

ALBUMIN:

ONGOING DEVELOPMENTS

BY ALBERT FARRUGIA

ALBUMIN IS, HISTORICALLY, AN ESTABLISHED THERAPY

in treating patients with a variety of severe illnesses. Many of these can be grouped as diseases of hypovolemia, in which the loss of fluid from the circulation leads to severe compromise of the blood's ability to deliver nutrients and oxygen to the tissues and organs. This leads to organ failure and possible death.

The most common reason for the loss of fluid from the circulation with resultant hypovolemia is massive injury leading to blood loss. A similar clinical circumstance occurs when burns lead to loss of the skin and allow large volumes of fluid to escape from the tissues and blood vessels. The use of albumin in these circumstances was established in World War II (see A. Farrugia, *The Source*, Winter 2009). More recently, many other conditions have been recognized as leading to hypovolemia, with all its harmful effects. Such a condition is sepsis, in which infection across the vascular supply (the blood vessels) leads to damage of the blood vessel wall and leakage of fluid. And as in loss through injury or burns, fluid loss in sepsis is a large cause of illness and death. Any treatment that can impede the progression of sepsis, however small, is bound to have a positive effect on health outcomes. Hence, the possibility that the administration of albumin, through ameliorating the hypovolemia, may improve the outcome in septic patients requires serious consideration. A body of clinical investigation has studied this issue. A large clinical trial conducted in Australia and New Zealand studied the effect of albumin treatment in many groups of intensive care patients¹. In the group of patients who had sepsis, albumin resulted in a 10 percent improvement in patient survival. Recently, a group of French investigators studied albumin infusion just in septic patients². Again, a 10 percent improvement resulted from albumin.

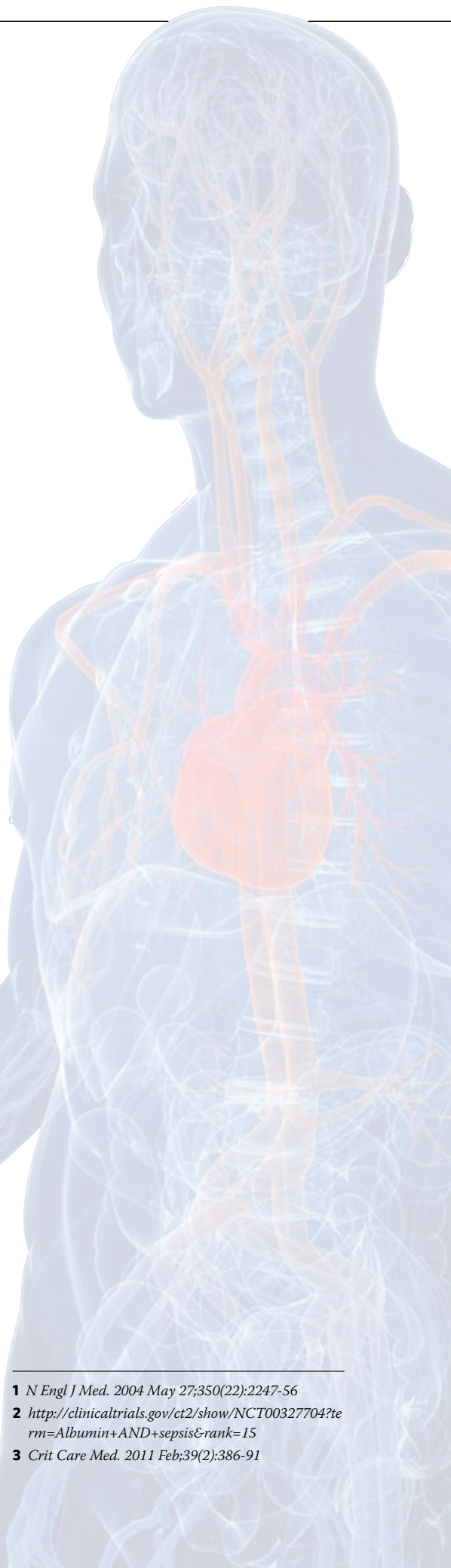
Some important things need to be mentioned here. In both clinical studies, and in similar uses by other investigators,

the measured effects of about 10 percent increased survival were not statistically significant; i.e., the effect could have occurred through chance. It is difficult to address this problem through a single study, as it requires the treatment of a very large population of patients with sepsis. However, the finding that several studies consistently show a 10 percent survival improvement with albumin is tantalizing. Some might consider a 10 percent improvement to be modest, but they would be wrong. It represents a very large decrease in the burden of this illness.

But tantalizing effects need to be corroborated and such corroboration is now available. When several clinical trials are similar in their design, patient populations, etc., they can be brought together using a technique called meta-analysis. This method pools the results from the individual trials and assesses whether these pooled results reflect a clinical effect. In recent meta-analyses of clinical trials in sepsis using albumin³, the beneficial effect from the individual trials was confirmed and yielded a result that was statistically significant for the combined results.

We, therefore, live in very exciting times for the venerable plasma protein therapy that is albumin. These findings show that there is plenty of scope for continuing to use this product. More of this scope will be described during the Plasma Protein Forum in June in Reston, Virginia. See you there!

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¹ *N Engl J Med.* 2004 May 27;350(22):2247-56

² <http://clinicaltrials.gov/ct2/show/NCT00327704?term=Albumin+AND+sepsis&rank=15>

³ *Crit Care Med.* 2011 Feb;39(2):386-91