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Malignant Hyperthermia: A Clinical Crisis

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Introduction

Malignant hyperthermia, though uncommon, is a serious and life threatening condition. Malignant hyperthermia is an autosomal dominant disorder that affects skeletal muscle. It can be caused by various general anesthetic agents like succinylcholine and several inhalational anesthetics. Malignant hyperthermia is a relevant topic to certified registered nurse anesthetists due to the potentially fatal result if not recognized and treated promptly. In due to the potentially fatal result if not recognized and treated promptly. It can be caused by various general anesthetic agents like succinylcholine and several inhalational anesthetics. Malignant hyperthermia is a relevant topic to certified registered nurse anesthetists (Nagelhout, 2014).

Pathophysiological Process

Malignant hyperthermia is a rare disorder and can often have devastating effects. It is often a difficult disease to diagnose due to other diseases with similar symptoms and the fact that malignant hyperthermia can happen at different times during the process understanding pathophysiology of this disorder can lead to better outcomes and prevent catastrophic events. With early recognition, diagnosis, and treatment with dantrolene sodium the mortality rate of malignant hyperthermia decreased from 80% in the 1970s to less than 5% by 2007 (Dirksen, 2013).

Significance of Pathophysiology

Malignant hyperthermia is a rare disorder and can often have devastating effects. It is often a difficult disease to diagnose due to other diseases with similar symptoms and the fact that malignant hyperthermia can happen at different times during the process understanding pathophysiology of this disorder can lead to better outcomes and prevent catastrophic events. With early recognition, diagnosis, and treatment with dantrolene sodium the mortality rate of malignant hyperthermia decreased from 80% in the 1970s to less than 5% by 2007 (Dirksen, 2013).

Implications on Nursing Care

The understanding of the pathophysiology and signs and symptoms of malignant hyperthermia directly affects nursing care. It is important to understand what population makes up high risk patients. A practitioner, with a good preoperative history, can ascertain if a person is a high risk. Any person with a family history of anesthetic reaction or malignant hyperthermia should be red flagged and suspected of possibly getting malignant hyperthermia with anesthesia.

Treatment Pathway

Step 1: Surgery if possible and discontinue anesthetic agents

Step 2: Give Dantrolene 2mg/kg (max 4mg/kg)

Step 3: Hyperthermia resolved

Signs and Symptoms

Malignant hyperthermia has a wide range of manifestations in a patient. It can be very acute with sudden and apparent muscle rigidity post anesthetic or the person can occur gradually and not show signs or symptoms until several hours post-procedure. Besides the variety of timing, malignant hyperthermia also varies in the process and the signs and symptoms that manifest with malignant hyperthermia.

Environmental Agent (Anesthetic Agent)

Elevate malignant hyperthermia to immediate care

Myocyte Failure/Death

Correct electrolytes and blood gases

Indicators

Stability Indicators

Temperature > 39°C

Electrolytes

Hyperventilation and give 100% FiO2

Additional Sources


Conclusion

Malignant hyperthermia is a genetically acquired disease that can cause death if not diagnosed and treated early enough. It's detrimental effects depend greatly on the practitioner’s knowledge and understanding of the pathophysiology process and the signs and symptoms that manifest with malignant hyperthermia. Once diagnosis is determined treatment should be given immediately to best prevent or outcomes brought on by malignant hyperthermia.