PATIENT POWER

UW Medicine

Raising Stroke Awareness: Know the Risk Factors

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Introduction

Andrew Schorr:
If you think you're having a stroke, what some might call a brain attack, you need to act fast. But how can you tell if you're actually having a stroke? Well, coming up, two leading experts from UW Medicine and the stroke center at Harborview will discuss the symptoms and risk factors and the need to seek care at a certified stroke center. It's all next on Patient Power.

Hello and welcome to Patient Power sponsored by UW Medicine. I'm Andrew Schorr. Well, we've talked about heart attack and we've talked about heart arrhythmias, those are all serious, of course, but there's another area of health you need to think about too that is truly an emergency, and that's a stroke. And that's where the blood flow to the brain could be cut off by a clot or you could be having a bleed in your brain, two types. We're going to discuss all that, but we want to talk about the importance of getting to where you can get the best care and what the best care is today.

First I'd like to introduce really a renowned expert in that. That's Dr. Kyra Becker. Dr. Becker is a neurologist, and she's a professor of neurology at the University of Washington, and she's a co-director of the stroke program for the University of Washington which is based at Harborview Medical Center. Dr. Becker, welcome. What are the signs of a stroke so people could know?

Signs of Stroke

Dr. Becker:
Andrew, it depends on what kind of stroke you're having. The kind of strokes that you mentioned where you bleed into your brain, they often start with the sudden onset of the worst headache of your life. Those are the less common kinds of strokes, though, and account for only about 15 percent of strokes. By far and away the more common kind of stroke is an ischemic stroke where a blood clot interrupts blood flow to the brain. So the symptoms of a stroke really depend on what part of the brain is affected. Typical symptoms include weakness or numbness on one side of the body; difficulty speaking or understanding speech, something we call aphasia; difficulty with vision, either loss of vision in one eye, loss of vision on one side of space or even double vision; or difficulty walking due to a loss of balance or the sense of vertigo, which is a sense that the room is spinning around. Those are the typical symptoms of an ischemic stroke.

Andrew Schorr:
Now, there are kinds of strokes where you have this for a minute, you feel kind of funny and then it goes away. Those are sort of transient ischemic strokes, or TIAs?

Dr. Becker:
Yeah, and I think by definition I wouldn't call them a stroke but a transient ischemic attack, but it's certainly a risk factor for having a stroke, and the data would suggest that 10 percent of people that have a TIA will go on to have a stroke and that half of those people that go on to have a stroke will have that within 48 hours of their TIA, so it certainly is something that needs to be taken seriously, and patients who have a TIA really should come to the emergency room as if they're having a stroke.

Andrew Schorr:
And when you say come to the emergency room, is that drive yourself or is that call 911?

Dr. Becker:
Well, certainly if your symptoms have resolved it may be okay to drive yourself, but if you're still having symptoms you need to come by ambulance. The data is very clear that you get to the hospital faster and get care faster if you come by the ambulance.

Andrew Schorr:
Now, tell us a little bit about the statistics in America related to stroke. Where is it as far as maybe leading to death and certainly disability?

Dr. Becker:
So stroke is the third leading cause of death in our country and the leading cause of permanent adult disability. About 780,000 new strokes occur every year.

Andrew Schorr:
And I know that you have this phrase "time is brain." So we're going to talk a lot about speed today, what we as patients can do and family members, but also you're going to explain what goes on there. But speed is important, isn't it?

Dr. Becker:
That's correct.

Andrew Schorr:
Well, let's meet our other guest, and that's Dr. Danial Hallam. Dr. Hallam is a neurointerventional radiologist. Did I get it right, Dr. Hallam?

Dr. Hallam:
Yes.

Andrew Schorr:
Okay. So you are involved very much as part of the stroke team in trying to get at the clot if that's what's going on, or certainly if there's a hemorrhage dealing with that as well.

Let's talk about what happens. So when let's say the ambulance calls in and says, this patient we now have on board we think is having is a stroke, what's going on back at Harborview?

Dr. Hallam:
We try to have everybody, and that's a fairly large team, ready to receive the patient and act promptly. That includes members of the emergency room staff, members of radiology who will perform a CT scan rapidly and members certainly of the neurology team as they are a primary in management of the patient, and finally where I come in is in the angiography suite. So we have an angiography suite ready for the patient should they need it and have a team ready to take care of them.

