Transcript Details
This is a transcript of an educational program. Details about the program and additional media formats for the program are accessible by visiting: https://reachmd.com/programs/the-pulse-of-emergency-medicine/the-role-of-ambulatory-surgery-centers-in-the-treatment-and-diagnosis-of-malignant-hyperthermia/12074/

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

The Role of Ambulatory Surgery Centers in the Treatment & Diagnosis of Malignant Hyperthermia

Announcer:
You're listening to *The Pulse of Emergency Medicine* on ReachMD, sponsored by Eagle Pharmaceuticals.

The following opinions expressed are not those of Eagle Pharmaceuticals but are those of the expert faculty guests.

And now, here's your host, Dr. Hector Chapa.

Dr. Chapa:
Ambulatory surgery centers provide a faster option for patients who are unable to wait for weeks, or at times even months, for a planned inpatient admission. However, this convenience can come with a high cost, as the risk of death is actually four times higher in these centers, which begs this question: How do conditions like malignant hyperthermia, which is our topic for this session, contribute to this risk, and how can this risk be mitigated?

Welcome to *The Pulse of Emergency Medicine* on ReachMD. I'm Dr. Chapa, and I'm joined by two other experts in this area, Dr. Stacey Watt and Ms. Debbi Conn, who are going to contribute to this discussion and give us a lot of education on this very important topic. Dr. Watt is the chief of service at the Department of Anesthesiology at Kaleida Health. Dr. Watt, thank you for being here today.

Dr. Watt:
Thank you for having me.

Dr. Chapa:
And we also have, Ms. Debbi Conn, who brings over 30 years of risk management experience to this discussion. She is the Executive Vice-President at Universal Healthcare Consulting, so she is the right person to have on this discussion. Ms. Conn, it's great to have you with us.

Ms. Conn:
Thank you. I appreciate the opportunity.

Dr. Chapa:
To start us off, Dr. Watt, can you level set our understanding about what malignant hyperthermia actually is? And under what circumstances might a patient experience this in an ambulatory surgery center?

Dr. Watt:
So malignant hyperthermia, for those of you who aren't typically dealing with that on a regular basis, MH, as it's often called, is a genetic disease or disorder that runs within family lines. It's passed down from generation to generation, in what's called an autosomal dominant inheritance, which basically means that your children, if you have it, have almost a 50% chance of having that disease or disorder as well. And what happens if you have malignant hyperthermia is when you're exposed to certain agents within an anesthetic – gas agents such as sevoflurane, desflurane or the gasses of anesthesia and some of the paralytic agents – you actually trigger what's called a crisis, where your temperature elevates, you become rigid, and you must be treated with an actual antidote in order to often survive that, and the care team that's taking care of you in the operating room must act very quickly and identify what's happening, and treat accordingly to make sure that you not only receive the care you need, but you get to the specific drugs and disorders as well as treatments necessary to save your life.

Dr. Chapa:

Is this more common in the pediatric population or adult? Or is that prevalence different at all, or the same?

Dr. Watt:
Well, it's often found in pediatrics because that's when their first exposure to anesthesia occurs. So oftentimes, patients come to us and they don't know they have MH, or malignant hyperthermia. So they're exposed to anesthetics, and the tricky part about MH is you can be exposed to anesthesia a hundred times, and on the hundred and first occasion is when you trigger an event and have a crisis in the operating room, so it can be quite scary. So oftentimes, we in the pediatric world are the first to experience it, because that's when the patients are first exposed. But it can occur to anyone at any time.

Dr. Chapa:
And, of course, Ms. Debbi Conn, I did not forget about you. Turning to you now, when a malignant hyperthermia event does occur, are the immediate steps taken to help manage this patient?

Ms. Conn:
Well, when an anesthesia provider states that they feel that there's a malignant hyperthermia crisis, the team needs to react immediately. The MH cart needs to be brought into the room, there needs to be staff to mix the dantrolene. The dantrolene is the only antidote for malignant hyperthermia. There are two types of dantrolene. One is the original dantrolene, which comes in vials where you need to mix it with 60 cc of sterile water. The other form of dantrolene is a more concentrated form, and it's 250 mg per vial, and that's the Ryanodex, and that only needs to be mixed with the 5 cc. Twelve vials of the standard form of dantrolene are equivalent to one vial of the Ryanodex. So you want to make sure, whichever version you have, that you have the staff there to mix and push the dantrolene. Anesthesia's going to be busy. They're going to be maintaining the airway. They're going to be taking care of the patient as far as their vital signs and anything that may occur with arrythmias. So you need to have staff to mix the dantrolene, start an IV, administer the dantrolene, and then you want to get somebody who's going to bring in ice. That patient's going to start to heat up. You want to cool that patient down. In an ambulatory surgery center, you don't have the ability for blood gases or immediate bloodwork. You can assume that the patient is getting acidotic, and you can give them some bicarb as they're blowing off that CO2. But you want to be able to transfer that patient as soon as possible, so the facility does need to be equipped with a transfer arrangement to transfer that patient to a hospital, where they can take care of the patient with malignant hyperthermia episode. The ambulance does not carry the dantrolene, so extra vials will need to go with a provider who can administer it on the ambulance. That would either be the surgeon or the anesthesiologist. And you want to get that patient safely to the hospital, with somebody calling report, understanding that ER is also not equipped with an MH cart. MH carts you'll find in an operating room, not in an emergency room. So you do want to have everything present to treat that patient.

