Discussion to: Delirium is Associated with Failure to Rescue after Cardiac Surgery

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Dr. Rakesh Arora (Cleveland, OH):

Thanks very much. First of all, Linda and Mike, thank you, your program was such a great session. I have a ton of questions during the panel discussion if there's time. I would like to thank the Association for the privilege of discussing this important paper and Dr. Young, good to see you again. Thanks for providing your manuscript well in advance of the meeting. The authors have stated in your manuscript that the nature of delirium is that it reduces the ability of patients to communicate problems that can cloud their clinical picture, which you've stated here as well. While this is true, really, it's the way the team responds to the diagnosis such as determining and managing the underlying cause, the nature of the pharmacologic treatment that follows, and perhaps the inappropriate use of antipsychotics and other drugs that may lead to an equal contribution of its perpetuation or its occurrence in the first place. In other words, how does the unit ancillary team respond to the complications that have potential for significant impact on outcomes? To address this concept, you and your colleagues have undertaken analysis, which I think is important, to understand the relationship between FTR and the occurrence of delirium after cardiac surgery. You've defined what FTR is and there are several important aspects that I want to dive into a little bit more detail and ask these questions sort of one by one. First of all, your prevalence study looks over a 10-year
period with an overall prevalence of about 11% in the whole cohort and about 36% in those who actually had failure-to-rescue. This is so much lower than other cohorts of similar size reported in the past and I wondered a little bit on how this was measured, how this was audited to ensure the nurses were doing it properly, and what [inaudible] you may have for confirmation. Similarly, the other features such as sepsis, low EF, and other key risk factors didn't pull out your model, which I'd like to hear a little bit more explanation around, so I'll start with that one first and then I'll ask additional ones.

Dr. Andrew Young (Charlottesville, VA):

So yes. We actually did talk to the nursing kind of supervisor for the ICU and there is no current audit in place, which is a good point. That would be a good way to make sure this is a valid assessment that we're using it properly. And certainly, before you make clinical decisions based on it, we should make sure it is appropriately validated. So that's a good point with regard to the auditing. And with regards to the other postoperative complications like sepsis, I think I totally agree with what you're saying about how these can kind of tie into the failure-to-rescue and also development of delirium. And also based on what you just told me, it's something I want to look into as well. I've been able to get some of these kinds of medication data from Epic in the past, our EMR. Sorry for using a trade name. But I think that's a good thing that I may try to do now is to see what antipsychotics have been given and the timing of that because I can match it up with the I-CAM score. So that actually is a follow-up study that I may try to do is to see how timing of the medications fits into it. Within the limits of this study, which is basically mostly using STS data, I couldn't really answer that, but I think that would be a really neat follow-up study.

Dr. Arora:

Great. Thank you. So again, while I'm appreciative you've undertaken this analysis, a lot of the FTR complications such as renal dysfunction or failure, stroke, reoperations, [inaudible], wound infection, all associated with delirium. So, it's a little bit of a chick and an egg phenomenon that we're dealing with here. How have you separated this without having a temporal relation with the actual outcome and the occurrence of delirium that might be the result of the complication that's occurred?

Dr. Young:

I think it's both a symptom. It could be a biomarker. It's also its own disease which is why it's so challenging to deal with. In this study, the way we designed it was basically to see how the global mental status was over the time period and how to associate with these outcomes. But I think you're right, the next step and the more intricate study and the more interesting study I think probably would be to do that and get the exact timing the complications and how it
matched up with the scores and I think perhaps pairing with what we talked about earlier would be a really interesting study. So, I think that is something I'll definitely try to work on.

Dr. Arora:

Okay. Do I have time for one more? Or we're being cut-- okay. Great. Thank you. So again, while your mortality was associated with delirium, the overall association with this analysis was somewhat modest. And we don't really have duration or severity. You've looked at indirectly perhaps by looking at the RASS score, and you get a medium RASS score, which is a bit of an unusual way to look at this. Another way would be looking at delirium/coma free days to take away the sedation aspects that might obviate some of the mortality you've seen. Can you comment at all if any longer duration or severity of being anywhere beyond zero, so either really negative with your RASS score or really high with your RASS score impacted outcomes?

