CONSIDERATIONS FOR MITOCHONDRIAL DISEASE PATIENTS UNDERGOING SURGERY

Patients with mitochondrial disease (mito) may have increased risks of anaesthetic complications. If a patient requires general anaesthesia, their mitochondrial disease specialist should be contacted. When possible, surgeries or other procedures requiring anaesthetics should be performed in centres familiar with the management of patients with mito.

Anaesthetics

In general, mito patients should avoid complex 1 inhibitors, these include:

- Halothane (in particular, in a dose-dependent manner)
- Barbiturates (phenobarbitone)
- Ketamine
- Phenytoin

Volatile anaesthetics theoretically interact negatively with mitochondria. Sevoflurane is generally better tolerated than isoflurane or desflurane and shorter acting non-depolarizing muscle relaxants such as rocuronium.

Sedatives

- Propofol has a theoretical inhibitory effect on multiple electron transport chain complexes and fatty acid transport and should be avoided if possible. If it's use is unavoidable, it should be given limitedly as boluses.
- Agents from the benzodiazepine group may be suitable as sedatives

Peri-operative care

In general, mito patients are less predictable in terms of fluctuation in metabolism. In general, the following is recommended:

- Minimised preoperative fasting
- Maintain normal blood glucose, body temperature and acid base-balance
- Avoid use of >5% dextrose containing intravenous fluids
- Avoid use of Lactated Ringer's solution (Hartmann's)
- Patients should be monitored for longer than patients without mito

References

Parikh, S. et al (2009) A Modern Approach to the treatment of Mitochondrial Disease. Current Treatment Options Neurology. 11(6); 414-430.

Sirrs, S. et al (2010) Anaesthetic Considerations in Mitochondrial Diseases. United Mitochondrial Disease Foundation, viewed 24 February 2017, <http://umdf.kintera.org/atf/cf/%7B858ACD34-ECC3-472A-8794-39B92E103561%7D/Dr.%20Sirrs.pdf>

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Hope for mitochondrial disease