Perioperative Delirium: Making Sense of All the Confusion

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Dr. Alan Jay Schwartz: Hello. This is Alan Jay Schwartz, Editor-in-Chief of the American Society of Anesthesiologists' 2017 *Refresher Courses in Anesthesiology*, the latest research and educational findings. The focus 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. Returning for a second year, we will be speaking directly with individual authors to learn about their expertise, perspective and insight regarding the featured module.

Today, we are pleased to present the following one-on-one conversation with fellow RCA editor Dr. Laurence Torsher and author Dr. Christopher Hughes. They will be highlighting the module titled "Perioperative Delirium: Making Sense of All the Confusion."

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Dr. Laurence Torsher: Hello. This is Laurence Torsher. I am an anesthesiologist at the Mayo Clinic in Rochester, Minnesota, and today our guest is Dr. Christopher G. Hughes. He is an Associate Professor in Anesthesiology in the Department of Anesthesiology, Division of Anesthesia - Critical Care Medicine at Vanderbilt University Medical Center. He's Program Director of the Anesthesia Critical Care Medicine Fellowship, Chair of the Procedural Sedation Committee, and member of the Institutional Review Board.

Dr. Hughes' research focuses on evaluating mechanisms and prevention strategies of delirium and long-term cognitive impairment. Dr. Hughes has written a Refresher Course piece entitled "Perioperative Delirium: Making Sense of All the Confusion." Welcome, Dr. Hughes.

Dr. Christopher Hughes: Thank you, Laurence.

Dr. Laurence Torsher: So, Dr. Hughes, why should we be concerned about delirium? What are the consequences of it?

Dr. Christopher Hughes: Well, I think, first off, in general, delirium is one of the most common complications that we see after surgery and anesthesia. It is likely the most common organ dysfunction that we see both in the postoperative setting and in the ICU setting, and you really need to be thinking about delirium as a marker of acute brain organ dysfunction, similar to how we think about other markers such as lab values, or P-to-F ratios, or echo findings as indicative of other organ dysfunctions.

Furthermore, delirium itself is extremely distressing and frustrating to patients, family members, healthcare providers, and in talking with patients and family members it's often these symptoms of delirium that are the most stressful and terrifying part of their actual hospital experience. So, I think it's important to have a working understanding of any syndrome or any disease process that is so prevalent in our patients, especially one that is associated with this much distress.

And then, with regard to your question about the consequences, it has been associated with several negative outcomes in all hospitalized patients, but including surgical patients in particular, patients diagnosed with delirium have increased lengths of stay in the hospital and in the ICU; they have a much higher

cost of care—anywhere from thousands to tens of thousands of dollars higher costs in patients with delirium versus those without. Patients with delirium are less likely to go home after discharge. They're more likely to be discharged to an institution such as a skilled nursing facility or long-term acute care. Then, once they leave the hospital, they are more likely to be readmitted than patients without delirium.

Having delirium in the hospital is also one of the biggest risk factors for having functional and cognitive impairments years after their hospital stay. These often prevent patients from returning to employment or requiring increasing caregiver support, so all these consequences make it terribly costly to patients, caregivers, hospitals, and society in general.

Finally, we're starting to see a considerable amount of data indicating that delirium, especially longer durations of delirium, is associated with increased mortality. Now, whether or not it actually increases mortality or not is debatable, but it is not debatable that delirium itself is an undesirable outcome, it's – and is associated with significantly worse patient outcomes overall.

Dr. Laurence Torsher: Well, Dr. Hughes, are there some specific assessment tools for delirium that we as clinicians can use?

Dr. Christopher Hughes: Yes, most definitely. So, most of us don't have psychiatrists roaming around and readily available to assess every one of our patients, and therefore we need these assessment tools. Fortunately, there are several different tools that are validated for different types of patients. Some tools are faster to perform, and others are better suited for faster-paced environments such as recovery rooms or ICUs; and then others are validated for use in intubated or nonverbal patients in particular.

So, the Confusion Assessment Method is probably the most studied assessment tool, especially in non-ICU patients. It has long forms, short forms, and even has a severity scale. Newer forms such as the 4AT – it's a newer tool that is short and freely accessible. The Confusion Assessment Method for the ICU and the Intensive Care Delirium Screening Checklist are tools that are recommended for ICU patients. You know, so, lots of different tools available, but unfortunately none of these have been validated for use specifically in PACU patients after general anesthesia. In general, their sensitivity is not great in these healthier patients, meaning you may miss a few delirium cases; but their specificity is incredibly high, meaning, your patient has a positive test, then you can be confident they do in fact have delirium.

