

Personal View

Dengue and COVID-19, common patho-biological pathway and implication for protection and promotion of disease severity

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COVID-19 is a new viral disease. As a new disease, its clinical characteristics are not well defined. The similarity between COVID-19 and other common viral diseases is recognised and it is usually a difficult clinical entity for management. Of several viral infections, dengue is an important arboviral disease that is widely mentioned for common clinical problems with COVID-19. In the early

phase of the pandemic, COVID-19 was often misdiagnosed as dengue¹. Fever, skin lesions and low platelet counts are observed in both dengue and COVID-19. Additionally, the common pathological pathway between both diseases is mentioned². Here, the authors use bioinformatics expressional analysis to summarize common pathways in dengue and COVID-19 (Figure 1).

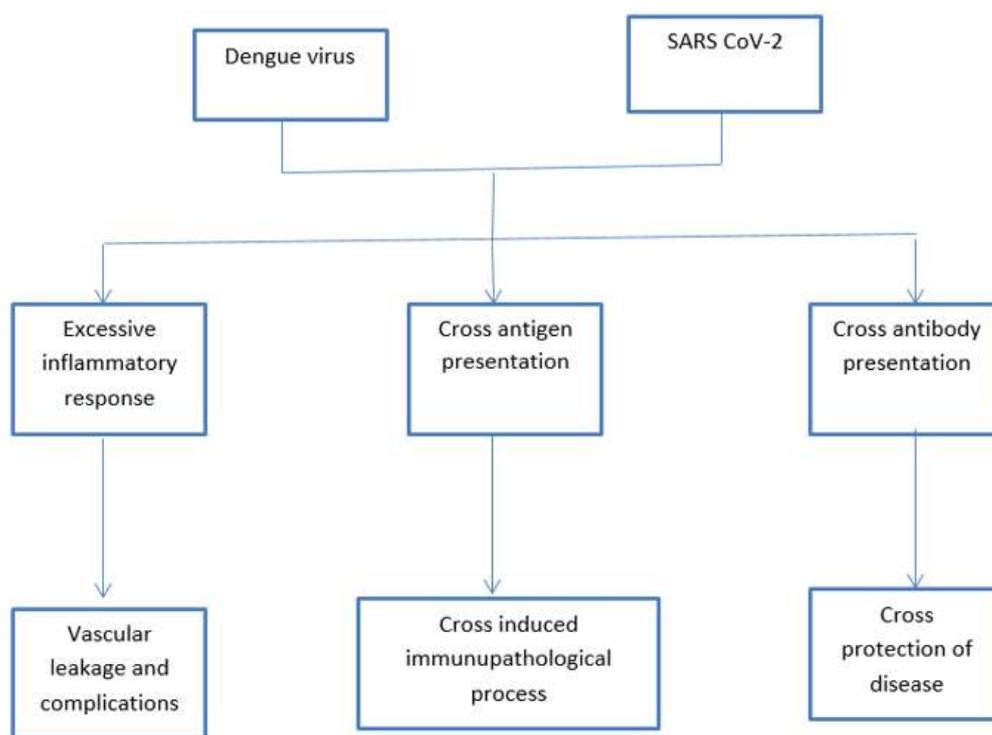


Figure 1: Common pathobiological pathway between dengue and COVID-19 and implication for preventing and promoting clinical problem

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Figure 1 shows that the two diseases have many common patho-biological processes. Excessive inflammatory response plays a role in severe disease progression. There are cross-antigens between SARS CoV-2 and dengue virus^{3,4}. The immune-mimicking process can also lead to immune-pathological disorders such as thrombocytopenia⁵. On the other hand, there is cross reactivity of antibody^{3,4}. This might result in cross protection. Indeed, there is an extremely low incidence of paediatric COVID-19 in a highly dengue endemic area such as Indochina. Nevertheless, if there is a

case, severe clinical presentation is possible. Immune mediated platelet destruction can occur and lead to a haemorrhagic episode in COVID-19⁶. This is the same way as the dengue haemorrhagic fever process. The background cross dengue antibody might be triggered and cause severe COVID-19 presentation. Finally, if a COVID-19 vaccine was to be used in the paediatric population in the future, an important concern will be the adjustment of the dose. It is well shown that a case with previous COVID-19 infection will develop more immune response to vaccine⁷. The case with previous dengue immunity, which is also a COVID-19 cross-immunity, might express increased immune response as well. Without good control, excessive immune response might result in an unwanted complication⁸.

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