Malignant Hyperthermia (MH)

Case Review: Ryanodex Treatment

8 Month Old Male Undergoing Urology Procedure

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Case & Patient History

- **Surgical Procedure:** Exploratory laparoscopy with left testicle orchiopexy versus orchiectomy for non-palpable left testicle
- **Medical History:** 8 month old male; 6.24 kg; Hydro-nephrosis; Right ureteropelvic junction obstruction; non-palpable left testicle; Passive smoke exposure
- **Past Surgical History:** Right pyeloplasty on 12.1.2015. Per history from parents anesthesia & postoperative course uneventful
- **Physical exam:** normal for age

The Challenge

0940: Anesthesia Induction: Inhalation without incident, PIV 24g right foot. LMA 1.5 inserted, skin temperature strip placed over left carotid

0955: Surgical Incision

1040: Surgical incision closure

**Immediate Course of Actions:**
- Ventilation change from PSV Pro to hand ventilation
- CO2 continuing to rapidly increase
- LMA removed and mask ventilation initiated (no masseter rigidity noted)
- Volatile anesthetic discontinued, Jackson Reese utilized with O2 source auxiliary port on the anesthesia machine
- Notification made to nursing, physicians, and pharmacy for assistance
- Differential diagnosis of Malignant Hyperthermia (MH)
- MH Cart brought to the OR
- Fluids Increased; room cooled; patient fully exposed; ice placed to axilla & groin

10:46
- Foley catheter with temperature sensor placed
- First dose of Ryanodex prepared

10:48
- Additional PIV started: 20g Right foot
- Patient intubated with out difficulty: 3.5 cuffed ETT with Phillips blade size 1; cuff inflated with 0.5mL of air
- Venous blood gas /BMP blood samples obtained and sent to lab
- Ryanodex 16mg given 0.32mL
- OGT placed-cold lavage

10:50
- Propofol 20mg given for sedation & infusion started at 250mcg/kg/min. Fentanyl and Versed also administered
- Repeat doses of Ryanodex at 16mg per dose X3 until patients hemodynamics returned to normal

11:00 Left radial Arterial line placed; additional blood samples sent to lab

11:01 MH hotline called

11:02 PICU bed secured by surgical team & report called to PICU

11:15 Active Cooling measures stopped

11:35 Pt transferred in stable condition to PICU

Intraoperative Hemodynamics

**Patient Outcome/Conclusion**

**Patient Outcome:**
- Remained hemodynamically stable overnight; no significant increases noted in urine myoglobin, or CPK labs. Myoglobin slightly elevated at 99 ng/mL
- Extubated the following day
- Anesthesia team provided MH education from the MHAUS website to family
- Patient was discharged on POD 2

**Conclusion:**
- First case of Ryanodex treatment at MCJCHV
- All involved agree preparation/administration of Ryanodex is time saving & easy to use.

References

- [http://www.mhaus.org/](http://www.mhaus.org/)