Dr. Chapa:
Knowing that the risk of mortality is higher when patients are transferred from an ambulatory surgical center, Dr. Watt, what are some of the factors that could be contributing to this disturbing trend, with this increased mortality when this occurs outside of a main hospital OR?

Dr. Watt:
Well, the one thing that I think is the most contributing factor to it is the lack of preparedness. Drills are important, but sites that aren't drilling and don't have a plan when an MH crisis occurs are those at highest risk. So some sort of have a social event for that– one drill per year, and instead of really taking it seriously and going through the steps, such as how are you going to mix the drugs? How are you going to transfer the patient? Who is going to accept the patient? All these small details become huge obstacles when you're in the midst of a crisis. So, preparation is really worth more than a pound of cure in these situations. And it's also important to get everyone on board with understanding absolute urgency of the crisis, so people have to understand this is not a drill, and this is not something to take lightly. The patient's life is hanging in the balance, and everyone really needs to be at their top game when this type of tragedy occurs.

Dr. Chapa:
Now for those just joining us, this is *The Pulse of Emergency Medicine*, on ReachMD. I'm Dr. Chapa, and today I'm speaking with Dr. Stacey Watt and Ms. Debbi Conn, about malignant hyperthermia, specifically focusing on an ambulatory surgical center, and how that risk differs from the main hospital OR.

So Ms. Conn, now that we know more about this heightened risk of malignant hyperthermia in ambulatory surgical centers, what's the best way to prevent this in addition to drills, or is it only drills?

Ms. Conn:
No, patients need to be questioned prior to surgery. And they should be questioned prior to the day of surgery, especially in an ambulatory setting. If you know a patient has a significant family history, you might not want to perform that procedure in the ambulatory setting, or you might choose to not use triggering agents for that procedure. Questions should be asked about a family history, a lot of

people don't know their family history, but there's other questions that we want to know if they have heat exhaustion, high temperatures, colored urine – there's lots of different questions that could be asked to evaluate a patient to see if they may be of risk. Of course, it is a genetic disposition, so we do definitely want to know family history. And like I said, performing the procedures with agents that may be triggering might not be the desired anesthesia care plan for those patients.

Dr. Chapa:
And now, Dr. Watt, if you could be talking to a staff member at an ambulatory surgery center, what would be your top point in having them recognize this condition and the immediate steps to take?

Dr. Watt:
Well, the first thing is know what you're dealing with, and know what to look for. You could easily go to something like the MHAUS hotline, or even find information online about the signs and symptoms, such as muscle rigidity, tachypnea – basically breathing fast, high heart rate, you see also that Coca-Cola colored urine that we talked about, elevation temperature – all those things sort of come together and they come together in sort of this huge plume of things that you're faced with suddenly. So if I could tell all the staff that are listening to me right now, go find your MH cart. Open it up, take a look through it, get familiar with it, because you don't want to be not familiar with it at the time of a crisis. So, again, that real preparation in your mind is really going to save the day for that patient in the future, so familiarize yourself with where the cart is, where the drugs are kept, where is dantrolene, where is the sterile water that you're going to be using to mix it, where is the nearest hospital that you're going to be transferring to. All these things are important because when an MH crisis hits, seconds count. And that patient is relying upon you to be at your best.

Dr. Chapa:
Now, back to Ms. Conn, What would you give as guidance for the entire surgery center?

Ms. Conn:
It is a team approach, and as Dr. Watt said, it's a severe crisis. So you need your ancillary staff there, whoever can be there, you need to call 9-1-1. But understand something: 9-1-1 does not carry the dantrolene, so you need to be prepared to send that patient in the bus with the dantrolene. Now, the dantrolene can't be administered by the staff in the ambulance, so either the surgeon or the anesthesiologist is going to need to go along and continue to treat the patient in the ambulance as need be. And somebody's going to need to call ahead to the hospital. Let them know they're getting a malignant hyperthermia patient. ER's are not equipped with dantrolene. It's something that's used in an operating room, not an emergency room. They're going to have to call. They're going to have to get the dantrolene. We do start with a loading dose. When you're giving them standard form of dantrolene, your initial loading dose could be 20, 25 vials. Each vial needs to be mixed with 60 cc of sterile water. That takes time to administer. So there's lots to take into consideration when you're treating these patients, and understanding that to get that antidote in is the most important thing in a timely manner. So, staff need to work together. They need to be a team. Front desk needs to prepare the chart. Other people need to be awaiting the ambulance arrival, and you want to get that patient out as soon as possible, with the hospital fully aware of what they're getting. Drills are really important, and hands-on drills, with everybody involved, from the front desk person right on down to who's going to open the door and have that patient wheeled out. Everybody needs to know their role in the event. It's a life insurance policy that's really important. Should you see it, it will be the worst thing you see, and you want to do everything possible for the best outcome.

Dr. Chapa:
Well, this brings us to the end of today's program. I want to thank our two experts, Dr. Stacey Watt and Ms. Debbi Conn, for your expertise, your awareness and your passion for this, and for joining me on this discussion on malignant hyperthermia, specifically with a focus in ambulatory surgery centers. Dr. Watt, Ms. Conn, it was great having you both on the program.

Dr. Watt:
Thank you very much. It's been great.

Ms. Conn:
Thank you.

Announcer:
This was *The Pulse of Emergency Medicine*, sponsored by Eagles Pharmaceuticals. To access other episodes in this series, visit reachmd.com/Emergency Med, where you can Be Part of the Knowledge.