Types of Stroke

Andrew Schorr:
So the first thing would be what kind of stroke you're dealing with, right? Is it the more common ischemic stroke where there's a clot, or is it a bleed, the hemorraghic type. If it's the kind where there's a clot I understand you have drugs which can be administered within a few hours that can make a big difference. Dr. Becker, tell us about that. Is that the first line usually of what may happen for many patients?

Dr. Becker:
Yes. So if someone comes in early enough after stroke onset administration of a drug called tPA or tissue plasminogen activator has clearly been shown to increase the chances of recovery. So the initial study that proved that is many years old now, in 1995 it was published, and it suggested that for people who arrive within three hours of stroke onset for every seven that receive tPA one will return to normal that otherwise wouldn't have. There's actually more recent data now that suggests that we could extend this time window out to four and a half hours, although it's very clear that with every minute that passes there's less of a chance of response to the drug.

Andrew Schorr:
All right. So then you have other approaches and we're going to mention along the way that Harborview is a certified stroke center, and we're going to hear more about the whole team that is there waiting for you if you are having a stroke and around the clock specialists who really just work on stroke. Dr. Hallam, so let's say someone is not responding to the drug to try to dissolve the clot or it's later on. What can you do?

Dr. Hallam:
Well, within a limited window, and it depends on the location of the stroke, up to eight hours in the front of the brain and up to one day or even two days in the back of the brain, we can try to get the clot out by going directly through the arteries, and there are a couple of ways to try to get the clot out in those situations.

The first thing we can do is if tPA has not been given through the vein we can give it directly into the clot through the arteries. The next thing we can do is we have a couple mechanical devices for removing clots. One is called the Merci Retrieval System, and that's basically a wire coil that engages the clot and pulls it out. The second is called

Penumbra aspiration system, and that consists of a range of specifically designed catheters that are used to go into the brain, engage the clot directly, disrupt the clot and gently remove it essentially with a sophisticated vacuum system.

Andrew Schorr:
Wow. So this sort of gives a new opportunity. It used to be if you didn't get the tPA early enough maybe there wasn't much that could be done, but it seems now in recent years you have these approaches. And you go up through the groin, right, just like somebody might have an angioplasty to unblock an artery to their heart?

Dr. Hallam:
Right. The patient who is so treated will go to the angiography suite, and we get access to the artery system by starting in the groin just as one would for a cardiac cath or any other angiogram, but then we go all the way up to the neck arteries and from there on to the arteries in the brain.

Andrew Schorr:
Now, if someone has an approach that way do they still have a chance of making a full recovery?

Dr. Hallam:
Yes. There's a lot of variability depending on whether or not they've lost brain already or how much they've lost. It depends on the location of the clot and our ability to remove it safely.

Andrew Schorr:
When you talk about lost brain, how quickly does brain tissue die?

Dr. Hallam:
It dies fairly rapidly, as early as just a few minutes, ten minutes or so.

Andrew Schorr:
Wow.

Dr. Hallam:
However, we know from experience and a number of studies which have taken a variety of approaches that although there may be an area of brain that dies very quickly it's surrounded often by a larger fairly extensive and critical area of brain that we consider to be at risk but not dead yet, and saving that at risk brain is what all our therapies are initially targeted at. That includes both the tPA through the vein, the tPA through the arteries, and the use of mechanical devices to remove the clot.

The Importance of a Certified Stroke Center

Andrew Schorr:
Dr. Becker, so you're co-director of the stroke program, and you have a certified stroke program. What does that mean, to be certified?

Dr. Becker:
So several years back the Joint Commission recognized the fact that stroke is a big problem and that people who are cared for by experts in stroke tend to have a better outcome, and so they launched a volunteer certification program for hospitals whereby the hospital and the staff need to reach a certain level of expertise and competence to become a certified stroke center. Part of that requires having a stroke unit in which patients are cared for, dedicated champions of stroke care, certain requirements for delivery of stroke care, and then a very robust quality improvement program.

So over the last several years the Joint Commission has certified numerous hospitals throughout the United States as primary stroke centers. And there's certainly a lot of talk that the certification process may move on in the near future to designate certain centers as comprehensive stroke centers, and that would mean that they are able to deliver the therapies that Dr. Hallam was just mentioning.

Andrew Schorr:
Now, in Washington state I understand there's a law now as far as where the ambulance takes you if it's suspected you're having a stroke, and that is they are required to take you to a stroke center, right?

