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Implementation of the 2022 AHA/ASA Guideline for the Management of Patients with Spontaneous Intracerebral Hemorrhage—Are You Doing Enough?

Announcer:

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Dr. Gibler:

Our next presentation is, and very timely, implementation of the 2022 AHA/ASA guidelines for management of patients with spontaneous ICH. And Dr. Rhonda Cadena, who's Clinical Associate Professor at Wake Forest University School of Medicine and Neurocritical Care. She works with Neurocritical Care/Pulmonary Care consultants with Atrium Health in the Carolinas Medical Center. And Dr. Cadena, like Dr. Kreitzer, is both trained in emergency medicine as well as 4 years of Emergency Medicine and then 3 years of Neurocritical Care. So, we're delighted that you're here tonight, Rhonda, and look forward to your presentation.

Dr. Cadena:

Thank you so much for that introduction. And thank you all for being here. Yes, I am an emergency physician as well as a neurointensivist. And I'm putting on my neurointensivist hat right now, because this isn't just the implementation of the guidelines, but it is, are you doing enough? So, I'm going to get started then.

So, ICH is the deadliest, most disabling, and least treatable form of stroke. Most patients who have an ICH have a disability for their entire lives, and many of them are dependent on others for their care. Mortality is about 30 to 40% overall, and even higher in those on anticoagulation.

Unfortunately, mortality has not changed in many years. This could be due to hypertension, and uncontrolled hypertension still being a cause to the majority of the ICH. And worldwide, uncontrolled hypertension is responsible for almost 75% of hemorrhages. It could also be due to cerebral amyloid affecting our aging population. And obviously as our population ages, we have more hemorrhages. But more than likely, it's likely due to the use of anticoagulation. The use of anticoagulation carries with it a worsening morbidity, mortality, very high mortality in upwards of almost 70%. This higher mortality with the anticoagulation is likely why we see a stagnant mortality reduction.

Looking at this graph, you can see the use of anticoagulants over the years. We started with the use of warfarin in the 1990s. The use of warfarin increased by 300% in a span of less than 10 years. And with that, we also got our anticoagulant-use-associated ICHs. The use of warfarin continues to rise as well as the use of the DOACs.

Now, when we look at the predictors of poor outcome in ICH, many of those are present on patient arrival, those including advanced age, large hemorrhages at presentation, those with a poor neurological exam when they arrive, and those with hemorrhages in very critical locations such as IVH, brainstem, and cerebellar hemorrhages, as Natalie talked about. However, as Dr. Kreitzer also talked about, hematoma expansion is a predictor of poor outcome in ICH, responsible for mortality and morbidity. And, of course, anticoagulant

use, also associated with it, which also leads to hematoma expansion. You can see some examples on these figures on the right.

Early hematoma expansion is the only one of these predictors that is amenable to treatment. It is timely, it must be right away. And there's two treatments that we rely on; one is reversal of anticoagulation, as Dr. Kreitzer talked to you about, and the second is control of blood pressure. So, I'm going to talk a little bit about blood pressure.

So, we know that high blood pressure is associated with greater hematoma expansion, neurological deterioration, and worse outcome. What we don't exactly know is where we're supposed to keep that blood pressure. Based on the research we have, there are two large trials, there's subgroup analyses of those trials, and there are meta-analyses of many trials. And what we feel, based on all of that at this time, is that we know that less than 130 is harmful, systolic blood pressure of less than 140 appears to be safe, and less than 150 is probably fine. And that's where we have it right now.

What we don't know is what happens with patients who present with blood pressures greater than 220. What happens with patients with large hemorrhages? Is the location of the hemorrhage the same through all patients? What about patients who go to surgery? What about patients who have a monitor in place, and now we have a CPP goal? Those are still questions that we have to answer.

We do know that a high variability in systolic blood pressure, lows to highs, down to lows again, that is associated with poor outcome. And we know that the earlier we get control of that blood pressure, the better it is for the outcomes.

So, these are just the last four guidelines that talk about blood pressure. For those of you who were around in 2007 and 2010, you know that they were very confusing. Sorry if there's anybody in here that was responsible for any of those guidelines. I looked around first before I got up here, just so I cannot say that if I don't need to, sorry if you're online. They were very confusing. And all the questions were about, what are we supposed to do with these guidelines? And essentially, the goal blood pressure was about less than 160. In 2015, after the ATACH-2 trial came out, they said, well, less than 140 is not harmful, so go ahead and do that. The last one that was released in 2022 basically say, well, let's make a goal range of 130 to 150. But they've removed any type of recommendation for those greater than 220 because we really do not know. And there's no recommendation on those who require surgical intervention or those with large hemorrhages.

So, basically, the goal of blood pressure is it probably depends. Okay? We have the guidelines, we will follow the guidelines, but just keep in mind that it's not a one size fits all. There are different hemorrhage locations that may or may not need different blood pressures. All the patients are different, depending on what their history is. If they have hypertension at baseline and whether or not they have large hemorrhages, smaller hemorrhages, or they require any surgical intervention. We also don't know how long we're going to control it. And again, as the neurointensivist, I'm taking a blood pressure goal, and then the big question is, well, how long do we keep this? And so, we don't really have that answer now either.

