Sepsis Current Concepts, Guidelines and Perioperative Management

2016

{Music}

Dr. Alan Schwartz: Hello. This is Alan Jay Schwartz, Editor-in-Chief of the American Society of Anesthesiologists' 2016 *Refresher Courses in Anesthesiology*, the latest research and education information. The focus of the new online format of the *Refresher Courses in Anesthesiology*'s CME program, and the modules featured, is to educate learners on current developments in the science and clinical practice of the specialty of anesthesiology, critical care medicine and pain management. For the first time ever, we will be speaking directly with individual authors to learn about their expertise, perspective and insight regarding their featured module.

Today, we are pleased to present the following one-on-one conversation with *Refresher Courses in Anesthesiology* Editor, Dr. Sam Wald, and author, Dr. Mark Nunnally. Today, they will be highlighting the module titled, "Sepsis Current Concepts, Guidelines and Perioperative Management."

{Music}

Dr. Samuel Wald: So, we are here with Dr. Mark Nunnally. He's a faculty in the Department of Anesthesiology, Perioperative Care and Pain Medicine at New York University, and he is Director of the Adult Critical Care Services. He's going to be speaking to us today about sepsis current concepts and perioperative management, and talking to us about sepsis as a perioperative problem,

discussing some common themes, and also talking about some key interventions. Dr. Nunnally, I'll turn it over to you.

Dr. Mark Nunnally: Thank you very much, Dr. Wald. I think it should go without saying that sepsis is a major problem, but it's worth underscoring that it is a very common problem. It's estimated about 250,000 people die of sepsis annually. And some have said that actually exceeds the number that would die of breast cancer, prostate cancer and AIDS combined. So, it is a real problem. And I think the thing to underscore is that these patients are among the sickest patients in the hospital, and they deserve the care of physicians that are talented at resuscitation and monitoring, which happens to be right at the central focus of the practice of anesthesiology. Many of these patients will require perioperative care, and facilitating that care is really, again, within the role of the anesthesiologist. So, understanding this syndrome is, I think, essential for any practicing anesthesiologist.

I would say very essential points are, first, the recognition of the syndrome, and understanding that, loosely speaking, we're talking about a patient that has both an infection and evidence of rampant inflammation—what they're now describing as maladaptive inflammation, leading to cardiovascular abnormalities and organ dysfunction. Resuscitation is critical. Resuscitation frequently – it means a large volume of fluid. We're talking on the order of 30 mLs per kilogram of crystalloid, although carefully titrated resuscitation is probably the most essential feature there—so, using various indices, such as pulse pressure variation, the response of the hemodynamics to volume loading, to determine whether or not the patient needs more fluids. Some patients, this will not be sufficient, and so the use of vasoconstrictors or even inotropes may be important. The facilitation of care, as I mentioned before, is essential. And for an anesthesiologist, that can include a couple of things that we're not necessarily accustomed to, one of those being the sending of cultures. Source control is essential in the treatment of the septic patient. So, any patient that

has an infectious source, if it is not treated effectively, will continue to get ill, and that is the major problem. Therefore, finding the source in all ways possible, and alleviating it quickly, is what's important. If we have a surgical diagnosis, often we already know what's going on, and it's the surgery that will cure the patient. But sometimes it's not certain, and sometimes the microbes are not certain. So, when a patient comes to the operating theater with sepsis, it is always worth asking the question, has this patient had adequate cultures sent? And if the answer is no, sending those cultures as quickly as possible will facilitate good care. Of course, also essential is the administration of timely and effective antibiotics. Not knowing the causative organism is frequently the case in the early treatment of sepsis, so giving broad coverage that can cover all the likely pathogens is important, and coordination with the infectious disease service, and in fact the treating surgical team, would be important as – there.

Finally, the last thing I would underscore as a really essential component in the care of the septic patient, is to keep this patient from becoming what I describe as the chronic critically ill. There's actually now a large amount of evidence to suggest that, phenotypically, patients in the ICU change with time. If they're subjected to an inflammatory stress, they undergo a stress response that is probably adaptive and probably is there for important reasons; but if they continue to undergo challenge immunologically and from an inflammatory standpoint, they can slowly but surely convert into a phenotype where variability in biologic process disappears, the metabolic profile of the patient disappears, their endocrine and sympathetic nervous systems don't function in the same way, and in fact the parasympathetic nervous system as well. And they become a patient that can survive for a long period of time, but does not have good outcomes, evidenced best, perhaps, by the fact that many patients that ultimately die of sepsis in the ICUs, die in a chronic critical illness state, and a large proportion of them actually die with the withdrawal of life-sustaining therapies. That is to say that the families and the caring practitioners for those patients, have determined that the outcome is poor. And our goal as

practitioners is to then intervene as early as possible to try to prevent that from happening.

Dr. Samuel Wald: Thank you very much, Dr. Nunnally, for your insightful review. And I'm going to turn it back over to Dr. Schwartz.

Dr. Alan Schwartz: Thank you for joining us today and participating in this insightful conversation with this month's featured author. Be sure to join us for next month's one-on-one author interview, presented in this new, exciting format.

Experience the bonus content that is not available anywhere else. To purchase the full subscription of the 2016 *Refresher Courses in Anesthesiology* program, please visit our website, www.asahq.org, click on the Shop ASA link, and search for RCA.

{Music}

THE END