Dr. Becker:
Yes. This is a recent law. It hasn't yet been enacted but it will be so in the future. It will require that patients are taken to a center in which they could best be served.

Andrew Schorr:
Okay. Now, give us a sense of the scope of your stroke team. How many people are we talking about and the ability to help someone around the clock.

Dr. Becker:
I think at Harborview it really builds upon its trauma center status where there are people in the hospital 24 hours a day, seven days a week, 365 days a year. And we have six board-certified vascular neurologists who take stroke call. We have three interventional neuroradiologist, and we have a host of other people including the neurosurgeons, the radiology technicians, nurse educators, nurse practitioners, program coordinators, quality improvement people who are all working with the stoke center. So it really is a very deep program with a lot of expertise coming from a lot of different angles.

Andrew Schorr:
Dr. Hallam, so when you are getting communication from the ambulance and someone is coming, so it's that team sort of goes into action. Now, you mentioned about imaging. So that's the thing you need to do first just to know exactly what are you dealing with?

Dr. Hallam:
Exactly. So there are several tests that the patient will undergo very rapidly after they arrive in the emergency room. One of the tests is a CAT scan, and that will directly impact management because it tells you whether or not the patient has had a bleed in their head. Most of these strokes do not involve bleeds, and so they are candidates for the type of therapy we've been discussing.

Andrew Schorr:
Like they have a blockage rather than bleeding?

Dr. Hallam:
Exactly. And you have to know immediately. It would be very dangerous to give someone tPA if they did have a bleed. And once you determine that they haven't had a bleed then you go on to decide how far into the stroke they've progressed, and that involves a fairly involved assessment of the symptoms, the timing since the stroke, a careful evaluation of the CT and other imaging studies such as CT profusion.

Andrew Schorr:
Dr. Becker, so now let's say Dr. Hallam does his work and somebody is hospitalized. How is Harborview set up with specialty care for stroke patients?

Dr. Becker:
Harborview has a very large neurological intensive care unit, and patients who undergo these endovascular procedures are generally admitted to the neurological intensive care unit. Patients who receive intravenous tPA also will just go to the neurosciences specialty unit or the stroke unit. In either situation the nurses are specifically trained in the care of patients with neurological injury, and it's really the nursing expertise that I think drives a lot of the outcomes after the first few hours. And as I mentioned the data is very clear that patients cared for in a specific stroke unit have better outcomes than patients cared for in just a general medical ward with a relative decrease in death and dependency of about 20 percent in most studies. So just having the expertise from the nursing staff is critical.

Andrew Schorr:
Now, we mentioned about it being this huge cause of disability if you survive the stroke. Can people regain function? I know at Harborview you have all sorts of rehab as well. Can people talk again, move again? I know it's variable, but can they make a comeback, if you will?

Dr. Becker:
I think the rule is everybody recovers following a stroke. It's a matter of to what degree. Stroke severity at onset will dictate the amount of recovery, but certainly recovery can be enhanced by getting aggressive physical therapy, occupational therapy and speech therapy.

Preventing Stroke

Andrew Schorr:
All right. Now, everybody is saying I don't want to go there. I don't want this to happen to me. If you were just going to tick off some of the things someone could do to lower their risk of stroke, Dr. Becker, what would that be? I bet you're going to say don't smoke.

Dr. Becker:
Don't smoke is key. But you know the most important thing is really blood pressure. By far and away high blood pressure is the major risk factor for stroke. About half of all strokes could be attributed to poorly treated hypertension. And lower is better. No matter where you are in your blood pressure range, lower is better. And again the data would suggest that for every 10 millimeter decrease in your systolic blood pressure you decrease your risk by about 30 percent. So it's huge. So if you do nothing else just make sure your blood pressure is treated. Smoking of course is a given. You shouldn't do it. Other things that clearly are of benefit are controlling your diabetes, watching your diet, making sure your cholesterol is not too high, and exercising regularly.

Andrew Schorr:
Now, does stroke run in families at all?

Dr. Becker:
It does. There are certain genetic predispositions to stroke risk factors, and certainly there are a lot of lifestyle choices somebody can make to help decrease those genetic predispositions. But yeah, certainly you are somewhat cursed by the genes you receive.

Andrew Schorr:
What about things like your diet? I know there's been a lot of talk about salt in the diet, things like that. Are there things like that that you would recommend people think twice about?