Dr. Young:

So, whether or not there were any other-- because as we said, the lower mean RASS score the more time spent at the lower score was associated with increased failure to rescue, as was a higher maximum score. But what-- I'm sorry—

Dr. Arora:

No, I think you're kind of answering it. It looks like the more delta away from zero of your RASS score was associated with worse outcomes.

Dr. Young:

It basically seems like from what I have, there's an association. The ideal patient is the one that's in the middle that doesn't have a really high-spiking RASS score, and the one that doesn't have a very low mean score. So somebody who is genuinely like the ideal patient. Somebody who gets extubated, doesn't need a lot of sedation, doesn't need a lot deliriogenic drugs and does fine. It's the folks who wake up and they’re agitated or maybe they're older and they're sundowning. Or the patient who for whatever reason has trouble getting extubated or perhaps requires sedation and then gets pushed too far the other way. It seems like those are the two danger zones. We want the ideal patient, like we just said, to be the one who is awake and able to talk and attentive.

Dr. Arora:
Great. Thank you very much. Thanks for bringing this very important information to the meeting. And I appreciate the paper.

Dr. Young:

Thank you for all your comments. I really appreciate it.

Unidentified Speaker 1:

A question?

Unidentified Speaker 2:

Great presentation. It's very timely. And I think a lot of us underestimate the impact post-operative delirium has on outcomes. I'm perhaps being a little too literal when I'm listening to your presentation, but I got confused on what are we rescuing from? So, you said failure to rescue, so for me, that means you have a complication, and inability to deal with the complication is what leads to the negative outcome. So, this kind of gets to the question. So, is the delirium the weed out or is that the complication that we're failing to recover from? And if you're talking about how well we treat the delirium, is that the variable we're trying to control for?

Dr. Young:

I apologize. I may have skimmed over it a little too quickly. But failure to rescue is-- it's a new STS definition of a complication. There are four complications - renal failure, prolonged post-operative ventilation, stroke and re-operation. And basically, if they have one of those complications, and then the patient dies, that is failure to rescue. So, you basically look at a group of patients who had complications and then whether or not they died. And that's what failure to rescue is. So, I think the concept behind it and what other research has kind of shown is that there can be big differences in the rates of failure to rescue between hospitals even with very similar patients in terms of their demographics and their operations. So, the idea is that it's like a hospital quality measure. It's something where different hospitals do it better than others. And that's why it's a valuable metric in a lot of people's eyes, and that's why it's kind of being adopted by the STS.

Unidentified Speaker 2:

So where does delirium fit into that?
Dr. Young:

So, delirium, the thought is that delirium is leading to failure to rescue or somehow associated with the failure to rescue. And as Dr. Aurora mentioned, with our analysis, you can't really say whether it's the one causing it or whether it's a symptom of the other complications that are part of failure to rescue. Or whether or not perhaps it's just like the complication leads to it, it leads to complications, it's unclear. But that's kind of the idea. The question was how it fit in with there. Because even if you just detected a patient's failure to rescue, it may suggest that something bad is going wrong and perhaps something needs to change in their course.

Unidentified Speaker 2:

Well, if I'm the ignorant reviewer who gets your manuscript, now you know what questions you're going to get. Thank you.

Dr. Young:

Absolutely. Thank you so much.

Unidentified Speaker 3:

There's a question.

Unidentified Speaker 4:

I was just wondering if you have any data on these patients if any of them had pre-operative diagnosed dementia or if any MMSE-- if any tests like that were done?

Dr. Young:

So, no MMSE was available. And I'm trying to think-- I do not believe there is a field in the ACSD for dementia. I don't think so. And we didn't have any other pre-operative data on that. But it's definitely relevant. Pre-operative stroke was something we at least had, and there wasn't a big difference between the groups on that one. But I don't believe there's a field specifically for dementia. Which there probably should be based on this.

Unidentified Speaker 4:
Nice presentation.

Dr. Young:

Thank you.