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Malignant Hyperthermia

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**Pathophysiology**

Malignant hyperthermia (MH) is a serious inherited disorder that can affect any healthy person, regardless of age, gender, or ethnicity. It is characterized by a rapid and uncontrollable increase in body temperature, which can lead to serious complications if not treated promptly. The condition is triggered by exposure to certain anesthetic agents, particularly volatile anesthetics and depolarizing neuromuscular blocking agents.

**Signs and Symptoms**

- **Early clinical signs of MH** include:
  - Increased heart rate and end tidal carbon dioxide (Stratman, Flynn, & Hatton, 2009)
  - Hyperthermia, with temperature rising as quickly as 1 degree Celsius every 3 minutes (Stratman, Flynn, & Hatton, 2009)
  - Muscle rigidity, especially in the jaw, chest, and extremities (OR, 2012)
  - Later signs include acidosis, rhabdomyolysis, and electrolyte imbalances that can also manifest as cardiac arrhythmias (Stratman, Flynn, & Hatton, 2009)

**Significance of Pathophysiology**

Malignant hyperthermia causes significant and potentially lethal distress to the body if not properly recognized and treated. It’s important to note that since this condition is genetically linked, it can be avoided. Because of its significance, malignant hyperthermia should be a priority during an anesthetic provider’s preoperative assessment. Patient’s who have a family history of previous exposure or a family member with a history of MH should be handled with care to avoid the risk associated with volatile anesthetics and depolarizing neuromuscular blockers, and prevent the patient from experiencing deadly symptoms such as ventricular fibrillation, rhabdomyolysis, and renal failure, pulmonary edema, DIC, etc. This condition shares many of the same signs and symptoms of other pathological disorders. It becomes more important to be diligent with assessment skills and understand the pathology to comprehend how this might happen and cause a lethal condition. Because it is such a pathologically serious disorder, increased education for patients, their families, and providers is necessary and important to provide safe anesthetic care.

**Implications for Nursing Care**

As mentioned previously, the goal should be to avoid triggering agents in the presence of someone who has a history of MH or has a family member with a history of MH. There are often specific GTs for specific equipment that can be used in these circumstances. However, the RYR1 defect may not be known and a MH crisis may occur in the middle of surgery. MH should be promptly recognized and many things need to happen at the same time.

- All triggering agents should be discontinued, an increase in oxygenation to 100%, FIO2 should be completed, and the patient should be given non-invasive ventilators and anesthesia care as per protocol and/or medication (MMNTM, 2011)

**References**


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