

IMPORTANT NEW PAPER PUBLISHED ON ANESTHESIA AND POLIO

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A scientific paper, "Anesthesia and Poliomyelitis: A Matched Cohort Study" and my accompanying editorial "Why a Paper on Polio and Anesthesia in 2016?" appear in a prominent specialty journal, Anesthesia and Analgesia, in June 2016. This study was done by the departments of anesthesiology, neurology and biostatistics at one of America's most important medical institutions, the Mayo Clinic in Rochester, Minnesota.

Previous articles on polio and anesthesia in the medical literature (the place modern physicians get up-to-date and accurate information about caring for patients) have been reports of a single case of anesthesia in one post-polio patient, and there were no comparisons to patients of the same age with the same other diseases that might affect anesthesia outcome (such as heart disease) and who were having the same operations (difficult operations have increased risks for all patients). Modern medicine demands such comparisons and also demands a careful statistical analysis of study data, for accuracy and validity. Such studies are difficult to do, and no similar study on polio and anesthesia has been attempted previously.

Information on anesthesia in post-polio patients currently circulating in the post-polio community was not developed from such studies and so is not scientifically valid. So, this paper and its editorial, which advocates for more research in this area, are important steps forward, even though the study is not considered perfect because of a low number of polio survivors.

The study reports on one hundred post-polio patients having major surgery at Mayo Clinic from 2005-2009 who were identified in the Mayo Clinic's electronic medical record system. Each post-polio patient was matched with 2 non-polio patients of the same sex and age and with the same severity of preoperative illnesses (such as heart disease), also having the same surgical procedure. All patients' records were then reviewed by the authors, looking at other possible variables and also examining the operative, anesthetic and postoperative courses for complications.

Operation types were general surgery (39%), urology (25%) and vascular (21%). All but one post-polio patients had general anesthesia. No differences were found between post-polio patients and control patients in the following: intraoperative events (both anesthetic and surgical), pain scores (how much pain patients have after surgery), how long patients spent in a recovery room waking up from anesthesia, whether they needed to be admitted to an intensive care unit (ICU) for more specialized care

postoperatively, how long they stayed in an ICU and when the breathing tube used during anesthesia could be removed. Thirty-day mortality was not significantly different between groups.

This study did have statistical issues, identified during the pre-publication review process. Of the 100 post-polio patients, only 36% had residual neurologic damage from polio and only one of these had polio-related respiratory failure. That patient used supplemental oxygen during the day and BiPAP with oxygen at night.

Reviewers of the paper felt that the number of severely affected polio patients was too small to statistically document significance, and some criticized the statistical methods used. The low number of post-polio patients was thought to be because polio patients may have moved away from Minnesota to a warmer climate as they aged.

Although this study can be criticized on these items, its structure (2:1 matched controls) and the measures of medical care studied (common things that can go wrong) give hope to post-polio survivors that, even if they are very ill, they can undergo modern anesthesia and have the same outcomes as non-polio patients.

A word of caution, however: there is a great variability of quality of care in America's hospitals. The Mayo Clinic represents the very best quality, and whether the study can be applied to all hospitals is questionable.

Finally, this study is important as an example of how to get information on how post-polio patients *really* do during anesthesia, compared to similar patients. More such studies are needed, but this one is hopeful.

Post-polio patients can relax a little about coming for anesthesia and surgery but need to be sure they have surgery and anesthesia at a quality hospital. Check the hospital out on your state government's hospital certifying organization's web site and/or the national certifying organization for individual hospitals, the Joint Commission on Certification of Health Care organization, <http://www.jointcommission.org> before agreeing to an operation. And, post-polio patients should avoid having anesthesia in free-standing out-patient surgery centers (ones not physically located in a hospital) and doctors' offices. These are locations with little assurance of the high-quality surgical and anesthesia care post-polio patients deserve and need.