Dr. Becker:
Yes, there are. Certainly limiting salt will help decrease blood pressure, but there are other important dietary choices people can make. There are well known diets called the DASH Diet, the Dietary Approaches to Stop Hypertension Diet, and the Mediterranean Diet that are shown to decrease blood pressure and the risk of stroke. So just choosing healthy, nonfat meats like chicken and fish and eating fresh fruits and vegetables daily is really important.

Treatment Advances

Andrew Schorr:
Dr. Hallam, so you talked about this technology. You have a couple of different systems to go in and get at the clot if you haven't been able to get it with drugs, other ways just through the vein. How fast is this technology changing to really give you more tools should they be needed?

Dr. Hallam:
So all of this has developed within the last five or so years. The Merci Retrieval System was approved in, I think it was 2005 or 2006, and the Penumbra system in 2008. And now that we have two different techniques, competing technologies in some ways, we're able to pick one as our first choice and try that, and with experience we found that we can use them fairly safely so at a minimum we don't hurt people with them. And if the first mechanical device doesn't work well, then we have a fallback, and sometimes that makes a difference.

Andrew Schorr:
We mentioned at the outset that you have an imaging done right of the off the bat to see is it the more common ischemic stroke where there's a blockage, a clot, or is somebody bleeding. So if they're bleeding do you have tools to go up there too and stop the bleeding?

Dr. Hallam:
Yeah, absolutely. It depends on the type of bleed. There are a variety of causes of bleeding in the brain. Perhaps the most common cause is directly from hypertension. That's not something we can directly treat, although if the bleeding is big enough then a neurosurgeon may be needed to go evacuate the bleeding. But there are other causes of bleeding, aneurysms and AVMs. We treat those commonly at Harborview, and there are techniques for treating them both by open surgery as well as by using the same set the skills to go through the arteries to get into the brain.

Andrew Schorr:
Dr. Becker, so we hear on the treatment end we have more options than ever, and we have to work on prevention, but how do you feel this field is involving? It sounds like if we can get patients and family members moving fast, you've got your team moving fast, you've got more going on, that we can save lives and lower the risk of disability.

Dr. Becker:
Yes, so I think the number of options for treating acute stroke has certainly increased in the last years, probably not as much as we would have liked to have seen it, but still very few patients are able to receive acute therapies because they just don't get to the hospital in time. So I think increasing awareness among people about the risks of stroke so they can prevent stroke as well as the signs of stroke so they can seek immediate attention is key. Because no matter how good of therapies we develop they're really not useful if you don't receive them. So getting people to recognize that something's wrong, get to the hospital immediately is important.

Andrew Schorr:
Let's just go over for a second, and you probably have a million stories, but just draw a picture of specific symptoms. We rattled them off, but I'll give you one example. I interviewed someone where the wife noticed, she and her husband were reading the Sunday paper and then his speech was slurred, but maybe you could give other examples too.

Dr. Becker:
So one of the more alarming stroke symptoms is something called aphasia. It's a language disturbance. So it would be kind of a sudden onset of inability to produce intelligible speech. So not slurring of the speech so much as not being able to actually string together words that make sense. And not being able to understand what's being said to you. So it's not a motor speech problem but really a comprehension problem.

And frequently along with this symptom of aphasia people will have right-sided weakness. And when we talk about weakness it's really not just weakness of an arm or leg but both together, the entire right side including the face or the entire left side including the face. So those are very clear symptoms of a stroke a require emergency therapy.

Andrew Schorr:
Dr. Hallam, let me see if I've got this right. So if let's say the right side is where you have these symptoms does that mean the clot is on the left side of the brain?

Dr. Hallam:
Usually, yes.

Andrew Schorr:
Okay. So it's kind of reversed.

Dr. Hallam:
Right.

Andrew Schorr:
So you know where to look. And then also, Dr. Becker, you said some strokes can be more severe than others. Is that simply the size of the clot, or what makes one stroke worse than another?

Dr. Becker:
It is the size of the clot essentially, which portion of the blood vessel it's blocking. So the further out in the vasculature the blood clot generally less tissue is injured so the stroke is less severe. But it also depends on what part of the brain. So there are certain parts of the brain that are more important than others, and if it's kind of in a high-rent district even if it's a small stroke it can cause pretty significant symptoms. There are other areas where you can actually have a fairly large part of the brain that's affected by the clot but with very few symptoms.

