Transcript Details
This is a transcript of a continuing medical education (CME) activity. Additional media formats for the activity and full activity details (including sponsor and supporter, disclosures, and instructions for claiming credit) are available by visiting:
https://reachmd.com/programs/cme/intracranial-hemorrhage-decreasing-time-to-treatment-to-improve-outcomes/16235/

Released: 10/09/2023
Valid until: 10/09/2024
Time needed to complete: 36m

ReachMD
www.reachmd.com
info@reachmd.com
(866) 423-7849

Intracranial Hemorrhage: Decreasing Time to Treatment to Improve Outcomes

Announcer:
Welcome to CME on ReachMD. This episode is part of our MinuteCE curriculum.

Prior to beginning the activity, please be sure to review the faculty and commercial support disclosure statements as well as the learning objectives.

Dr. Gibler:
Adrian is a Stroke Neurologist from Manchester, UK, and has some very, very interesting data as it relates to bundling of care. And so, this is something for emergency medicine. I think you will be seeing this, you already probably do this for acute coronary syndrome. But Dr. Parry-Jones, would you like to take us through that, please?

Dr. Parry-Jones:
Right. Thank you very much. It's a pleasure to speak at an Emergency Medicine Conference as a neurologist. And I'm going to go through some aspects of management of intracranial hemorrhage, focusing on anticoagulant reversal.

So I'll just begin by highlighting some key basics around the pathophysiology of intracerebral hemorrhage so we can think about what we can do for these patients in light of this. So this schema shows you what happens with the majority of patients. So 80% of patients will come into hospital with stroke-like symptoms, they have a CT scan which confirms a hemorrhage, and then they don't have any further bleeding thereafter. The hemorrhage causes mass effect, it can damage the brain around it, causing secondary injury, which you see as edema on a CT scan. But then over time, the patient recovers, the hematoma clears, and they're left with a glial scar.

But what we worry about is this phenomenon of hematoma expansion, and this happens in about 20% of patients after they arrive in hospital. And it's really bad for outcomes for patients. So they have a bigger mass within the head that leads to herniation syndromes, raised intracranial pressure, it increases the amount of secondary injury the patients have, and the amount of edema, and that all worsens outcomes. So this is one of the key therapeutic targets.

We can also reduce the volume of blood in the head through surgery, which I'll briefly touch on. And then if we map the interventions which have been proven to improve outcomes for intracerebral hemorrhage, most of them go on to hematoma expansion. So we know that anticoagulant reversal and intensive blood pressure lowering reduce the risk of hematoma expansion for patients. We know that giving platelets to patients taking anti-platelet drugs is potentially harmful. And a small RCT demonstrated that. And the jury's out on other hemostatic drugs such as tranexamic acid and factor VIIa with ongoing trials.

Surgery is offered to minority patients, so it's about 5 to 10% in the UK, and the evidence base is mixed. It's growing. So a recent trial has demonstrated that evacuation using minimally invasive surgery in lobar hemorrhages may be beneficial, and there's further trials ongoing. And critical to all of this is that these patients get really excellent supportive care, be that on a stroke unit or on a critical care unit if they're unwell enough to need that.

So at our center, we put all of these things together into what we call the ABC care bundle. And we use quality improvement approaches to try and implement that as effectively as possible. Now, we set process targets around this. So currently, what we aim to do is to

deliver reversal agents in less than 60 minutes from coming through the door. We aim to lower the systolic blood pressure to 140 mmHg within 120 minutes of coming through the door. And we set up a care pathway which is really a set of focused referral criteria that we agreed with our regional neurosurgical team to make sure that only the patients that really needed to be consulted with were actually consulted with neurosurgery.

So I'll just take you through a few examples of the approaches we took to try and really maximize the efficiency of these care processes. So first of all, we, back at the beginning of this, looked at how we could speed up reversal of vitamin K antagonists. So we ran a quality improvement project, we focused principally on getting the time from the scan to delivering the treatment, sped up the scan-to-needle time. And we introduced 3 key changes which led to improvements. So the first thing was that we kept a stock of prothrombin complex concentrate in the emergency department. So it was there to be used immediately. At our center, you used to have to go to the blood bank to collect it, which was some distance away and it took time. We introduced a point-of-care INR machine. So we got that immediately, so we avoided the 45 minutes to an hour delay for a lab INR. And finally, we agreed with our hematologists that we didn't need to ring them for every case, so we had some clear criteria when the stroke team could use this treatment without their consultation. And you can see from the graph on the right, that meant that our door-to-needle times went down from over 200 minutes to around about 100 minutes, so it was all quite effective.

The other thing is that when a suspected stroke patients comes in, of course you don't know that they're an intracerebral hemorrhage until you do a scan. So it's very important that you recognize the emergency of the situation, a suspected stroke patient taking an anticoagulant. So one thing we did to improve that was to introduce a prehospital pre-alert so our paramedic teams would ring ahead to alert the stroke team that they were bringing a patient taking an anticoagulant with a suspected stroke up to 48 hours. So we had that in place already for up to 4 hours because of thrombolysis. But when we put that in for later-presenting patients that reduced our door-to-scan time by half an hour, so it cut quite a bit of time off in treating these patients. So we'd worked on the scan-to-needle and also the door-to-scan to try and improve the whole process.

Then we also focused on improving blood pressure lowering. So intensive blood pressure lowering is quite challenging, it's quite a difficult intervention to implement. So we looked at our needle-to-target time, this is what this graph shows here, for individual patients. We introduced a protocol to do that. The red line shows you our targets, so we were a long way off that. The protocol didn't make much difference. And what we found was that we were using labetalol boluses, which we had to give every 5 minutes, and the doctor had to do that. And the doctor would often get dragged away to another patient. So we changed it to using a GTN infusion, which meant that by following a protocol, the nursing team could gradually increase the dose, and that was much more effective. So you can see we were meeting the target much better after that.

But we were having occasional outliers, which was when patients got transferred from the emergency department up to the ward and the process slowed down or stopped. So we introduced a rule that patients would stay in the ED until the target was met. And if it wasn't met within 60 minutes, they went to their critical care for further care, and that stopped the outliers occurring.

So this led to a significant reduction in mortality. So you can see beforehand, during, and after, we had a big improvement. And in our 30-day case fatality, there was a 10 percentage point improvement when we did all of this, so it reduced deaths by a third.

So in summary, bundled care is associated with better outcomes after ICH. Key components to that are anticoagulant reversal and blood pressure lowering, and quality improvements needed to optimize implementation. So our project or similar initiatives will help to do that.

Announcer:
You have been listening to CME on ReachMD. This activity is jointly provided by Global Learning Collaborative (GLC), EMCREG-International, and TotalCME, LLC. and is part of our MinuteCE curriculum.

To receive your free CME credit, or to download this activity, go to ReachMD.com/CME. Thank you for listening.