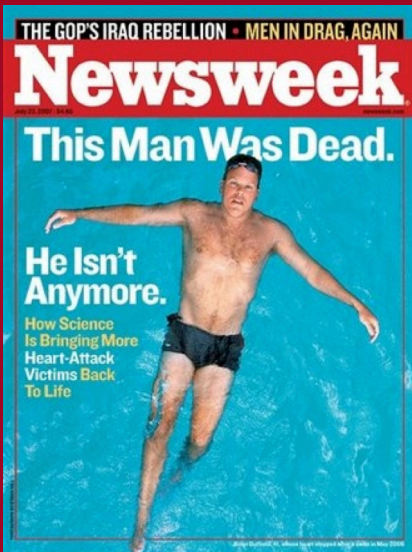


EM CASE OF THE MONTH

BROWARD HEALTH MEDICAL CENTER DEPARTMENT OF EMERGENCY MEDICINE



Therapeutic Hypothermia was the cover story of Newsweek in July 2007. There are multiple trials with conclusive evidence that adding hypothermia to routine post cardiac arrest care can improve survival and improve neurological outcomes.

EM CASE OF THE MONTH

EM Case of the Month is a monthly “pop quiz” for ED staff. The goal is to educate all ED personnel by sharing common pearls and pitfalls involving the care of ED patients. We intend on providing better patient care through better education for our nurses and staff.



Therapeutic Hypothermia

A 55 year old male presents to the ED in V-fib cardiac arrest. Per EMS, he called 911 for chest pain and upon arrival his EKG showed STEMI. The patient became unresponsive en route. CPR, defibrillation, and epinephrine are delivered per ACLS algorithms. Return of spontaneous circulation is achieved after 10 minutes of pulseless “downtime”. A CODE ICE is called and therapeutic hypothermia is started prior to cath. Which of the following clinical effects are NOT expected while cooling a patient?

- A. Shivering
- B. Increased urine output
- C. Increased risk of pneumonia
- D. Hypercoagulability
- E. Hyperglycemia



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Hypothermia Adverse Effects	Notes
Shivering	Treat with Magnesium or paralytics
Increase SVR Arrhythmias	Bradycardia most common
Diuresis	Watch for hypovolemia and electrolyte imbalances
Decrease insulin sensitivity and insulin secretion	Watch for hyperglycemia
Decrease clotting function	Increase bleeding
Impair immune system	Increase risk of infection

Therapeutic Hypothermia

The correct answer is D. Therapeutic hypothermia would cause increase risk of bleeding—not hypercoagulability. Bleeding causes of cardiac arrest such as trauma, GI, or aneurysmal bleeding are all contraindications to therapeutic hypothermia.

Discussion:

Therapeutic hypothermia not only saves lives—it saves brains. The number needed to treat (NNT) is 6. This means for every 6th patient that we cool, we can expect one additional neurologically intact discharged patient. To put that into perspective, the NNT for aspirin in MI is 40. You have to give aspirin to 40 patients to save one additional life. These patients are not only surviving to hospital discharge – the data shows they are going home neurologically intact. They go home to their families and their jobs rather than a nursing home with a PEG tube and a tracheostomy. This is a therapy we can get excited about!

Keep in mind that like every therapy we provide, we need to be prepared for adverse effects and be ready to treat them. In the case of therapeutic hypothermia, the adverse effects are listed in the table to the left. Your patient may **shiver** to try to increase core temperature. This should be treated magnesium or paralytics. Arrhythmias may occur as well – **bradycardia is the most common and can be treated with atropine if necessary**. These patients will also diurese so be sure to **watch for hypovolemia and electrolyte abnormalities**. Hypothermia decreases insulin sensitivity and secretion so **watch for hyperglycemia**. Hyperglycemia in the post arrest period is associated with worse neurological outcomes. Colder core temperatures are associated with an increased risk for infection so **keep an eye out for pneumonia and other infections**.

I want to stress that the evidence is poor for most ACLS therapies such as vasopressors and antiarrhythmic drugs. The therapies that have been proven to work are good chest compressions, defibrillation, and therapeutic hypothermia. And while we rarely forget to give epinephrine for cardiac arrest, I frequently see the proven therapy of hypothermia go overlooked. So next time you are on the code team, remember this proven therapy when you we get a pulse back. The phrase “I feel a pulse!” should immediately be followed by “Should we call a CODE ICE?”.

Take Home Points

- Therapeutic hypothermia has been proven to decrease mortality and improve neurological outcomes in the post-arrest patient
- Do not ever give therapeutic hypothermia to any bleeding cause of cardiac arrest
- There is a short list of adverse effects you can expect from cooling your patient. Know what to expect and be ready with the appropriate therapy.

IF YOU HAVE A TOPIC YOU WOULD LIKE TO SEE DISCUSSED IN A FUTURE EDITION, PLEASE SEND IT TO DR. JASON MANSOUR AT JMANSOURMD@GMAIL.COM

“An investment in knowledge pays the best interest.” –Benjamin Franklin

