MALIGNANT HYPERTHERMIA

The anaesthetic hypermetabolic crisis

STOP TRIGGERS
give dantrolene

TRIGGERS: volatile anaesthetics (sevoflurane, isoflurane, desflurane) and SUCCINYLCHOLINE, in a susceptible patient (RYR1). A hypermetabolic crisis - minutes matter.

RECOGNISE

rising $EtCO_2$ is the earliest sign

EARLY

Unexplained RISING $EtCO_2$ · tachycardia · masseter / generalised rigidity · tachypnoea.

METABOLIC

Mixed acidosis, hyperkalaemia, hypoxia; rising temperature is a LATE sign.

LATE / DAMAGE

Hyperthermia, arrhythmia, rhabdomyolysis (↑ CK, myoglobinuria), DIC, arrest.

TREAT IMMEDIATELY

call for help + the MH kit

1	**STOP the trigger**	stop volatile + suxamethonium; 100% O_2 high flow; hyperventilate; use clean circuit / TIVA
2	**DANTROLENE**	2.5 mg/kg IV bolus, repeat every 5 min to > 10 mg/kg until controlled
3	**COOL actively**	cold IV fluids, surface cooling, cavity lavage; stop at 38 °C
4	**TREAT the storm**	hyperkalaemia (calcium, insulin-glucose), acidosis, arrhythmia; fluids for rhabdomyolysis

AFTER: ICU; watch for recrudescence 24-48 h; continue dantrolene as needed; monitor for rhabdomyolysis / DIC. Refer for muscle-biopsy / genetic testing; counsel family. Call the MH hotline.

DISTINGUISH FROM

different triggers and treatments

NMS

Antipsychotics / dopamine withdrawal; lead-pipe rigidity, days onset. Rx: stop drug, dantrolene / bromocriptine, cool.

SEROTONIN SYNDROME

Serotonergic drugs; clonus, hyperreflexia, hours onset. Rx: stop drug, benzodiazepines, cyproheptadine.

THYROID STORM

Thyrotoxicosis; fever, AF, agitation. Rx: beta-blocker, propylthiouracil, iodine, steroid.

DANTROLENE & TEAM: know where the MH kit is; reconstitute dantrolene FAST (many vials of standard, or the newer concentrated formulation); assign a runner; use a cognitive aid; call the MH hotline early.

PEARLS & PITFALLS

- A rising $EtCO_2$ with rigidity under anaesthesia is malignant hyperthermia until proven otherwise.
- Hyperthermia is a LATE sign; do not wait for a temperature spike to start treatment.
- Dantrolene is the only definitive drug - give it early and keep redosing until controlled.
- Distinguish from neuroleptic malignant, serotonin syndrome and thyroid storm (different triggers / drugs).

References: MHAUS guidelines · European MH Group · standard anaesthesia & critical-care references.

Educational aid; verify doses against local protocol and patient factors.