Treatment of severe acute respiratory syndrome with convalescent plasma

To the Editor—In their article, 'Treatment of severe acute respiratory syndrome with convalescent plasma',[1] the authors report for the first time the infusion of plasma collected from a convalescent patient with severe acute respiratory syndrome (SARS) to treat, in combination with ribavirin and corticosteroids, a 57-year-old SARS patient.

The medical rationale behind the use of convalescent plasma that potentially contains neutralising immunoglobulin (Ig) G or M is to decrease the viral load and to control viraemia symptoms. A similar strategy has been used in a clinical study conducted in Thailand, in which patients with acquired immunodeficiency syndrome received 500 mL of heat-treated plasma, collected from human immunodeficiency virus (HIV)–negative donors with scrub typhus, that was capable of inhibiting HIV.[2]

In the reported SARS case, 200 mL of convalescent plasma was injected, corresponding to about 2 g of Ig (based on a mean Ig content of 10 g per litre of plasma). The clinical outcome was successful, despite the relatively low volume of plasma infused; furthermore, no side-effects were observed.

On the basis of these results, we believe that the possibility of performing passive immunotherapy treatment among patients with SARS should be further studied. Today, this approach may well represent one of the most efficient ways of preventing or treating SARS.

Clearly, the use of single-donor plasma may be the most relevant form of immunotherapy under current emergency situations, but, if confirmed to be helpful, plasma therapy to manage SARS will have to evolve towards safer and possibly more efficient alternatives.

As a potential improvement of the current therapeutic protocol, the use of virally inactivated single-donor plasma might prove to offer two important advantages. Firstly, its use would limit the risks of exposing patients to blood-born viral infections.[3] Secondly, pathogen inactivation would make the pooling of plasma from several convalescent donors a conceivable option if performed under careful conditions. Pooling should also enhance the polyvalency of the infused anti-SARS antibodies, thereby increasing their neutralising effect and efficacy against variants of the SARS virus without exposing patients to infectious risks from other viruses.

Several methods to inactivate viruses in single-donor clinical plasma are now available or being developed and could be evaluated.[4-8] Ultimately, if treatment with plasma is successful against SARS, a purified and concentrated Ig preparation obtained from the fractionation of a large pool of plasma collected from donors who are producing antibodies against the SARS virus could be developed for clinical evaluation and use. Hyperimmune IgG preparations are already successfully used for prophylaxis or treatment of other viral (eg hepatitis B and A, measles, varicella) and bacteriotoxic (eg tetanus) diseases.

In conclusion, given the ease of SARS dissemination around the world and the current lethal outcome for close to 10% of infected patients,[9] the benefit of plasma infusion should be confirmed and multicentric clinical studies should be conducted to evaluate whether virally inactivated pooled convalescent plasma and, ultimately, purified anti-SARS Ig, can provide a safe, effective, and standardised treatment of this disease.

T Burnouf, PhD
(e-mail: tburnou@attglobal.net)
M Radosevich, PhD
Human Plasma Product Services
18 rue Saint-Jacques
59800 Lille
France

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