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INTRA AND POST OPERATIVE COMPLICATIONS IN ANAESTHESIA AND THEIR MANAGEMENT

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ABSTRACT

Anesthesia is Greek for "without sensation". It is a state of controlled, temporary loss of sensation or awareness that is induced for medical purposes. It may include some or all of analgesia, paralysis, loss of memory, and unconsciousness. A patient under the effects of anesthetic drugs is referred to as being anesthetized. Or we can say that anesthesia is a reversible state of unconsciousness produced by drugs, with sufficient depression of the reflexes to allow an operation to be performed. It can be seen from the above statement that two conditions are necessary before the state of surgical anesthesia can be achieved. Firstly there should be unconsciousness, which after all, is all that the patient is interested in! Secondly, some depression of muscular reflex activity, which the surgeon needs to enable delicate work. If an anesthetic agent is administered in sufficient quantity for long periods, overdose levels are reached which can lead to death. From the time that the first noticeable effect is produced until fatal overdose occurs, the progressive reflex depression of the central nervous system may be divided into four stages.

KEYWORDS: sensation, uncounseness, memoryloss, paralysis, muscle relaxant, and reflex activity.

INTRODUCTION

GENERAL ANESTHESIA

General anesthesia is a medically induced coma with loss of protective reflexes, resulting from the administration of one or more general anesthetic agents. It is carried out to allow

medical procedures that would otherwise be intolerably painful for the patient; or where the nature of the procedure itself precludes the patient being awake.

A variety of drugs may be administered, with the overall aim of ensuring unconsciousness, amnesia, and analgesia loss of reflexes of the autonomic nervous system, and in some cases paralysis of skeletal muscles. The optimal combination of drugs for any given patient and procedure is typically selected by an anesthetist, or another provider such as an operating department practitioner, anesthetist practitioner, physician assistant or nurse anesthetist (depending on local practice), in consultation with the patient and the surgeon, dentist, or other practitioner performing the operative procedure.

During childbirth, some women in labor are administered an analgesic agent (pain relief) and remain conscious and co-operative. Accident victims also need to have some degree of pain relief to lessen the effects of shock. Specifically designed equipment delivers analgesic gas, usually in the proportion 50- 50 nitrous oxide and oxygen (entonox). Without reflex depression or delirium) This is too deep for a woman in labor, as she is required to remain conscious. It is not deep enough for a surgeon as it cannot provide the conditions he requires. This stage is therefore passed through or bypassed altogether.

With reflex depression or surgical anesthesia) This provides at its lightest level, sufficient reflex depression to prevent movement of a limb or muscle if the skin is cut.

More anesthetic agent, and hence more anesthesia, must be used to depress the more sensitive reflexes, such as those from handling the parietal peritoneum (the abdominal cavity), where inadequate.

Anesthesia would cause a reflex tightening of the abdominal muscles and prevent the surgeon reaching his objective.

Respiration becomes progressively paralyzed in the deeper planes of stage three, and when it finally ceases, stage four has been reached. Sometimes the anesthetist has to take the patients near to the brink of this stage in order to meet the surgeon's requirements.

METHODOLOGY

There are two types of anesthesia agents which are used for the general anesthesia are I/v induction agents these are those which are used to sedate or to anesthesia the patient the i/v

induction agents used to anesthesia the patient are Propofol, ketamine, and etomidate are the agents among them the commonly used iv agent ispropofol another are inhalational agents these agents are inhaled by patient to anesthesia these inhalational agents are Halothane, Isoflurane, Sevoflurane, Desflurane, etc among them the most commonly used is desflurane the sevoflurane and then isoflurane Another most commonly less anesthetic gas is nitrous oxide which gets mixed with inhalation agents to produce effect N20 gas can be compressed into liquid form Non explosive, non inflammable Low toxicity, weak anesthetic agent. It was used as the sole anesthetic agent for dental or outpatient procedures. It can be used to maintain anesthesia during major surgery in combination with other anesthetic agents; but it is not used on its own to produce a deep level of anesthesia. Usually administered to the patient in proportion of two-thirds nitrous oxide to one-third oxygen. Also there are some non anesthetic gaseous agents these plays an important role in anesthesia these are.

Oxygen

Present in the air at a concentration of approximately 21 percent. It cannot be ignited, but its presence will aid combustion. Explosive whilst under pressure and brought into contact with oil or grease. Should not be at administered to patients in concentrations above 40percent.

Carbon dioxide

It will stimulate respiration making it deeper, but not increasing the rate. Sometimes used when spontaneous respiration does not occur after an operation.

It can also be used, in low proportions to the total gas mixture being administered, as an aid to the smooth induction of anesthetic agents. (I.e. Used with nitrous oxide and oxygen for a short period before using the anesthetic agent, reduces the patients resistance to breathing in it.

ASPIRATION

Anesthetists should have a low index of suspicion and recognize aspiration should it occur. The trachea should be suctioned once the airway is secure, ideally before positive pressure ventilation to prevent the distal displacement of aspirated material. Aspiration can also occur while a person is having surgery under anesthesia. The stomach contents can travel up to the mouth, then down through the windpipe and into the lungs. Anesthesia reduces a person's level of consciousness and ability to protect their airways, which increases the risk of aspiration.

