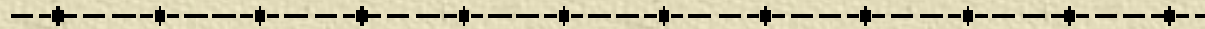
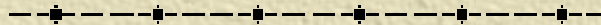




Cooling off a Hot Topic: Malignant Hyperpyrexia



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OVERVIEW:

- ✦ Introduction
- ✦ A Good Handover
- ✦ Malignant Hyperpyrexia
- ✦ Summary

A Good Handover

- ✦ This aspect is 9/10's of good management of post-op emergencies.
- ✦ The Post-Op handover should include:
 - ✦ Relevant preoperative status, such as vital signs, radiology findings, laboratory values, oxygen saturation, allergies and disabilities
 - ✦ Anaesthetic technique and agents used (including muscle relaxants, narcotics and reversal agents – time this given)

A Good Handover - cont

- ✦ Type of surgical procedure
- ✦ Estimated fluid/blood loss and replacement
- ✦ Access sites
- ✦ Any complications occurring during anaesthesia
- ✦ History of PONV, Pain etc
- ✦ Post operations orders, including Fluids, Pain relief and PONV medications

Malignant Hyperpyrexia

- ✦ Also known as Malignant Hyperthermia (MH)
- ✦ A life-threatening hypermetabolic disorder
- ✦ Triggered by Suxamethonium and volatile anaesthetic agents (eg Halothane, Isoflurane, Sevoflurane etc) in genetically susceptible individuals autosomal-dominant inherited disorder
- ✦ Occurs in 1 in 100,000 anaesthetics Pathophysiology: Decreased Calcium reuptake by sarcoplasmic reticulum
- ✦ Increased intracellular calcium
- ✦ Massive acceleration of cellular metabolism
- ✦ Uncontrolled muscle contraction – Death

Malignant Hyperthermia-cont

- ✦ **Diagnosis:** Unexplained hypercapnoea, tachycardia, hypertension, cyanosis and desaturation.
- ✦ Rigidity after Sux - 'masseter spasm'.
- ✦ Temperature elevation is a late sign.
- ✦ Laboratory signs are hyperkalemia, a raised creatinkinase and myoglobinuria, caused by a damaged cell membrane
- ✦ **Management:** Call for help
- ✦ Remove offending agent, discontinue all anaesthetics and ventilate with 100% oxygen via new circuit (intubate if patient not already intubated)

Malignant Hyperthermia-cont

- ✦ **Dantrolene**: relaxes skeletal muscles by inhibiting the release of calcium ions from the sarcoplasmic reticulum. Presents in 20mg Vials, which must be dissolved in 60mls of Sterile Water. Starting dose is 2.5mg/kg – up to 10mg/kg
- ✦ Symptomatic treatment; dysrhythmias, hyperkalaemia and metabolic acidosis
- ✦ Perform Active Cooling – surface, and cavity cooling e.g. ice water through a nasogastric tube
- ✦ Monitoring: Invasive BP, Serum Electrolytes

Malignant Hyperthermia-cont

- ✦ Inform patient and relatives, test patient and relatives for MH susceptibility in a MH diagnostic centre.
- ✦ If positive: MH susceptibility ID card
- ✦ Minor oral surgery performed on outpatient basis under local anaesthesia, has been shown to be safe for the MH patient.
- ✦ GA, using intravenous medications and nitrous oxide only, is also safe.
- ✦ However, any facility that performs surgery or anaesthesia using trigger agents should be prepared to monitor the patient and treat an MH crisis including having an adequate supply of dantrolene.

Malignant Hyperthermia-cont

What equipment preparation should be done before surgery of an MHS patient?

- ✦ Machine: Clean, vapour-free anaesthetic machine.
- ✦ Monitors: ECG, BP oximeter, capnometer. Temperature axillary, (tympanic, rectal) should also be monitored unless general anaesthesia is very brief (<10-15 minutes).
Hypothermia blanket
Refrigerated saline
Drugs and supplies, including dantrolene

What equipment is recommended to be stocked on an MH cart?

- ✦ Drugs: dantrolene 36 vials, sterile water, dextrose 50%, antiarrhythmics, mannitol, calcium chloride, sodium bicarbonate, furosemide.

Malignant Hyperthermia-cont

Things to consider:

- ✦ Is there enough ice on hand?
- ✦ Does the can opener actually work on the dantrolene?
- ✦ Do you keep your out of date stock of dantrolene to practice with (i.e. mock run)?
- ✦ Do you know the hospital / centre policy?
- ✦ Where you can get extra Dantrolene from?

Summary

✦ A Good Handover

✦ Malignant Hyperthermia

Resources and Web-links:

Malignant Hyperthermia Tutorial -

www.medana.unibas.ch/eng/mh/mhtutori.htm

The Malignant Hyperthermia Association -

www.mhacanada.org/links.htm