

Is Oxygen Helpful for Patients with Acute Stroke? - Frankly Speaking EP 41

Transcript Details

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Dr. Frank Domino:

Mary, a 75-year-old woman in your practice, is brought in on an urgent basis by her family members. They notice she has not been acting normally. She seems confused and isn't speaking clearly. This has been going on since early this morning and it is now 2:00 in the afternoon. When you examine her, you note that she has difficulty speaking and some right-sided arm weakness. Her vitals are normal, including a pulse ox which is 94%. EKG is normal. You diagnose a probable stroke and ask your staff to call an ambulance. While you are waiting, should you give her oxygen? Hi, this is Frank Domino, family physician and Professor at the University of Massachusetts Medical School, and joining me today is Dr. Alan Ehrlich. Dr. Ehrlich is Clinical Associate Professor in Family Medicine at the University of Massachusetts and Executive Editor at DynaMed. Welcome to the show, Alan.

Dr. Alan Ehrlich:

Thanks, Frank.

Dr. Domino:

It sounds like Mary is having a stroke. What should we be doing with regard to her current situation, and in particular, should we be giving her oxygen?

Dr. Ehrlich:

The question about oxygen is fairly interesting and there was a new study that looked at this. The general advice when someone is having a stroke involves mostly supportive care. They need to be monitored, because they may be having arrhythmias. You need to be making sure they're adequately hydrated, their electrolytes are okay. But with respect to oxygen, the question's always been around avoiding hypoxia. We know that patients who have strokes often become hypoxic for any number of reasons. And if they do, and it's not adequately treated, that leads to worse outcomes. So, if not treating hypoxia leads to worse outcomes, it's natural to think, "Well, gee. Maybe we should just put 'em on oxygen to prevent hypoxia."

Dr. Domino:

That certainly makes sense.

Dr. Ehrlich:

Yes, well, as you know, medicine is littered with things that make sense, but turn out not to be true. From a theoretical point of view, the idea is that there's some cell death, there's a penumbra around the dead cells, where they may be at risk. And, if you can get them extra oxygen, you can avoid edema, and things like that, then perhaps you can do better. This has been looked at. There was a study back in 1999 that didn't find any benefit with giving extra oxygen. There have been some that have looked at high flow rates, and that, if anything, seems to be worse. But a couple of years ago, there was a pilot study that looked at giving supplemental oxygen and it showed some improvement in outcomes. Now, what we have is a very large study that was recently published, and what they did was they had 8,000 patients having some kind of stroke, and they were randomized to one of three options: No supplemental oxygen, continuous supplemental oxygen, or just extra oxygen at night. The idea of just extra oxygen at night was, when you have oxygen on you continuously, you can't get up, you can't move around, and there may be other adverse events that come from not being adequately mobilized during the daytime. And also, more people tend to become hypoxic at night, so they were trying to address all that. Anyhow, the bottom line was no benefit.

Dr. Domino:

That's really interesting. As you said earlier, this makes good sense, but it turns out not to be so. Going forward, how do we change our practice?

Dr. Ehrlich:

Well, I think we need to realize that oxygen is not entirely benign and it's really helpful for people who need it. But it isn't useful. It makes us feel good at times, or at least, I think many doctors think they're doing something when you put oxygen on a patient. But, Frank, we talked about oxygen in acute myocardial infarction previously, and we found, again, if you're not hypoxic, it doesn't help. The key is to see, "Does the person have some need for oxygen?" Now, hypoxia is the most common need. Sometimes there are other things. If somebody was severely anemic, so they've got low oxygen-carrying capacity, perhaps you'd wanna give them some supplemental oxygen or something like that. But the point is, you need a very specific reason to do it. It's not a default thing that I should do, just because it looks like we're doing something.

Dr. Domino:

In addition to being hypoxic, you mention here a pulse ox of less than 94%. Are there any other indications to add supplemental oxygen?

Dr. Ehrlich:

Yeah, I'm not... The 94% threshold is what the American College of Cardiology would recommend. They suggest keeping people at 94% or above. The Canadians actually have a lower threshold. They recommend keeping it greater than 92%, and so, we don't actually know what is the optimal oxygenation level. And that's part of the problem, but unless someone appears to be inadequately oxygenating, and again, monitoring their oxygen level is certainly a good idea, I would avoid the supplemental oxygen.

Dr. Domino:

How about if their blood pressure's low or they have a history of other medical complications? Do you have any direction there?

Dr. Ehrlich:

Yeah, I think patients who have other reasons why you might want to put them on oxygen, again, go right ahead. So somebody who's got hypotension, or somebody who has a rapid respiratory rate, and appears like they're dyspneic, from perhaps they have underlying respiratory disease that's being aggravated, maybe they have a little heart failure with pulmonary edema, any of those reasons, you might want to start using oxygen even before they reach some magic threshold. But it gets back to what I was saying, you want some type of affirmative reason why you're starting oxygen, not just doing it, just because the person might benefit from a little extra oxygen.

Dr. Domino:

Okay. To summarize, it appears that in a person who's having an acute stroke, unless there's a reasonable identified benefit that you can consider, adding supplemental oxygen to a patient may not be beneficial and probably runs a small risk of being harmful.

Dr. Ehrlich:

I think that's right and this comes under the general heading of more is less.

Dr. Domino:

More is less. Well, that's actually fantastic news. It is challenging in the acute setting to remember that doing nothing is possibly better than doing something, but I think this is reasonable guidance, and something we can probably adapt and use as we see fit.

Dr. Ehrlich:

Yeah. And again, this isn't that different from existing practice, 'cause it's been controversial, but still, in this trial, 20% of the patients were already on oxygen when they got to the hospital and whatnot, so this is something that I think, especially docs in an outpatient setting, where you may not be dealing with acute emergencies very often, should keep in mind.

Dr. Domino:

Great. Well, thank you, Alan, this is a fantastic article. And this, coupled with the article we reviewed not that long ago on acute myocardial infarction and supplemental oxygen, really helps expand our understanding of both how to appropriately care for patients, as well as remembering that doing more isn't always better.

Dr. Ehrlich:

Thanks, Frank.

Dr. Domino:

Practice pointer: In a patient who's having an acute stroke, as a minimum, keeping a pulse ox at 94% is a reasonable thing to consider. If the patient is not hypotensive or likely anemic, oxygen provided supplementally in the acute setting may not provide any benefit. Join us next time, when we discuss the role of exercise as a preventative agent in seasonally associated depressive symptoms.