

Anesthesia considerations for patients with Post Polio Syndrome

I would advise all PPSers to keep this with your medical records and even make a few copies so it will be available if you need it in an emergency.

General

Functional capacity diminished due to fatigue and/or muscle weakness 15 to 40 years after initial infection, and after stabilization of symptoms for many years – “unstable polio.”

Theories – most practical is that giant motor neuron dysfunction – Collateralization of muscle fibers during recovery from motor neuron loss produced giant motor neuron units, which with time, aging, overuse or decreased remodeling have broken down. Exertion brings on fatigue and weakness. Wide range of functionality and most at risk are original muscles. Compensated deficits will decompensate with anesthesia.

Symptoms and involvement to be discovered in thorough pre-operative evaluation: these include chronic pain, fatigue, progression of weakness, dysphagia, respiratory insufficiency, urinary retention, GI motility changes, emotional reaction to change in functional capacity and recrudescence of polio.

Anesthesia consideration highlight include the following:

Pain

Type I polio muscular pain, nerve entrapment, muscular-myofascial fatigue pain; joint pain from unstable joints, previous procedures; arthritic changes.

Patients generally avoid narcotics: a. fear of addiction, b. fear of pulmonary compromise, and c. avoidance of functional compromise.

Hyper-aesthesia otherwise not the norm

Chronic pain medication otherwise utilized

Aspiration Risk

Patients who have had bulbar symptoms likely have dysphagia, esophageal dysmotility, pharyngeal pooling, delayed swallowing, LES dysfunction and should be considered to be a risk for aspiration.

Pulmonary

History of iron lung during childhood places patients at increased risk for post-operative ventilation or requirement for post-op vent support.

Physiatry evaluation for value pre-op. Pulmonary function tests. Three rules of 50% quite germane in this population.

CAH chronic alveolar hypoventilation due to restrictive disease, assessed by VC, MIF, ABG's; pre-op and post-op; incentive spirometry support

CPAP/BiPAP if required during day or night, might require titration of support and O₂ immediately post op. Patient's own masks most comfortable and will require recovery room coordination with respiratory therapy and nursing.

IPPV – Intermittent positive pressure ventilation - requires pre-operative training. Might use chronically. If postoperative ventilation expected, this is the optimal weaning modality, preferable to endotracheal ventilation with CPAP wean. Mucous plugging decompensatory in severe cases. Effective cough maintenance. Ventilatory fatigue may appear precipitously and post-operative monitoring crucial.

Neuromuscular

Few studies to support exquisite sensitivity to no-depolarizing NMB. However, no residual blockade by double burst and full reversal.

Avoid enrophanium for short half-life.

Muscle relaxant effect of anesthesia gas to be minimized by ventilating off prior to extubation.

Cold susceptibility – patient is often with baseline vasomotor dysfunction.

Neuromuscular dysfunction amplified with temperature drops as little as .5 degrees centigrade.

Neuroendocrine

Theoretical hypoadrenal state link to fatigue. May consider pre-operative cortisol dose. Blood pressure support medications helps many patients with fatigue.

Regional

No specific contraindication to regional blocking:

- High spinal in those with respiratory muscle weakness

- Avoid neurotoxicity of 5% lidocaine

- Avoid spinals with epinephrine wash

- Patient comfort paramount (sensitization to lumbar puncture, sensation of paralysis)

Renal

Urinary dysfunction/retention exacerbated by anticholinergics, gas, opioids

Cardiovascular

Older patient population with the usual considerations

In addition

- exercise programs conditioning pre-op as delineated by physiatry would stabilize hemodynamics, lower resting HR

- muscle conservation of non-stress exercise with avoidance of overuse may mask coronary artery insufficiency. Stress testing pre-operatively for moderate and high risk procedures recommended.

Geriatric considerations are standard for this population