Antibodies against coronavirus start to decrease in 2-3 months, study finds

**Context**

- A few countries, including the U.K., were toying with the idea of issuing some form of a **certificate to people** who have been **infected** with novel coronavirus and **recovered** subsequently, as such people were assumed to be resistant to reinfection.

**Study reveals**

- Now, a study published in *Nature Medicine* suggests that **antibodies** formed against SARS-CoV-2 begin to **decrease in number**, just **two-three months** after infection.

  - “We observed that IgG levels and neutralizing antibodies in a high proportion of individuals who recovered from SARS-CoV-2 infection start to decrease within two-three months after infection,” Quan-Xin Long from Chongqing Medical University, Chongqing, China and others write.

  - In contrast, **circulating antibodies** against 2002-2003 SARS and MERS coronavirus were found to last more than **one year**.

  - In the case of the 2002 SARS, sustained **IgG levels** were seen for more than **two years** after infection, while antibody response lasted for **nearly three years** in the case of MERS.

**Is re-infection possible?**

- This does not necessarily mean that people previously infected with SARS-CoV-2 can be reinfected soon after.

- Even if the antibody level decreases, it might be protective.

- A person with **low antibody level** can get reinfected but the **viral load** will be low, infectivity will be less and he/she may not progress to a diseased state.

- Antibodies specific to a virus even when present in low levels will be protective against disease.

- Besides inducing neutralising antibodies, novel coronavirus has also been found to **induce cellular immunity**.

- As a result, the immune system’s **T cells and B cells** are elevated in an infected person. “Generally, when antibody levels are high, the T cells are low and vice versa,” says Dr. John.

- When infected by a virus, **non-specific immune response** in the form of **macrophages, neutrophils and other cells** tend to prevent the virus from causing symptoms.

- Soon after, the body makes antibodies specific to the virus called the **immunoglobulins — IgG and IgM**, called the **adaptive response**.

- In addition, the cellular immunity kicks in when the body makes T cells that destroy cells that have been infected by the virus.

- The combination of adaptive response and cellular immunity “may prevent progression to severe illness or re-infection by the same virus. This process is often measured by the presence of antibodies in blood,” WHO says.

- They found that **asymptomatic people were eliciting a weaker immune response** to the virus compared with those who developed symptoms.

- As a result, **40% of asymptomatic individuals** had **antibody levels** at **undetectable levels** compared with nearly 13% in the case of symptomatic individuals.

- Nearly 80% of people infected with SARS-CoV-2 show no or very mild symptoms.
Implications

- The reduction in IgG and neutralizing antibody levels in the early convalescent phase might have implications for immunity strategy and serological surveys.
- These data might indicate the risks of using COVID-19 ‘immunity passports’ and support the prolongation of public health interventions, including social distancing, hygiene, isolation of high-risk groups and widespread testing.
- Besides T cells, people infected with coronavirus also make memory B cells, which rapidly produce antibodies when required.
- If they find the virus again, they remember and start to make antibodies very, very quickly.
- Another paper published in Nature found that even when the antibodies were present at low levels, it was sufficient to neutralise the virus.
- The authors say that “most convalescent plasmas obtained from individuals who recover from COVID-19 do not contain high levels of neutralizing activity” yet antibodies with “potent antiviral activity” were found in all these individuals.