



Author's reply

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Taniguchi presented an interesting hypothesis that hepatitis E virus (HEV) infection may induce regulatory T cells (Tregs) more strongly than other infections. Tregs are reportedly increased in acute hepatitis E [1, 2]. Unfortunately, no reports of comparisons of the strength of the Treg-induction ability of HEV with that of other infectious diseases have been made. In acute hepatitis E, the increase in Tregs is thought to prevent over-immunization leading to liver failure. The absence of Tregs in the liver tissue of autopsy cases who died of liver failure due to acute hepatitis E supports this theory [3]. On the other hand, in primary membranous nephropathy (PMN), the qualitative and quantitative decrease of Tregs is largely responsible for the etiology. PMNs are known to undergo spontaneous remission and Tregs may be involved in the process [4, 5]. Evaluation of Tregs in routine clinical practice should help elucidate the pathogenesis of PMN.

For immune-related renal diseases other than PMN, therapies aimed at improving Treg function have been proposed [6]. We expect that Tregs will also be utilized in the treatment of PMN.

References

1. Tripathy AS, Das R, Rathod SB, Gurav YK, Arankalle VA. Peripheral T regulatory cells and cytokines in hepatitis E infection. *Eur J Clin Microbiol Infect Dis*. 2012;31:179–84.
2. Rathod SB, Das R, Thanapati S, Arankalle VA, Tripathy AS. Suppressive activity and altered conventional phenotype markers/mediators of regulatory T cells in patients with self-limiting hepatitis E. *J Viral Hepat*. 2013. <https://doi.org/10.1111/jvh.12125>.
3. Prabhu SB, Gupta P, Durgapal H, Rath S, Gupta SD, Acharya SK, Panda SK. Study of cellular immune response against Hepatitis E Virus (HEV). *J Viral Hepat*. 2011;18:587–94.
4. Cattran DC, Brenchley PE. Membranous nephropathy: integrating basic science into improved clinical management. *Kidney Int*. 2017;91:566–74.
5. Chung EYM, Wang YM, Keung K, Hu M, McCarthy H, Wong G, Kairaitis L, Bose B, Harris DCH, Alexander SI. Membranous nephropathy: clearer pathology and mechanisms identify potential strategies for treatment. *Front Immunol*. 2022;13:1036249. <https://doi.org/10.3389/fimmu.2022.1036249>.
6. Li Y, Liu H, Yan H, Xiong J. Research advances on targeted-Treg therapies on immune-mediated kidney diseases. *Autoimmun Rev*. 2023;22:103257. <https://doi.org/10.1016/j.autrev.2022.103257>.

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