Cytokine Receptor Allele Frequency, Immunogenicity, and Efficacy of New COVID-19 Vaccine in Different Setting

Dear Editor, COVID-19 vaccine is the new hope for controlling the new emerging pandemic disease, COVID-19. At present, many new COVID-19 vaccines have already been registered and are used in several countries around the world.[1] An important consideration in preventive medicine is the efficacy of the vaccine. The efficacy rate of vaccine varies in different reports from different settings. The impact of background population genetic on the efficacy rate of vaccine in different setting is interesting. The variations in genes coding for cytokines or cytokine receptor (CCR) s are examples on important genetic factor that are related to the efficacy, immunogenicity of the vaccine.[2] Some genetic polymorphisms such as CCR2 polymorphism (90G > A CCR2; rs1799864) are reported on the associations with decreased vaccine efficacy.[3]

The authors hereby analyzed on public data on genomic database, gnomAD,[4] aiming at assessment on allele frequencies of important chemokine receptor 2 (CCR2) polymorphism, rs1799864, in different populations. According to the database analysis, the allele frequencies are different in different population, from the lowest in Finnish European (0.06745) to the highest in East Asia (0.20300) and Latino (0.22890). Based on this data, the observation on different efficacy of vaccine reported from different settings around the world can be explained.[4] It might expect that the vaccine efficacy rates should be higher in the European population comparing to the rates in the East Asian and Latino population.

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Conflicts of interest

There are no conflicts of interest.

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