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CORRESPONDENCE

Interferon-Induced Transmembrane Protein 3 Related to Coronavirus Disease 2019

To The Editor—In recent days, Zhang et al [1] proposed an experimental scheme to hypothesize the inheritance mechanism to understand the relationship between interferon-induced transmembrane protein 3 (IFITM3) and the current global coronavirus disease 2019 (COVID-19) among severe disease developed in a small minority of infected individuals. In the article, they report that homozygosity for the C allele of rs12252 in the IFITM3 gene is associated with more severe disease in an age-dependent manner.

Interferons I and II induce the IFITM variants 1–3. Several previous studies reported the strong inhibition of a wide variety of enveloped and some nonenveloped viruses infection by IFITMs [2]. A lot of similar research comes from IFITM3-mediated inhibition of influenza A virus infection [3]. There was strong evidence that IFITM3 polymorphisms correlated with the severity of IAV disease in human infection. The relevance of the IFITM3 rs12252-C polymorphism for severe COVID-19 seems to be population-dependent. However, according to previous research, the second IFITM3 single-nucleotide polymorphism, rs34481144-A, was not reported to influence the severity of COVID-19 in humans. Furthermore, this virus-induced phenotype was due to the endosomal recruitment of IFITM3 rather than to an overall increase in the IFITM3 abundance.

In addition, IFITMs also affect infection in many ways, such as altering cellular membrane properties, altering the lipid/protein composition of acidic intracellular compartments, elevating the level of cholesterol on late endosomes and lysosomes, and inhibiting the hemagglutinin-mediated membrane fusion. In a word, the mechanism of the IFITM-mediated inhibition of COVID-19 requires further verification [4].

Notes

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