SPECIAL ABSTRACT

New China's Achievements in Anesthesiology

This is an abstract of material translated by the U. S. Joint Publications Research Service, 205 East 42nd Street, Suite 300, New York 17, New York. The original article was written by Shang Te-yen of the Chinese Academy of Medical Sciences and Hsieh Jung of Peiping Medical College, and appeared in Chung-hua Wai-k'o Tsa-chih (*Chinese Journal of Surgery*) *Vol. 7, No. 9, 1959, pp. 848–855*).

The authors state that "During the long periods of oppression and pressure of feudalism, imperialism and the comprador classes of Old China, economical culture was very backward, medicine not excluded. Before 'liberation,' anesthetists or people specializing solely in anesthesia were few in number. The standards of anesthesia technique were very low. Anesthesiology was the weakest link among our other backward medical sciences." They go on to state that "Since 'liberation,' domestic production has been stressed. Special anesthesiology cadres have been trained during the past decade. Special departments or divisions have been established for anesthesiology in various medical colleges and schools as well as in the bigger hospitals."

Endotracheal and Endobronchial Anesthesia

They have introduced the dual purpose (Blocker) tube for endobronchial anesthesia and indicated its use in pulmonary surgery as well as in determinations of lung function. They mention using the Carlens catheter and emphasize the advantage in preventing contamination and hypoxia. They mention that hypothermia is often used in conjunction with endobronchial catheters to prevent anoxia and hypercarbia. They believe also that hypothermia increases the resistance of the organism to blood loss.

Intravenous Procaine and Combined Anesthesia

The authors state that "since 'liberation,' the most frequently used anesthesia in China is intravenous procaine combined with muscle relaxants and small doses of thiopental sodium." In addition, "curariform drugs are utilized to potentiate or are used concurrently with hydroxydione." In the initial use of intravenous procaine, difficulties in management (undefined) led to its decline in popularity. However, in recent years (since 1953) other substances such as *mai-ting* and "succinum extract" have been added to the procaine. In adddition, muscle relaxants have been employed in conjunction with intravenous procaine. This "potentiated procaine" (sometimes used in a 2 per cent solution) is popular and "its use as an anesthetic is second only to ether." The authors report on its use in many thousands of cases. They report "little effect" on respiration and circulation, that the course of anesthesia is smooth, that postoperative recovery is rapid and with few complications. They report some investigations into the effect on liver and kidney and these investigations indicate (without supporting data) less effect than with other agents. They do indicate that little is known about the pathological changes induced by procaine and report that technical management needs to be improved. Nitrous oxide is now being produced and is being used with procaine, thiopental and ether.

For basic anesthesia, thiopental is used intramuscularly or by rectum. They note that thiopental given intramuscularly to infants under one year of age frequently produces respiratory arrest and they suggest caution in dosage in these patients. Muscle relaxants are used frequently to facilitate ventilation during thoracic surgery. They report hypotensive episodes after hypercarbia during thoracic surgery and urge that close attention be paid to respiration.

Hypothermia and Artificial Hibernation

Hypothermia has been used for cardiovascular surgery and in other critically ill patients. In "visual cardiac surgery," the temperatures have been in the range of 28–31 C. Small doses of "blockade mixture" have been used to "shorten the course and lower the organism's resistance to cold." If the heart rate slows and

reaches 30/minute atropine and ephedrine are used but also 1 per cent procaine is injected into the heart. Most of the procedures practiced in this country are employed during hypothermia in China. It is interesting that neostigmine or acetylcholine is injected into the coronary artery after occlusion of the circulation. The authors report that research is being done on deep hypothermia, "artificial hibernation," apparently produced by the use of cold application and drugs (lytic cocktail) and this type of anesthesia is used in surgical procedures for aortic coarctation, aortic tumors, cranial surgery, etc. The authors make special comment on the use of artificial hibernation in patients with severe burns and report good results. It is used also in the treatment of toxic dysentery with a reduction in mortality from 17.4 to 3.8 per cent. In addition, it is used in the treatment of patients with pulmonary tuberculosis and in severe pulmonary infections. The authors report that "results in the use of artificial hibernation in various diseases have revealed the spirit of total cooperation of the propertyless class in New China for the benefit of patients and science."

Regional Anesthesia

The authors report that "Soviet experience in local anesthesia and blockade therapy has been employed. The tension crawl infiltration method of A. B. Vishnevsku, endo-osteal anesthesia, interlocking blockade and horizontal section anesthesia, as well as the various blockade therapies, have all been rapidly developed throughout China." Local anesthesia apparently is used for open chest surgery with success. Spinal anesthesia is being expanded in use. However, the authors report that epidural anesthesia seems to be replacing spinal anesthesia and it is used in infants as well as adults.

Controlled Hypotension Anesthesia

This state is produced by the use of arterial bleeding, total spinal anesthesia, epidural anesthesia and various blocking drugs. A blood pressure of under 70–80 mm. of mercury is achieved. Often mild hypothermia is used in conjunction with hypotension. The authors caution about the need for adequate blood replacement even in controlled hypotension. No remarks are made about the difference in the state of vessels depending upon whether hypotension is produced by bleeding or blocking.

Changes in Electrocardiogram and Sudden Circulatory Standstill under Anesthesia

The authors state that "no research observations had ever been reported in medicine, surgery or anesthesiology before liberation" about electrocardiograms. The observations reported by the authors are in agreement with standard observations and practices in this country. For example, they cite the need for proper oxygenation and removal of carbon dioxide and the need for avoiding high concentrations of agents. The measures reported for resuscitation are those used in this country. There is no indication that closed chest cardiac massage is used.

Conclusion

The authors conclude by stating that "Although some of the techniques are not new or of worldwide significance, they do reflect difficulties in the development of scientific cultures that existed under the 'big three' of old China." They continue by stating that "the backward condition of clinical anesthesiology of the past has generally disappeared."

The authors mention that they must not be complacent, and list several problems to be solved. These include such things as (1) research in the basic sciences, (2) cooperation in research with other disciplines, (3) improvement in equipment, (4) training of "better cadres," (5) exploitation of traditional Chinese medicine, including acupuncture, and (6) "absorb more technical cadres experienced in basic and clinical sciences."

The total report, which includes a section on advancements in surgery, includes 39 bibliographic references.

Stuart C. Cullen, M.D.