Recommendations For Persons With Myalgic Encephalomyelitis/Chronic Fatigue Syndrome (ME/CFS) Who Are Anticipating Surgery or Anesthesia

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BACKGROUND ON ME/CFS

ME/CFS is a disorder characterized by significant impairment in function accompanied by severe debilitating fatigue, post-exertional malaise, unrefreshing sleep, orthostatic intolerance, recurrent flu-like symptoms, muscle pain, and neurocognitive dysfunction such as difficulties with memory, concentration, comprehension, recall, calculation and expression. All of these symptoms are aggravated for hours, days, or longer following even minimal physical or mental exertion or emotional stress. Relapses may occur spontaneously. ME/CFS patients can also experience light, sound, chemical, and food sensitivities, which can trigger a worsening of their symptoms. Although mild immunological abnormalities (T-cell activation, low natural killer cell function, dysglobulinemias, and autoantibodies) are common in ME/CFS, subjects are not immunocompromised and are no more susceptible to opportunistic infections than the general population. The disorder is not thought to be infectious, but it is not recommended that the blood or harvested tissues of patients be used in others.

GENERAL CONSIDERATIONS FOR SURGERY OR ANESTHESIA IN PEOPLE WITH ME/CFS

Intracellular magnesium and potassium depletion has been reported in ME/CFS. For this reason, serum magnesium and potassium levels should be checked pre-operatively and these minerals replenished if borderline or low. Intracellular magnesium or potassium depletion could potentially lead to cardiac arrhythmias under anesthesia.

Up to 97% of persons with ME/CFS demonstrate vasovagal syncope (neurally mediated hypotension) on tilt table testing, and a majority of these can be shown to have low plasma volumes, low RBC mass, and venous pooling. Syncope may be precipitated by catecholamines (epinephrine), sympathomimetics (isoproterenol), and vasodilators (nitric oxide, nitroglycerin, α-blockers, and hypotensive agents). Care should be taken to hydrate patients prior to and after surgery and to avoid drugs that stimulate neurogenic syncope or lower blood pressure.

Allergic reactions are seen more commonly in persons with ME/CFS than the general population. For this reason, histamine-releasing anesthetic agents (such as pentothal) and muscle relaxants (curare, Tracrium, and Mivacurium) are best avoided if possible. Propofol, midazolam, and fentanyl are generally well-tolerated. Most ME/CFS patients are also extremely sensitive to sedative medications — including benzodiazepines, antihistamines, and psychotropics — which should be used sparingly and in small doses until the patient's response can be assessed.

Herbs and complementary and alternative therapies are frequently used by persons with ME/CFS. Patients should inform the anesthesiologist of any and all such therapies, and they are advised to withhold such treatments for at least a week prior to surgery, if possible. Of most concern are garlic, gingko, and ginseng (which increase bleeding by inhibiting platelet aggregation); ephedra or ma huang (may cause hemodynamic instability, hypertension,

tachycardia, or arrhythmia); kava and valerian (increase sedation); St. John's Wort (multiple pharmacological interactions due to induction of Cytochrome P450 enzymes); and Echinacea (allergic reactions and possible immunosuppression with long term use). The American Society of Anesthesiologists recommends that all herbal medications be discontinued 2-3 weeks before an elective procedure. Stopping kava may trigger withdrawal, so this herbal (also known as awa, kawa, and intoxicating pepper) should be tapered over 2-3 days.

Finally, Hypothalamic-Pituitary-Gonadal Axis Suppression is almost universally present in persons with ME/CFS, but rarely suppresses cortisol production enough to be problematic. Seriously ill patients might be screened, however, with a 24 hour urine free cortisol level (spot or random specimens are usually normal) or Cortrosyn stimulation test, and provided cortisol supplementation if warranted. Those patients who are being supplemented with cortisol should have their doses doubled or tripled before and after surgery.

If the patient is staying overnight in the hospital following surgery, let staff know about the patient's sleep issues or sensitivities to light, sound, chemicals, food, or temperature so that nighttime disruption and exposure to sensory triggers can minimized where possible. Finally, consider providing intravenous saline to minimize the effects of low blood volume and venous pooling.

People with ME/CFS often have comorbidities such as fibromyalgia, postural orthostatic tachycardia syndrome, mast cell activation syndrome, and joint hyperextensibility. If the patient has one or more of these comorbidities, surgery and anesthesia guidelines for those conditions should also be considered.

Relapses are not uncommon following major operative procedures, and healing is said to be slow but there is no data to support this contention.

For recommendations tailored to children and adolescents, see the 2017 pediatric primer by Rowe et al.

SUMMARY RECOMMENDATIONS

- Insure that serum magnesium and potassium levels are adequate
- Hydrate the patient prior to and after surgery
- Use catecholamines, sympathomimetics, vasodilators, and hypotensive agents with caution
- Avoid histamine-releasing anesthetic and muscle-relaxing agents if possible
  Use sedating drugs sparingly
- Ask about herbs and supplements, and advise patients to taper off such therapies at least one week before surgery
- Consider cortisol supplementation in patients who are chronically on steroid medications or who are seriously ill.

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