And I think one last important point to make on this topic is, delirium can present with both hypoactivity and hyperactivity, and it's the hypoactive-delirium phenotype that is harder to recognize and often requires a tool to diagnose. And the majority of delirium, including in the PACU, is this hypoactive-in-nature delirium; whereas most of us would kind of understand what hyperactive delirium looks like when we see it.

Dr. Laurence Torsher: Well, Dr. Hughes, thinking now specifically as an anesthesiologist, are there some things that I could do in the perioperative period to prevent or at least minimize the likelihood of postoperative delirium in a patient?

Dr. Christopher Hughes: Yes, I believe there are some techniques that we can use based on data that we have. We can avoid certain medications that have been strongly associated with delirium. This includes benzodiazepines for premedication or sedation. Meperidine is another common medication that has been associated with delirium, that we can avoid. Poor pain control has been repeatedly associated with delirium, so ensuring adequate pain control through the use of regional anesthesia techniques or – and as well as multimodal nonopioid adjuncts, I think is important. When you're in the OR, avoiding oversedation,

whether you're performing a MAC case or a general anesthesia case, seems to be helpful with regard to postop delirium.

And then a lot of just attention to detail in the postoperative period is essential—simple things like restoring glasses or hearing aids, getting out catheters when we can, promoting sleep, and early mobilization is important. If you're in the ICU, light sedation techniques and using dexmedetomidine for sedation seems helpful to minimize delirium.

And then, finally, I think I would advocate consulting geriatrics or physicians with a lot of delirium experience for these high-risk patients, just so they can offer additional insights that a busy clinician may overlook, or just give you some additional pointers for that specific patient.

Dr. Laurence Torsher: So, Dr. Hughes, let's suppose in spite of our best efforts I have somebody in the recovery room who's slipped into I guess what I'll call the delirium category. How should I approach caring for that patient postoperatively to help him either recover or at least minimize the effects of his delirium?

Dr. Christopher Hughes: So, this is an excellent question with a lot of debate. But my approach in general depends on what their symptomatology is. So, if the patient is hypoactive and has hypoactive symptoms, then there really is no good evidence to support specific treatment with medications. So, in these patients, I would recommend examining their chart and look for precipitating medications or electrolyte abnormalities, or other things that you can quickly change or correct. Increasing the interaction with the patient; increasing their stimulation. Both physical and cognitive stimulation is important. Increase their mobilization. Try to improve their day/night sleep cycle, et cetera. So, not much other than just, kind of, good medical care and paying attention to detail on those patients.

But if the patient has hyperactive symptoms, then I think the first step is trying to reorient them, offering support verbally, et cetera, and making sure that all the other things we talked about with hypoactive delirium are also occurring. But if those hyperactive symptoms continue or if the patient becomes a danger to themselves or to the staff, that is when I think the medications are indicated.

And in the acute setting, haloperidol is the only intravenous antipsychotic that we have. It's often the first-line agent. This should be the medication first administered as opposed to benzodiazepines, which may actually make the delirium worse. I think if you have to give multiple doses of haloperidol, then I would consider a dexmedetomidine infusion. Data are really supportive of dexmedetomidine for prevention and rescue therapy for delirium, but it's not really been investigated as a first-line treatment, so I don't think we can recommend that quite yet. But once stabilized – and then I think starting an atypical antipsychotic orally, such as olanzapine or quetiapine, is probably warranted since they have a safer side effect profile compared to haloperidol.

But importantly, the evidence that we have is weak as to whether or not these agents make a difference at all with regard to delirium outcomes, so I think their use really needs to be limited to those patients with hyperactive symptoms that cannot be controlled through these nonpharmaceutical measures.

And then, since these agents all have significant side effects, reducing the dose and discontinuing the medications as soon as possible is really important. These antipsychotic medications are actually some of the most common inappropriate medications that patients get discharged on, because they were never discontinued in the hospital despite improvement in mental status. So, they will go home and be seen in follow-up with medications that are new, and this is one of the most common classifications that we see. So, that would be in

general my approach, knowing the limitations of the current evidence that we have.

Dr. Laurence Torsher: Well, Dr. Hughes, thank you very much for your time and sharing your expertise with us. Dr. Hughes told us about the implications of delirium and why it should matter to us as anesthesiologists. He outlined some of the specific assessment tools that are available to us, and he highlighted the differences between hypoactive and hyperactive delirium. He gave us some pointers on things that we can do as anesthesiologists to prevent or potentially minimize postoperative delirium. And then finally, he gave us some treatment strategies for caring for the patient who is found to be in a delirium situation postoperatively.

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Dr. Laurence Torsher: Again, thank you very much, Dr. Hughes, and now back to you, Dr. Schwartz.

Dr. Alan Jay 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. To purchase the full subscription of the 2017 *Refresher Courses in Anesthesiology* program, please visit www.asahq.org, click on the Shop ASA link, and search for RCA.

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