Biochemical/hematological markers in patient monitoring

IMMUNOGLOBULIN E RESPONSE DURING SARS-COV-2 INFECTION

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BACKGROUND-AIM

From the recent results of past researches, a possible virus infection association was found with the onset of allergic sensitization in infants. Other investigations have shown both increased and decreased levels of IgE in association with viral infections. The purpose of the present study was to examine more closely the relationship between viral infection with SARS CoV-2 virus and IgE levels.
The host immune response to SARS CoV-2 can lead to an aberrant inflammatory response or "cytokine storm" which contributes to the severity of illness.
Therefore, the host immune response plays a key role in the SARS CoV-2 pathogenesis and seems to be different from other coronavirus infections owing to specific epigenetic-sensitive mechanisms unveiled in severe patients upon interactions between SARS-CoV-2 and host cells.

METHODS

For this purpose, a retrospective study was performed on a population of patients with upper respiratory symptoms of viral infection with SARS CoV-2 in the period of 01-31 December 2020.
Seventy two patients (n=72) with respiratory infection to SARS CoV-2 viral ugents were studied retrospectively with respect to IgE immunoglobulin levels during acute (I to 7 days) and convalescent (8 to 30 days) phases of infection.
The" cytokine storm" was exploited to monitor the course of infection and in the study were considered patients with high level of inflammatory biomarkers, including high levels of interleukin 6 (IL-6) (IL-6>40pg/ml) and procalcitonin (PCT) (PCT ≥0.5ng/mL) with CLIA method, and plasma C-reactive protein (CRP) (CRP ≥10mg/L) and ferritin (serum ferritin>300 μg/l) with nephelometric method . Measurements of IgE level was obtained with CLIA method with normal referent ranges of 1-87 IU/ml.

RESULTS

Analysis of changes of IgE levels for given individuals during acute and convalescent phases of SARS CoV-2 infection was found that 59% of patients had an increase in IgE level of 20% or more, 14% showed a rise of less than 20% of normal level and 27% were in the normal range.
Results showed more increasing levels of IgE in patients in acute phase, and increasing in convalescent phase was linked with patients with more severity of inflammatory symptoms.

CONCLUSIONS

In the present study, it was found that SARS CoV-2 infection modulated serum IgE levels in both phases of the disease in the infected individuals.
Since in preliminary studies for IgE antibodies to influenza and Epstein-Barr virus were detected in patients with those viral infections, it is possible that the elevated IgE levels observed in the acute phase may be due, in part, to IgE antibodies against the infectious agent and that these antibodies may be short-lived because of decreasing IgE levels into the convalescent phase of infection.
Now, SARS CoV-2 is being clearly considered as novel hematologic disease, but the exact mechanistic role of both innate and adaptive immunity against SARS-CoV-2 still needs to be clarified to help to find new targets.