Beyond submassive acute pulmonary embolism: Seeing clearly beyond the clouds

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Sometimes all it takes is a tiny shift of perspective to see something familiar in a totally new light

—Dan Brown,

The Lost Symbol 2009

There has been a perpetual cloud over the treatment options for pulmonary embolism (PE). This weather has been encouraged by a variety of factors that have promulgated a concept of acute PE as a no-go zone. Acute PE was among the first targets of our specialty and by all theoretical accounts it should have been an emergency operation that we excelled at routinely. This is a disease that features an easily reversible mechanical right ventricular obstruction, but our early tools included primitive oxygenators that were not conducive to enabling recovery after the inevitable shock-like states and soon many patients were arriving in operating rooms filled to the brim with lytics. A simple acute pulmonary embolectomy became a nightmare of bleeding and shock and the pendulum of referral swung more and more to sicker and sicker thresholds before surgery would be contemplated.

What made matters worse is the fact that surgeons traditionally have only seen the numerator. Emergency medicine specialists, pulmonologists, cardiologists, thrombosis experts, and intensivists all deal with the PE spectrum. They are all potential referral funnels that ultimately lead to cardiac surgeons, but we have not had a means to capitalize on the wealth of their experience.

In an effort to consolidate familiarity and proficiency, many institutions have organized PE teams to try to make sense of the chaos.¹ The results have demonstrated that we have greater potential to serve patients with not only massive PE, but also those who we now recognize have submassive PE. A small but significant fraction of these patients probably die despite all the catheters and lysis and new technology we throw at them. These patients probably (we cannot be sure) could have a rewarding operation, leaving hospital readily and enjoying a fruitful life—assuming

they have no other maladies that would compromise long-term survival.

Pasrija and colleagues² present a case series of 55 patients who underwent pulmonary embolectomy at their institution. These included patients with submassive PE as well as massive PE with or without cardiovascular collapse requiring cardiopulmonary resuscitation. There were no deaths in the first group and the overall survival of the entire cohort was very good, with excellent long-term survival. The authors also presented information on the rapid recovery of right ventricles after embolectomy. This aspect is of key interest because it emphasizes the dramatic effect of this mechanical intervention.

Perspectives have changed and it is impressive that surgery has the potential to provide uniformly better outcomes in patients with submassive PE. Is it time to consider a randomized clinical trial looking into the outcomes of surgical embolectomy versus thrombolytics? The greatest challenge to this optimistic endeavor would be to change the perspective of members of the surgical community such that they could consider that clinical equipoise could be reached. Collaboration is the only means to see through this cloud.

It's not what you look at that matters, it's what you see.

—Henry David Thoreau

Central Message

Both surgical embolectomy and thrombolysis yield similar survival. Surgery is associated with less reoperation and less stroke, and thus it should be advocated in submassive and massive pulmonary embolism.

See Article page 1095.

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