730

Woo A and Sinha M. [Should ultrasound or X-rays be used in chronic pain medicine interventions?](#) British Journal of Hospital Medicine 2016, 77(5), p. 314

Woo A, Tharakan L and Vargulescu R. [Stellate Ganglion Block for Painful Congenital Venous Malformation of the Arm.](#) Pain Practice 2015

Wilson J and Woo A Long term Opioids: Friend or Foe? British Journal of Hospital Medicine 74(5): 298 (May 2013)

Woo A. [Depression and Anxiety in Pain.](#) British Journal of Pain March 2010 vol. 4 no. 1 8-12

Biography

Adam Woo is Consultant in Pain Management and Anaesthesia at Kings College Hospital. He is Fellow of the

Royal College of Anaesthetist, Fellow of the Faculty of Pain Medicine. He has an MSc from Edinburgh University

and trained in pain medicine at UCL Hospitals, St Thomas' Pain Management Centre and Great Ormond Street

Hospital. He is member of the Anghoff Committee for the Faculty of Pain Medicine Exams and Local Pain

Medicine Educational Supervisor.

adamwoo@nhs.net