I'm not going to go into all of the 2022 guidelines in detail, but I do want to just point out a few things that are mentioned in this guideline. One is there is improvement in risk stratification, identifying patients who are at risk for having hemorrhages based on imaging studies. It is also a recommendation for management of ICH with standardized protocols. They do talk about surgical treatments, and Dr. Kreitzer had talked about some of those. But those treatments are not different. And we do not have any new evidence at this time. They caution against outcome prediction based on the scores that can be used to help the families understand the prognosis but not used in isolation. And in these guidelines, they now have a post-ICH recovery, including rehab and caregiver support, which was a much-needed addition.

So, basically, when we look at the missed targets in ICH, even with these guidelines, there are some other things to consider as far as our constraints. Number one, we all know time is brain, and hemorrhages are no different. And so, we have time constraints on the patient arriving to the hospital, these delayed presentations. Blood pressure control is important to control as soon as possible, the earlier the better. But with those delayed presentations, delayed medications into the patient, or those patients that those medications do not work for the blood pressure, all of those are potential problems. And also delay in reversal of anticoagulation. That could be due to the delayed presentation of the patient, not knowing the patient was on anticoagulants, or not having the resources or the drugs available for the reversal of those anticoagulation drugs. We also don't exactly know where our blood pressure goal is, but we need to work on that in the future.

And then when we talk about needing the standardized protocols, there are barriers to developing the protocols, given that each institution there's multiple services involved in these protocols. And then the actual implementation of these protocols, and we'll be hearing more about this in the next talk.

And then we do not have guidelines based on the treatment of secondary injuries after the patient initially presents. They are at risk for having lots of injuries after that initial presentation due to cerebral edema, and as we said, the hematoma expansion, but those secondary injuries need some guidance in the guidelines as well.

Dr. Gibler:

We very much appreciate that. Any thoughts from the panel? Any thoughts from the panel for Dr. Cadena? Someone from the audience had - did somebody? Okay, someone from the audience talked about: Does it matter - does the location of the intracranial hemorrhage matter as far as your goals for blood pressure management?

Dr. Cadena:

At this time, I will say no, it does not matter, because all of the trials lumped all of the ICHs all together, and so they do not differentiate between them. So, does it - are we going to find that it matters in the future? Possibly. But at this time, all the guidelines are based on all the ICHs, no matter the location.

Dr. Gibler:

Okay. How about from the standpoint of critical access hospitals? I assume most people in this room, very different than if you went to an emergency medicine conference where people work everywhere, critical access hospitals, academic medical centers, I assume many of the people in here work in urban centers or academic medical centers. What do you think as far as blood pressure management if you're talking to an emergency physician out in a remote or critical access hospital in the U.S., you know, a 10-bed hospital, 15-bed hospital, how do you suggest they work as far as blood pressure management when you know that variability of control can potentially harm the patient?

Dr. Cadena:

Yes, so my recommendation would be to put that patient on a continuous infusion if one is available. Unfortunately, there are some that do not have continuous infusions in very small standalone EDs. And then with those, I would have very specific criteria for the PRN medications to be given. And I would have them goal a blood pressure of 130 to 150.

Dr. Gibler:

Any thoughts? Dr. Parry-Jones?

Dr. Parry-Jones:

Yeah, I was just going to - I wonder if you have any comments on the choice of drug that people might use to lower blood pressure? I know nicardipine is quite popular, isn't it, in the U.S.?

Dr. Cadena:

Yeah, we usually use nicardipine. There is clevidipine as well that can be used. It's a little more expensive, it's faster to titrate, it has less volume, we tend to use those on the renal patients. But nicardipine is usually the drug of choice.

Dr. Gibler:

Any other thoughts? Any other questions from the audience? In general, why is it when the guidelines repetitively say we should be moving away from vitamin K antagonists, do we not do that? You know, I know that the other thing is, I'm very surprised that when you showed the data of, you know, it's been a rapid expansion of DOAC use, but still, relatively small next to VKA use. Thoughts, Dr. Connolly?

Dr. Connolly:

Yeah, well, it's a particularly American phenomenon, actually, which is the slow uptake. No, it's cost. I mean, the DOACs are expensive in the U.S., and with lots of co-pays and all those sorts of things. And this is what I had explained to me by American cardiologists and others, whereas in many other countries, patients don't pay for their meds or pay very little. So, it's a cost issue in the U.S.

Dr. Gibler:

Even though it's a long-term use of that drug.

Dr. Connolly:

Yeah, I mean, until they become generic, it's going to remain that, but that's not too far in the future.

Dr. Gibler:

Great. Dr. Cadena, thank you very much.

Dr. Cadena:

Thank you.

Announcer:

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