Anesthesia for the Emergency Patient

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In singling out the topic of “Anesthesia for the Emergency Patient,” we imply that there are inherent factors associated with emergency surgery which particularize it and differentiate it from elective surgery. That these factors are numerous in no way lessens their individual or collective importance. Cardiac and respiratory adequacy are so completely essential as to make each indispensable to adequate function of the other. (Geographically methods of controlling these systems may vary but basic physiologic rules tell us that failure of the intervening mechanism at any point in these systems spells disaster.) As with other units in the human body, pulmonary and cardiac reserves offer protection for all ordinary demands; but in emergency surgery physiological reserves may be reduced.

Marked reduction in tidal volume is a common finding in patients arriving in operating rooms and emergency rooms. Regardless of the cause, i.e., chronic lung disease, depression of the central nervous system or thoracic trauma, the supply of oxygen from without must be adequate. Diligent guarding of the airway must be practiced by the anesthetist.

The transport of oxygen depends on an adequate hemoglobin, the heart serving as an efficient pump, and peripheral vascular tone being intact to distribute blood to the vital areas. Carbon dioxide elimination is of the utmost importance and adequate means of discharge must be known, available and applied.

Rapport between surgeon and anesthetist is imperative, the loss of life due to lack of cooperativeness and consideration is inexcusable. In emergency surgery, the margin of safety is too narrow to allow for speculative decisions.

Fatigue or a particular attitude among individuals on the team which may stem from interpersonal or extracurricular activities has been known to make the patient the recipient of unjustified treatment. Interdependence on the part of surgeon and anesthetist is always to be found but in emergency surgery this is especially true. Between them they can make the task relatively easy, or impossible.

Diagnostic thoroughness is sometimes an impossible accomplishment in emergency surgery, but certain immediate preparations and precautions can and should be observed. The anesthetist’s own interview with the patient and assay of vital signs should not be underestimated if consciousness is present.

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There is always time, while preparing the patient, to ask a few pertinent questions that will have a bearing on the individual's requirement. To use the most simple terminology at this time is important. To ask the patient if he is on digitalis may not elicit the same response as inquiring about "heart pills." Medications in the ataractic group (specifically drugs that are derivatives of phenothiazine and rauwolfia) may be referred to as "nerve pills." Diuretics, leading to great loss of potassium which in turn may precipitate a cardiac arrhythmia, are sometimes called "water pills." Steroid therapy may be suspected in the arthritic patient. Disaster may be avoided, however, by asking the helpful question, "Are you taking any medication at this time and for what reason?"

A patient with an empty stomach before anesthesia is the desire of all anesthetists but often the desire is not a fact. To allow sufficient time to elapse after ingestion of a recent meal and before induction of anesthesia is a precaution making the anesthetist's task infinitely less difficult. When possible a lapse of time should be allowed, in order to minimize the dangers of vomiting and aspirating, but when the surgeon's task must be accomplished without delay, techniques must be used to circumvent aspiration.

Patients come to emergency surgery after prolonged, debilitating, exhausting illness with bodies depleted of vitality, intoxicated by their disease, and usually with a disturbance which by its very nature imposes mechanical as well as physiologic hazards for surgery. Such are patients with asthma, tuberculosis and emphysema; or patients in the advancing years with reduction in cardiac reserve, arteriosclerosis and limitation of vasomotor response. Here then are some of the problems faced by surgeon and anesthetist in choosing proper management for a successful procedure.

Contemplation of the great strain to be thrust on the patient's physiological reserve by anesthesia and surgery should mobilize every effort to bring the patient to as normal a state as his disease will permit. If cardiac pathology exists, it must be corrected if possible.

Minimal requirements of laboratory work for hospital admission are prescribed by the Joint Committee on Hospital Accreditation. These are hemoglobin, hematocrit, white blood count and urinalysis. In an acute emergency, assumptions often must be allowed. If a complete battery of electrolyte studies can be made as basic laboratory studies, they should be a part of the work-up and appreciated by the anesthetist. The knowledge that electrolyte alterations and acid base balance disturbances may play a role in cardiovascular collapse cannot be emphasized too strongly. Particular attention should be focused on sodium, potassium and calcium determinations and their relationships to the chloride and carbon dioxide combining power determinations. Acidosis, whether metabolic or respiratory, can be lethal and should be avoided.

Pre-anesthetic medication in proportion to the patient's age and weight very often must be discarded because of the condition of the patient. It should be used to suit the patient's requirement, i.e.: 1. The unconscious patient obviously does not need a drug to allay apprehension;
2. If shock is an existing factor, then intravenous medication, given slowly, will benefit the course of anesthesia and the patient's needs in a fashion superior to subcutaneous depot injection.