Andrew Schorr:
Dr. Hallam, we keep using this term, "clot," and I just want people to have an image of it. How big or how little might this clot be, and what is it made up of?

Dr. Hallam:

We're all designed to stop bleeding when we need to. If you cut yourself you need to stop bleeding, so your blood is designed to clot off, to solidify using a combination of factors in the blood and platelets and they all form a solid from a liquid. Sometimes that happens when you don't want it to happen, so that can happen for a variety of reasons. Once you have a clot in an artery that goes to the brain that's what causes an ischemic stroke.

Size varies greatly. As Dr. Becker mentioned, if it's a clot fairly far out in the arterial tree then the clot will be fairly small and the territory, the area of the brain to which it's

blocking blood will be smaller. More proximal clots, those closer to the heart but still in the brain will be larger, maybe as big as a centimeter, and those are the ones that we feel we can better address with our angiographic treatments.

Andrew Schorr:
So just to give us an image when we talk about size, we talking about could be the size of a pea or it could be the size of a lima bean, or how would you relate it to that?

Dr. Hallam:
Closer to the pea or maybe a couple of peas stringed together. That would be a larger clot.

Recovery

Andrew Schorr:
Wow. We certainly don't want to get there. So, Dr. Becker, I've heard that the brain can recover. We're talking about recovery, but can another part of the brain take over function? So if we are losing speech or losing movement and unfortunately because of time some portions of the brain died, do we have enough brain tissue that some functions maybe with rehab could be transferred in a way?

Dr. Becker:
That's exactly right. Right now there isn't good evidence that brain can regenerate itself, but there is a rewiring that seems to occur. So as you mentioned other parts of the brain can take over for parts that have been damaged, and you can relearn how to use your arm or your leg or to speak by using other parts of the brain that originally weren't participating in those functions.

Andrew Schorr:
Well, as we take it all together, Dr. Hallam, first of all with your tools that are very new, are you encouraged where things are going that you can do more for people if they can just get to your facility, a right facility that you can really help save?

Dr. Hallam:
Yes, absolutely. With proper patient selection, we can't help everybody, but those that we can help it's certainly my feeling that we have the opportunity to make a tremendous improvement in their outcome.

Andrew Schorr:
And you're a research institution too. Are you working on what's next?

Dr. Hallam:
We're involved in trials to evaluate how well our retrieval systems work.

Andrew Schorr:
Well, I'm glad they're working as well as they are now. Dr. Becker, are you encouraged that we can do better?

Dr. Becker:
Absolutely. And as I mentioned it's important that patients recognize their symptoms and get to the hospital, but in the hospital we need to do better. As we've talked about, time is brain, so we need to do everything that we can do to increase the speed at which we deliver these therapies, and I think that's something that we've seen great improvement on over the last years in our own institution. So I think we're very encouraged that we can optimize the outcome with these therapies.

Andrew Schorr:
So it's a partnership. If we, patients, can recognize the symptoms, dial 911 and get to a certified center such as yours you're doing your part.

Dr. Becker:
Exactly.

Andrew Schorr:
Well, I hope we've raised the awareness of stroke for people now, and I urge people, do not pass go, dial 911. If you've had one of these transient symptoms it is a warning sign for you. And it really is, Dr. Becker. People should not ignore those, right? It's not like, oh, it will go away and maybe it will never happen again. You do need to pay attention.

Dr. Becker:
Absolutely. A TIA deserves the same kind of evaluation as a stroke.

Andrew Schorr:
Okay. Well, we've got great care to help you, but, remember, you have to do your part to really pay attention to this. Dr. Kyra Becker, co-director of the stroke program at the University of Washington, thank you for being with us.

Dr. Becker:
Thank you.

Andrew Schorr:
Dr. Danial Hallam, neurointerventional radiologist, thank you for also taking us into a tour of the body and all you can do now in the brain. Thanks so much.

Dr. Hallam:
My pleasure.

Andrew Schorr:
Well, this is what we do on Patient Power is try to really highlight for you significant health problems, talk about prevention, as we did with stroke. Do not smoke. Quit smoking. Diet, blood pressure, as we said, whether it's at the pharmacy, at the doctor, every time

you go, check your blood pressure and let's get it down and avoid a stroke even happening. Thanks to UW Medicine for sponsoring our series of programs. I'm Andrew Schorr. Remember, knowledge can be the best medicine of all.