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Recognizing & Managing an Acute Malignant Hyperthermia Crisis

Announcer:
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On this episode, we'll hear from Dr. Christopher Edwards, Assistant Professor of Pediatric Anesthesiology at the University of Florida, who shares with us key management strategies for acute malignant hyperthermia crises. Let's hear from Dr. Edwards now.

Dr. Edwards:
So let's say we have a patient that we've identified who's in an MH crisis, we've gotten the MH cart in the room and have some people starting to draw up and administer dantrolene. What are the other things we want to be most aware of? So first, I always like to point out that it's not just an initial dose of 2.5 milligrams per kilo of dantrolene, but we want to be administering this medication until we see that we're turning the corner in terms of clinical signs and symptoms normalizing. We want to see tachycardia start to resolve, we want to start to see hypercarbia be more controllable.

In some patients, especially in very muscular patients, that may take more than the initial 2.5 per kilo bolus. We sort of say as a mental guide that if you've given a total of 10 milligrams per kilo of dantrolene, and haven't seen resolution of clinical symptoms, then we may be barking up the wrong tree. And this may not be in an MH episode, we would expect to see resolution in nearly all cases with doses up to 10 milligrams per kilo. But certainly if you have a muscular athlete, you've given the initial 2.5 per kilo and haven't seen resolution of symptoms, don't stop there; continue to give another 2.5 milligrams per kilo dantrolene.

Other things to worry about: the setting of a serious acidosis and hyperkalemia from muscle breakdown can be a really arrhythmogenic state. So you want to keep an eye on your EKG, you want to use standard measures to control hyperkalemia, and manage any developing arrhythmias as you typically would. And then in terms of managing the patient's hyperthermia, we typically say that if the temperature is greater than 38 degrees Celsius, we should work on active cooling measures. And generally, that can be things that are quite simple and non-invasive. So it can just be placing ice packs to the vascular areas, initiating ambient air cooling. If you have cold I.V. fluids, you can do a cold I.V. fluid bolus, and stop cooling measures once the patient's below 38 degrees Celsius. We're not shooting for hypothermia, just normothermia.

And then finally, these patients, once you have control of the acute setting, should be transferred to an ICU setting for at least 24 hours for continued monitoring. Some of the big things to keep an eye on there are prevention of myoglobinuric renal failure. So we want to be pushing urine output, whether that's with fluids or mannitol or Lasix, to try to continue to have more than 1 ml per kilo per hour of urine output. And then we typically also administer dantrolene in dosing that prevents recurrence of symptoms of MH. There are about 30% of patients that in the initial 16 or 24 hours after an MH acute episode will have recrudescence of symptoms. And if you give MH at a dose of1 milligram per kilo every 4 to 6 hours in that 24 hours in ICU, you can typically prevent this recurrence of symptoms. So there's some further details and if you look at critical event checklists or call the hotline, then folks will walk through some of the more minor points, but those are usually the main things in the acute and post-acute phase that I'm most concerned about.

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