ECMO-BILIZING AND ECMO-TIVATING: REHABILITATION OF ECMO PATIENTS

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Also Known As:

- Rehabilitation of a severely debilitated, encephalopathic patient with critical illness myopathy.

Rehabilitation Initial Assessment

- What are the barriers to patient leaving the hospital?
  - nutrition, nursing needs, respiratory stability, IV medications/drips, cognition, bowel/bladder,
- What are the barriers to patient getting home?
  - Mobility, self cares, cognition, medical/nursing cares (PEG, wounds, IV meds)
- Considering physical ability, medical needs, social support system and home environment what is the right next level of care?
  - If MEDICAL/NURSING needs outweigh REHAB needs then acute inpatient rehab is NOT a good option

Encephalopathy

- Anoxic related to hypoperfusion of the brain related to cardiogenic factors or other causes of shock
- Metabolic related to metabolic derangements of critical illness
- Toxic related to medications administered in ICU setting

Encephalopathy- Low Stimulation

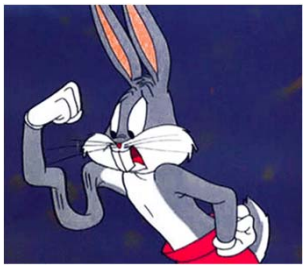
- Limit visitors to no more than two at a time for 15-20 minutes.
- Keep your conversations brief and clear. Give just one piece of information at a time. Talk soft and give patient time to respond.
- Leave the room to have any conversation that is not directed at the patient.
- Keep the television, music and computer off unless patient is known to enjoy it. Limit screen and music time to no more than 20 minutes.
- Do not over clutter the room even with family photos etc
- Maximize natural light

Encephalopathy: Pharmacology

- Sleep agents: avoid benzos, minimize antipsychotics. Consider tylenol, trazodone, remeron
- Concentration/memory: aracept (also mild assist in agitation)
  - This is somwhat extrapolated from the traumatic brain injury data
- Calming: avoid benzos, consider depakote, trazodone, gabapentin (especially if pain is a component), tylenol, atypical antipsychotic (zyprexa less sedating, seroquel sedating…both PQ prolongig)
- Arousal: ritalin, provigil, amantadine (stimulating)

Critical Illness Myopathy (NOT Neuropathy)

- Skeletal Muscle disease
- Breathing and swallow only indirectly involved due to the weakness of supporting skeletal muscles (accessory muscles of respiration and head control)
- Risk factors include NMJ blockade, steroids, severity and duration of illness, but there seems to be a very strong hereditary/individual component
- Trunk and proximal weakness, can be asymmetric



Critical Illness Myopathy evaluation

- EMG is described in all studies and case reports, this is primarily because there are no clinical diagnostic criteria for the diagnosis and people are struggling to prove a diagnosis
- I do not recommend EMG in the ICU setting or until patient is alert, interactive and participatory
  - EMG testing is severely limited in ICU setting and with non-participatory patient
- I only recommend EMG testing when another neuromuscular diagnosis is clinically suspected
- Critical illness neuropathy is described but I have never seen it and it was likely misdiagnosed in most cases in early studies due to severe limitations of EMG testing in critically ill/ICU setting.
- If you are unsure, call me, I'm always happy to evaluate someone clinically

Critical Illness Myopathy: Management

- Myopathy can be more immediately functionally impairing than neuropathy because the trunk, neck and hips and shoulder muscles that are most important for movement are involved
- MOVE MOVE MOVE MOVE
- Treat underlying critical illness
  - We really don't/can't make progress in strength and function until patients are medically stabilizing.
- Minimize myotoxic medications (steroids, +/- statin)
- Minimize sedatives to allow patient a chance to wake up and rehabilitate

Debility

- Immobilization decreases strength up to 20-30% in a week
- Quads most effected
- 5-10% of muscle mass lost per week
- Plateau is reached in most cases around 25-40% of original strength (60-75% lost)

Debility

- Can be severe and doesn't reverse itself or normalize spontaneously over time
- 5 years after critical illness with ARDS in otherwise healthy adults (mean 44 years old) they had not returned to normal for age/weight peers on 6 minute walk test or on a validated survey of physical activity (36-Item Short Form Health Survey, SF-36) despite lung function returning to normal or near normal.
  - Unclear if they have not been optimally rehabilitated or if they can not be fully rehabilitated.
- After 10 days of bed rest in healthy adults there is significant reduction in voluntary activity and increase in percent of time spent inactive.
- Measurable loss of muscle mass, muscle force/strength after 1 week of bed rest
- Contributes to "frailty" in already high risk population
- This is a consideration in counseling patients regarding realistic outcomes from massive cardiac events

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