Convalescent Plasma Therapy and COVID-19

Part of: GS Prelims and GS-III- S&T

- Basis of the Therapy:
  - The convalescent plasma therapy seeks to make use of the antibodies developed in the recovered patient against the coronavirus.
  - The whole blood or plasma from such people is taken, and the plasma is then injected in critically ill patients so that the antibodies are transferred and boost their fight against the virus.

- Time Period for Infusion:
  - A study in The Lancet Infectious Diseases stated that a COVID-19 patient usually develops primary immunity against the virus in 10-14 days.
  - Therefore, if the plasma is injected at an early stage, it can possibly help fight the virus and prevent severe illness.

- Infusion into COVID-19 Patients:
  - The plasma can be infused into two kinds of COVID-19 patients—those with a severe illness, or individuals at a higher risk of getting the virus.
  - However, while plasma transfers immunity from one person to another, it is not known if it can save lives in COVID-19 infection.
  - The treatment could be effective for patients in the age group 40-60, but may be less effective for people aged beyond 60 years.

- Previous Application of the Convalescent Plasma Therapy:
  - The United States used plasma of recovered patients to treat patients of Spanish flu (1918-1920).
  - Hong Kong used it to treat SARS (Severe Acute Respiratory Syndrome) patients in 2005.
  - In 2009, the swine flu (H1N1) patients were treated with plasma.
    - A study in Oxford University’s journal Clinical Infectious Diseases found that “convalescent plasma reduced respiratory tract viral load, serum cytokine response, and mortality” in H1N1 patients.

- WHO Guidelines (2014):
  - WHO guidelines in 2014 mandate a donor’s permission before extracting plasma.
  - Plasma from only recovered patients must be taken, and donation must be done from people not infected with HIV, hepatitis, syphilis, or any infectious disease.
  - If whole blood is collected, the plasma is separated by sedimentation or centrifugation, then injected in the patient.
  - If plasma needs to be collected again from the same person, it must be done after 12 weeks of the first donation for males and 16 weeks for females.

- Application in India:
  - Currently, India has facilities for removing 500 ml of plasma from a donor.
  - For this experimental therapy, the Drug Controller General of India will first have to grant blood banks approval for removal of plasma from recovered COVID-19 patients.
  - In India, the special care of the risk of infection during transfusion needs to be taken care of.

Relapse in Patients Recovered from COVID-19
Patients who test positive for COVID-19 develop protective antibodies. Theoretically, there can be a relapse even in patients who have antibodies. There are various reasons for such relapsing of COVID-19, some of them are:

- **Mutation of the Virus:**
  - The probable mutations, is one of the major reasons for making an individual vulnerable to reacquire the COVID-19 infection.

- **Unknown Behaviour of the Virus:**
  - Since the exact behaviour of the novel coronavirus is still being studied, immunity against it is not fully understood.
  - At this stage, it is not fully understood as to how long the antibodies provide protection against the viral infection.
  - Also, in the absence of any vaccination, it is not known whether the immunity acquired by the persons is permanent.

- **False RT-PCR test (Reverse Transcription Polymerase Chain Reaction) Test:**
  - It has been observed that a “false negative” RTPCR test — the RNA test being conducted to diagnose COVID-19 infection — can lead to a patient testing positive a second time after testing negative in between.