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Summary

Gut microbiome analysis and Genetic analysis in MCS

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Dr. Kentaro Watai's presentation focused on exploring the potential connections between the gut microbiome and Multiple Chemical Sensitivity (MCS), presenting emerging evidence from microbiome research, genetic analysis, and clinical experience. As a clinician specializing in allergy and respiratory medicine, Dr. Watai offered a novel and biologically grounded perspective on MCS, diverging from traditional views that have often minimized its physiological underpinnings.

He began with a large-scale web-based case-control study conducted in Japan, surveying 150,000 participants. The study found that approximately 0.9% of the population met criteria for MCS. Further analysis revealed associations between MCS and several lifestyle or developmental factors, including Caesarean section birth, agricultural employment, residence in newly constructed buildings, and number of vaccinations. These findings pointed to the possibility that early-life and environmental exposures might predispose individuals to developing MCS.

Dr. Watai emphasized in particular the role of Caesarean section birth in altering the gut microbiome. He explained that babies born via Caesarean do not receive exposure to the mother's vaginal microbiome, which can lead to an imbalance. These alterations are thought to impact central nervous system development via the gut-brain axis, which could play a role in the later emergence of MCS symptoms. This hypothesis was tested through a metagenomic analysis of gut microbiota in MCS patients compared to healthy controls. The results showed notable differences in microbial composition, particularly elevated levels of *Akkermansia* and reduced levels of *Faecalibacterium prausnitzii*—both of which are known to influence gut barrier function and inflammatory responses. Note that the gut barrier separates our gut from the bloodstream, providing physical protection from bacteria and chemicals entering the blood.

In clinical practice, Dr. Watai observed that MCS is frequently misdiagnosed, particularly as bronchial asthma, due to overlapping respiratory symptoms like chronic cough. He urged

healthcare providers to distinguish between the two by focusing on comorbidities and patient history. Misdiagnosis not only delays appropriate care but also reinforces stigmatization of MCS as a psychosomatic disorder. This further compounds stress, and prevents the individual from receiving their appropriate treatment.

He concluded by highlighting that MCS has been formally recognized under Japan's insurance system since 2009, yet access to care remains limited due to hospital resource constraints and lack of institutional awareness. Dr. Watai's research has indeed shown that MCS is a unique and legitimate condition, as expressed through testing the gut bacteria, and therapeutic techniques need to be offered accordingly. Dr. Watai called for more clinical programs, education, and research that bridge the gap between microbiome science and environmental medicine, stressing the importance of integrating these findings into both diagnostics and policy frameworks.

Citations

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