Highlights from the 8th ECTRIMS Focused Workshop

"The Risk of Infections for MS Disease Modifying Treatments (DMTs)"

Safety and Immunogenicity of Vaccines in Multiple Sclerosis

Dr Christine Lebrun-Frénay, Centre Hospitalier Universitaire de Nice, Nice, France

Several published guidelines and recommendations address questions on whether, how and when vaccines should be proposed to MS patients. Scientific evidence shows that immunization is safe and does not contribute to increased MS risk or disease activity. Ideally, vaccination should be proposed at the earliest stage of the disease, before a DMT is started. Inactivated vaccines can be administered to DMTs' exposed patients, while live vaccines are not recommended for immunosuppressed patients to avoid the risk of vaccine-related infections. The mode of action of immunosuppressive drugs and patient lymphopenia at time of immunization can contribute to lower immunogenicity. Therefore, vaccination timing should be adjusted to optimize vaccine response and to limit any possible interference with the therapeutic schedule. Concerning SARS-CoV-2 infection, vaccination should be recommended.

Immunization Strategy (before, during and after immunosuppression)

Dr Susana Otero Romano, Hospital Vall d'Hebron, Barcelona, Spain

MS patients are more susceptible to infections compared with the general population and certain infections, which are vaccine-preventable, can worsen MS course. Vaccines are safe for MS patients, with limited adverse effects and a potential reduced immunogenicity dependent on the immune status of the patient at immunization time. Therefore, vaccination needs and timing should be defined as early as possible upon MS diagnosis. Both attenuated and inactivated vaccines can be administered to untreated patients ideally four to six weeks before the onset of immunosuppressive therapy. During immunosuppression, attenuated vaccines are contraindicated and should immunization not be possible, post-exposure prophylaxis could be considered. Oppositely, inactivated vaccines are safe during immunosuppression, but should be administered at the latest two weeks before treatment onset for optimal immunogenicity. In cases of a planned interruption of immunosuppression, attenuated vaccines can be administered upon immune restoration following safety intervals recommendations, while inactivated vaccines can be administered anytime. Overall, the local routine vaccination schedule should be adopted and additional vaccines either for high-risk populations or with more restricted indications should be considered. Covid-19 vaccines are expected to be safe for immunosuppressed patients even though scarce specific data for MS patients are available yet. Timing of vaccination should be decided based on the immunological context and the risk-benefit balance.

Immunization in Special Situations – Children

Dr Yael Hacohen, University College London, London, England

Children receiving novel biological therapies represent a growing immunocompromised population. No specific evidence is available about immunization in children affected by MS, but data collected from other autoimmune diseases and immunosuppressive conditions provide useful information about vaccine safety and efficacy. An effective long lasting immune response may be elicited in paediatric immunocompromised patients, as demonstrated by Varicella Zoster, HPV and measles-mumps-rubella (MMR) vaccines. However, a lower immunogenicity may occur, as shown by the H1N1 vaccine in children under steroid therapy. Data on vaccine safety are encouraging: no disease flare or infection related to vaccine strains or severe adverse events resulted from the immunization with live attenuated MMR/V vaccines of children affected by Juvenile idiopathic arthritis (JIA); no association of different vaccines with CNS Acquired Demyelinating Syndrome (ADS) has been observed, even though an increased risk of occurrence of the first symptoms of ADS up to 30 days following vaccination occurred. Some cases of CNS demyelination developed after HPV vaccination, but they did not result in MS. Despite the available evidence on vaccine safety and efficacy, vaccination coverage in children with autoimmune diseases or under immunosuppression is still much lower than expected. Therefore, an effort by care providers in maintaining patients' vaccination status together with the provision of vaccination guidelines and a clear explanation of the impact of the underlying disease with regards to vaccine safety to both doctors and patients are required.

Immunization in Special Situations – Women, Including Pregnancy

Dr Melinda Magyari, University of Copenhagen, Copenhagen, Denmark

Physiological, hormonal, and immunological changes occurring in pregnant women makes them more susceptible to infections and exposes them to more severe clinical symptoms upon infections. Therefore, vaccination represents a key preventive tool to impact on maternal morbidity, mortality, and infection rate. From the infant perspective, an effective transplacental transfer of maternal antibodies is achievable when a proper vaccination timing is considered. Inactivated vaccines are safe overall and generally recommended in the 2nd and 3rd trimester, while live vaccines should be avoided during pregnancy. Influenza vaccination at the beginning of the influenza season (regardless of the trimester of pregnancy) and pertussis vaccination (dTpa) during the third trimester are specially recommended. New COVID-19 vaccines have not been specifically tested in pregnant women, but they are likely to be safe. They have not been associated with an increased risk of complications or miscarriages (evidence from more than fifty thousand vaccinations) so far. Women suffering from MS should get all recommended vaccinations at the time of diagnosis. Alternatively, immunization timing should be adapted to treatment plans because some DMTs may affect vaccine efficacy and safety.

Immunization in Special Situations – Elderly

Dr Bernhard Hemmer, Technische Universität München, Munich, Germany

Major changes occur in the immune system of elderly people: the output of both the bone marrow and the thymus decrease as well as the number of naïve T and B cells, while myeloid cells, dysfunctional memory T and B cells and circulating cytokines increase; phagocytosis, chemotaxis and antibody production get lower in comparison with adults. These immunological alterations lead to an impaired immune response to several infections which show either a higher incidence or increased clinical complications, hospitalization, and death rates in elderly people. Their immune system might not be strong enough to effectively fight against pathogens. Immunosenescence also explains why an impaired response to vaccination is associated with increased age: resulting protection is lower because of a reduced antibody production or it fades more rapidly than in younger patients. Vaccination side effects are also less intense, and they correlate with a diminished and sometimes insufficient immune response. With regards to elderly people suffering from MS, no specific evidence has been published yet and further research is required in order to elucidate the impact of several other factors besides age that might contribute to the impaired immune response.

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