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Spotlight on SARS CoV-2 infection inducing autoimmunity, through the formation of autoantibody to self hemostatic components or to host cells, often leading to severe thrombotic or bleeding events

WHAT'S HAPPENING? [TRASCI 62.1 NOV ISSUE].

Spotlight on SARS CoV-2 infection inducing autoimmunity, through the formation of autoantibody to self hemostatic components or to host cells, often leading to severe thrombotic or bleeding events, in some individual: Seeking expert insights on the latest predictive diagnostic and treatment options of the ongoing subvariant alone or the expected mix "triple-demic" viral infections, with influenza and flu, expected in colder season.

The main objective of this What's Happening is to encourage international teams on working strategies for risk assessment, predictive diagnosis, and patient management, so as to collectively bring, today, what will be tomorrow's news.

With the recent appearance of a third respiratory syncytial virus, or R.S.V., in the mix with cases of influenza and flu, that were already begun to increase earlier than the usual than in the colder season, a better understanding of mixed respiratory pathogens inducing autoimmunity becomes an unmet high priority challenges to be explored. This is of particular relevance right now as these respiratory pathogens which have similar respiratory symptoms, has soared in children infected with R.S.V. rhinoviruses and enterovirus and have already created some straining in many pediatric hospitals in several countries.

It is now fully confirmed that Coronavirus infections cause severe inflammation, hypercoagulability and autoimmunity in some predisposed individuals leading to severe thrombotic or bleeding manifestations, depending upon the functionality of the targeted hemostatic components involved. While the true mechanism and etiology of these events remain to be fully established but, in clinical practice, similar to most diagnosed autoimmune diseases, a prothrombotic state involving some important haemostatic proteins or their intermediate phospholipid complexes occurs, similar to the well documented severe lupus anticoagulant, anti-phospholipid, heparin or PF4 inducing thrombotic and other hemostatic complications. These include the very rare cases of autoimmunity to vWF that leads to severe bleeding because of the ongoing infection-induced microvascular endothelial dysfunction and cellular injury. In fact, the elevated VWBF: Ag ratio to ADAMTS13, of greater than to 1.5 is currently used as a predictive diagnostic of infection-induced vascular abnormality.

The key question, in the context of CoV-2 infection-induced autoimmunity, that remains to be answered, is why, in a similar situations, only some patients and not everyone develops an asymptomatic pathogenic antibodies provoking the host hemostasis proteins to deviate from their normal functions, and become harmful to the host.

In this context I have invited Jean AMIRAL, Scientific consultant and

the company's founder of HYPHEN BioMed, and an international expert in the field of innovative tools for diagnosis and monitoring hemostatic abnormalities and autoimmunity-induced thrombotic or bleeding and vascular abnormalities events, to lead a systematic synthesis of the latest opinions on the coronavirus induced autoimmunity and consequential treatments of choice, a topic of interest to both contributors and readers alike.

Currently, numerous innovative large-scale diagnostic tools exist to manage novel therapies of autoimmunity and the follow up strategies for managing the challenges of using novel therapeutic interventions in autoimmunity-induced hemostatic abnormalities, including the associated treatment-emergent adverse events. In most cases various ELISA-based assays are used for the rapid analysis of the autoimmune status but with the recent innovative technological advances some newer innovative capture assays using PF4 coated solid surfaces become the most preferred option. More recently, a more specific ELISA assay developed and applied in coronavirus infection-induced autoimmunity, in Jean AMIRAL's laboratory. This is a basic example of the single or multiple mix infections by CoV-2 subvariants alone or combined with influenza and other infections. This will open the gate for many others experts to provide their own personal views and experiences on the topic of autoimmunity, that remain the focus of this section of Trasci in 2022.

In context to the effectiveness of COVID-19 mRNA vaccines against COVID-19-associated hospitalizations it is worthwhile to highlight that the two consecutive doses of any vaccine, or if mixed matched, are less effective than two doses of the recent booster vaccines. Moreover, among immunocompromised adults during CoV-2 Omicron predominance, vaccines in the general adult population have been found to be 70–90% effective, but, for the immunocompromised, a much lower range — 34–71% of effectiveness is documented in the Indian public health institute. Therefore, those with healthy immune systems should keep in mind their responsibility to fellow community members who are immunocompromised or have other conditions that place them at higher risk for Covid, or mixed disease, even after vaccination. Clearly, additional precautions are still needed especially when the transmission rates remains high, even in heavily booster vaccinated countries.

Looking at the future perspectives in exploring current thinking on technological innovations in any pandemic that affect our future we need to vigorously pursue international team working strategies, because we don't know what the future will bring all over the world. Looking at the trends today and thinking about what the future of multiple infections would look like, we must remain prepared and keep the issue of autoimmunity in the ranks of high priority unmet challenges.

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Clearly, only through international team working strategies we will be able to close the gap between the perception and reality.

I wish to take this opportunity to express my most sincere thanks to Jean for sharing his insights and personal hands on experiences on the topic of autoimmunity with the readers of this section and for his continual help and support, for many decades, as an essential part of our team working regularly to deliver some high quality joint ventures for

this section of Trasci. Clearly I could not do without his inputs.

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