

Summary of Anesthesia Issue for Post-Polio Patients - Updated 13th June 2000*

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Polio results in wide-spread neural changes, not just destruction of the spinal cord anterior horn cells (motor nerves) cells, and these changes get worse as patients age. These anatomic changes affect many aspects of anesthesia care. No study of polio patients having anesthesia has been done. These recommendations are based on extensive review of current literature and clinical experience with these patients.

1. Post-polio patients are nearly always very sensitive to sedative meds, and emergence can be prolonged. This is due to central neuronal changes, especially in the Reticular Activating System, from the original disease.
2. Non-depolarizing muscle relaxants cause a greater degree of block for a longer period of time in post-polio patients. The current recommendation is to start with half the usual dose of whatever you're using, adding more as needed. This is because the polio virus actually lived at the neuromuscular junction during the original disease, and there are extensive anatomic changes there, even in seemingly normal muscles, which makes for greater sensitivity to relaxants. Also, many patients have a significant decrease in total muscle mass. Neuromuscular monitoring intra-op helps prevent overdose of muscle relaxants. Overdose has been a frequent problem.
3. Succinylcholine often causes severe, generalised muscle pain post-op. It's useful if this can be avoided, if possible. There is not experience with Raplon yet.
4. Pain is often a significant issue. The anatomic changes from the original disease can affect pain pathways due to 'spill-over' of the inflammatory response. Spinal cord 'wind-up' of pain signals seems to occur. Proactive, multimodal post-op pain control (local anesthesia at the incision plus PCA, etc.) helps.
5. The autonomic nervous system is often dysfunctional, again due to anatomic changes from the original disease (the inflammation and scarring in the anterior horn 'spills over' to the intermediolateral column, where sympathetic nerves travel). This can cause gastro-esophageal reflux, tachyarrhythmias and, sometimes, difficulty maintaining BP when anesthetics are given.
6. Patients who use ventilators often have worsening of ventilatory function post-op, and some patients who have not needed ventilation pre-op have had to go onto a ventilator (including long-term use) post-op. The marker for real difficulty is thought to be a VC <1.0 litre. Such a patient needs good pulmonary preparation pre-op. Another ventilation risk relates to obstructive sleep apnea in the post-op period. Many post-polios are turning out to have significant sleep apnea due to new weakness in their upper airway muscles as they age.
7. Positioning can be difficult due to body asymmetry. Affected limbs are osteopenic and can be easily fractured during positioning. There seems to be greater risk for peripheral nerve damage (includes brachial plexus) during long cases, probably because nerves are not normal and also because peripheral nerves may be unprotected by the usual muscle mass or tendons.

Please feel free to contact me if you have any questions. This brief summary may not cover everything you want to know.

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