Although the tasks of an anesthetist are many, all others are overshadowed by the constant necessity for maintaining a clear airway. Whatever the method may be—Guard Against Hypoxia! One method is the use of the intratracheal tube; overwhelming authority supports endotracheal intubation. To have control of respirations, to decrease dead space and to provide a route for tracheal aspiration makes it imperative that every anesthetist be skilled in intratracheal intubation. Controversy does exist concerning the manner of anesthetizing the patient prior to placing the intratracheal tube. One method used at our clinic since 1953 for a universally good topical anesthesia has been transtracheal block. Indications for transtracheal block:
1. To facilitate intratracheal intubation without central nervous system depression or further depression of muscles of respiration.
2. For endoscopic examination or intubation of the conscious patient.
3. To alleviate coughing or spasm precipitated by rapid administration of irritating agents.
4. To allow suctioning without associated bucking and coughing.

Technique

**Drug:** 5% Cyclaine, because of low toxicity.
1. Onset of anesthesia — two minutes.
2. Duration: approximately — thirty minutes.
3. It has been reported that Cyclaine has some bronchodilating effects.

**Equipment:**
A 5 cc. syringe is necessary to contain the drug and allow for a test aspira-
tion of air from the trachea. A one-inch #21 needle (some authorities advocate a larger bore needle but we feel this size gives better spraying effect).

Procedure:
1. If patient is to have the block awake he is indoctrinated to the procedure. He is asked not to cough or swallow while the needle is in place, although this may be difficult for him.
2. With the patient in supine position the head is placed in maximum extension. A folded sheet is placed under his shoulders.
3. By palpation the thyroid cartilage is identified. Locate cricothyroid membrane.
4. Advance needle perpendicular to skin through membrane into trachea.
5. Draw back plunger to withdraw air before injection is made.
6. Inject drug (3 cc.) rapidly into trachea and withdraw needle.
7. Allow patient to cough to spread drug.
8. If the patient is to be asleep before transtracheal block the same procedure is exercised.

The patient undergoing emergency surgery frequently has a full stomach. Vomiting or regurgitation may occur on induction or emergence but are not unheard of during maintenance. Assured topical anesthesia, with a smooth induction and correct placement of the intratracheal tube, allows the surgeon to continue his task with minimal fear of induction or intraoperative complications.

Most anesthetists are so accustomed to certain techniques and agents that they have become specialized in their use; they may be secure in this position or perhaps they can modify their armamentarium. The reasons for the advantage of one anesthetic over another may vary from clinic to clinic and anesthetist to anesthetist, but it is the anesthetist's duty to remember that all agents may depress myocardium and circulation as well as respiration. The weakest anesthetic agents should be used to

(Continued on page 64)
Costello

(Continued from page 34)

preserve the "poor risk" patient's cardiac and respiratory reserves. To offset respiratory fatigue the anesthetist must augment the patient's own efforts. A change in pulse rate and volume, slight changes in rhythm, small changes in blood pressure, early variations in the patient's color — these may be signs of early partial airway obstruction; checking and clearance of the airway should be carried out.

Records of blood pressure and pulse should be followed closely so that the anesthetist may control blood replacement; on the one hand counteracting any trend toward shock; but, on the other hand guarding against overload of the cardio-respiratory capacity.

Finally, the anesthetist should keep the surgeon informed of the patient's condition. Should surgical manipulation disturb the patient's equilibrium appreciably, the anesthetist may be obliged to ask the surgeon to stop until vital signs can be evaluated. Nothing can be more disturbing to the surgeon than, suddenly, to become aware that the patient's blood is dark or that the heartbeat is weak or irregular. The anesthetist is the observer of all vital signs and the protector of them. Success or failure of the procedure may be dependent on her observations.

REFERENCE:

BASIC SCIENCES IN ANESTHESIOLOGY

by ARTHUR B. TARROW, M.D.

This study guide is an excellent refresher manual and reference for student nurse anesthetists as Col. Tarrow was for several years director of a school teaching nurse anesthetists. It incorporates more than 2,000 pertinent questions, answers and references patterned from anesthesia examinations. Each reference is annotated by page number from late editions for rapid referencing!

The widespread acceptance by physicians, dentists, nurses, teachers and students in 50 states and 24 foreign countries is this manual's high recommendation as "must" reading for all.

BASIC SCIENCES IN ANESTHESIOLOGY is priced at $10.00 a copy. A 10% discount is allowed on orders of five or more. Please mail your order to LYDETTE PUBLISHING COMPANY, P.O. Box 5222, Beacon Hill Station, SAN ANTONIO, TEXAS. We will prepay postage on orders accompanied by check.