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Case Presentation: Management of ICH in the Anticoagulated Patient Using Specific Reversal Therapy: Importance of Timing

**Announcer:**
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**Dr. Parry-Jones:**
So I'll just move on to a case presentation, which I hope illustrates some of the practical problems that you encounter in trying to treat some of these patients. So this is a 61-year-old male patient who was well before his stroke, had a prestroke, mRS of 0. He had some comorbidities, had type 2 diabetes, hypertension, he'd had a TIA 10 months before, and was found to have atrial fibrillation after that, for which he was anticoagulated with apixaban. He's coming on call with a right-sided weakness and drowsiness at 9 AM. So this is - the onset was an hour prior to him arriving in hospital. He has a GCS of 12, a right hemiplegia, an NIHSS of 21, and a very high blood pressure.

And this is the scan. So you can see there's a deep thalamic ICH with extension into the ventricular system. The volume on the ABC/2 of the intracerebral hematoma is 20 mL.

So, and this is kind of a not uncommon problem you encounter. So the patient comes in, he's not with anybody, so he's unaccompanied. He can't tell you any last took his apixaban, so we just don't know. So you call the patient's son. The patient says that – sorry, the patient's son says that the patient lives alone and normally looks after his own medication. The son had last seen him well the day before at 11 AM, and then had found him with the weakness today. He said that he seems to have slept in the bed, seems to have gone up and got dressed. So that might help a little bit. But he also mentions that he's had quite poor compliance with his medication recently. So he'd been given a blister pack. And unfortunately, the son's on his way to the hospital and doesn't have the blister pack and it's sitting at home. Okay, so you do your detective work, but we're still uncertain.

So some lab results have come back. We've got an EGFR of 90, it's now 11 AM. So based on this information, it could be that he's 2 to 24 hours after onset, because he was last seen well at 11 AM the day before. So you've got a lot of uncertainty there about where he is in the disease process.

So what happened in this case? There was a phone call to hematology to get a further opinion on what to do, who advised to give PCC, treatment was then commenced. Andexanet alfa is not currently available in England for use in ICH, so we don't have it for use. BP lowering was commenced shortly after this. The case was discussed with neurosurgery, who felt he wasn't for intervention. He was transferred to the High Dependency Unit for blood pressure management, and was transferred back to his local hospital on day 6.

So I just wanted to delve a little bit more into the uncertainty about when he last took the apixaban, and what - how that might feed into our thinking. So this is a graph of the pharmacokinetics of apixaban and rivaroxaban, so if you ignore the dark blue curve, it's the yellow and the red. So the yellow curve is the level of the DOAC in the blood after the first dose, and the red is after the second dose. So if we assume that he's taking it as prescribed, then he should have had a dose about 2 hours before we're seeing him. So you can see he's

really quite high up on that first curve. He's well anticoagulated. If he'd missed the morning dose, either because he's forgetful and forgot to take it, or because he'd already had a stroke, then he's going to be at this point on the curve. So it'll be right down to 50. So still anticoagulated, but less so. But if he'd actually missed both doses, then the level is really low. So in fact, he could be anywhere within that band. And that's our difficulty, isn't it? We don't know. And we'd love to have a lab test to tell us that that's quick, but we don't.

So if we look at his other risk factors in terms of time and his hematoma volume, so again, we don't know whether he's 2 hours or 24 hours after this ICH, so he could be an either point. His volume is 20 mL, we know that for sure. And so that we've got a sort of tight band there on that curve. But here, he could be 2 to 24 hours, so he could be anywhere there.

And sadly, these are the kinds of uncertainties we're faced with a lot of the time, aren't they? So I think often it's better to err on the side of caution and treat these patients to avoid an expansion if they are anticoagulated and if they're at risk of expansion.

So just to sum up from the case, it's approximately 10 to 20% are on anticoagulants, delays increase the risk of expansion, and you have to – despite this uncertainty, you have to really decide quickly what you're going to do, you need to get on with it. You don't want to add a delay to their treatment. Two key things to consider, time since the last anticoagulant, if you can find it out, time since the ICH onset. And the ICH volume is important. And finally, as Natalie has said, you occasionally get patients where it's very clear that they have a catastrophic intracerebral hemorrhage, and you might palliate them early on, in which case, you're not going to treat them.

**Announcer:**
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