During intubation Foreign body aspiration can occur if loose items are unintentionally introduced into the airway during intubation, ventilation or advanced airway management. This can lead to partial or complete airway blockage or obstruction, and if the cause is not suspected, can be fatal. While anesthesia is generally safe, respiratory complications such as anesthesia- related aspiration can be fatal. Occurring as often as 1 in every 2–3,000 operations requiring anesthesia, almost half of all patients who aspirate during surgery develop a related lung-injury, such as pneumonitis or aspiration pneumonia.

SHOCK

Shock is a Pathophysiologic state triggered by failure to adequately deliver oxygen to the cellular level and perpetuated by the cellular response to ischemia. Shock can be caused by a wide variety of conditions and, once initiated, can become a rapidly fatal downward spiral The classic causes of shock-- hypovolemia, cardiac failure, and sepsis--occur commonly in the operating room. Additionally, concurrent surgery and anesthesia may contribute to produce clinical shock. Surgery may produce hypovolemia from "third space" loss and/or from blood loss. shock during general anesthesia are the cause or the causes of the condition and the effect of the anesthetic in either preventing or accentuating it. Owing to the general use of ether and the ease with which definite tensions may be administered it was the only anesthetic used in my experiments, and all the conclusions are based on this anesthetic. The shocks which are causing due general anesthetics during surgeryare.

CARDIOGENIC SHOCK; Cardiogenic shock is a life-threatening condition in which your heart suddenly can't pump enough blood to meet your body's needs. The condition is most often caused by a severe heart attack, but not everyone who has a heart attack has Cardiogenic shock. Cardiogenic shock is rare. Various causes can be attributed to Cardiogenic shock during the anesthetic procedures. In this case, the abrupt hemodynamic deterioration in the absence of clear causative factor could be related to the use of propofol and fentanyl

HYPOVOLEMIC SHOCK: Hypovolemic shock is a life-threatening condition that results when you lose more than 20 percent (one-fifth) of your body's blood or fluid supply. This severe fluid loss makes it impossible for the heart to pump a sufficient amount of blood to your body. Hypovolemic shock can lead to organ failure. Surgery may produce hypovolemia from "third space" loss and/or from blood loss. Some anesthetic drugs, by inhibiting the

autonomic nervous system, impair the body's ability to compensate for hypovolemia, cardiac failure, or sepsis.

HYPOTENSION

Hypotension is low blood pressure. Your blood pushes against your arteries with each heartbeat. And the pushing of the blood against the artery walls is called blood pressure. Having a lower blood pressure is good in most cases (less than 120/80). But low blood pressure can sometimes make you feel tired or dizzy. Hypotension is frequent between the induction of anesthesia and the beginning of surgery. In their study, Reich et al showed that hypotension was more frequent during the 5–10 minute postinduction period compared with the 0–5 minute period. ACEIs or ARAs may increase the incidence of refractory hypotension during general anesthesia, limiting the response to ephedrine or phenylephrine. Anesthetic drugs, which are used to put you to sleep during surgery, can affect your blood pressure. Changes can happen while you're being put to sleep and then when you're coming off of the drugs. In some people, anesthesia causes a significant drop in blood pressure. Blood pressure (BP) reduction is a common pharmacodynamic feature of propofol,sevoflurane and other drugs used in general anaesthesia.

Propofol is likely to induce hypotension by inhibiting the sympathetic nervous system and by impairing baroreflex regulatory mechanisms and it may cause hypotension during surgery.

HYPERTENSION

Hypertension is another name for high blood pressure. It can lead to severe health complications and increase the risk of heart disease, stroke, and sometimes death. Blood pressure is the force that a person's blood exerts against the walls of their blood vessels. During induction of anesthesia, patients with hypertension may have problems with increases in heart rate and blood pressure caused by anesthesia from mechanical stimulation of the pharyngolarynx, and they are also at higher risk for hypotension than normotensive patients because of interaction between induction agents. From activation of your sympathetic nervous system during the start of anesthesia—a normal phenomenon. 3 In addition to patients blood pressure rising during the start of anesthesia, your heart rate will also likely rise. Abrupt discontinuation of β-blockers is associated with significant rebound hypertension and tachycardia, which can lead to myocardial ischemia or infarction. Small amount of propofol itself induced vasoconstriction and we concluded that a low dose of propofol to avoid hypotension during induction could cause hypertension withtachycardia.

HYPOTHERMIA

Hypothermia is a medical emergency that occurs when your body loses heat faster than it can produce heat, causing a dangerously low body temperature. Normal body temperature is around 98.6 F (37C). Hypothermia occurs as your body temperature falls below 95 F (35 C). Mild hypothermia is extremely common during anesthesia and surgery. The basic process occurs as core body heat redistributes to the skin surface through anesthetic-induced vasodilatation and depression of hypothalamic thermoregulatory centers. Heat loss occurs mostly through skin via radiation and convection. During anesthesia and surgery, hypothermia occurs mainly because of a combination of anesthesia-induced impairment of thermoregulatory control, a cool operating room environment, and surgical factors that promote excessive heat loss.

ALLERGY

An allergy is an immune system response to a foreign substance that's not typically harmful to body. These foreign substances are called allergens. They can include certain foods, pollen, or pet dander. Immune system's job is to keep body healthy by fighting harmful pathogens. Symptoms include rash or hives (urticaria), swelling of the skin or mucosal surfaces (angioedema), inflammation of the airways (Bronchospasm and laryngeal edema) and decreased blood pressure, which can lead to cardiovascular collapse. Allergic reactions to anesthetic agents are often caused by neuromuscular blocking agents (NMBAs). These are medications that prevent your muscles from moving. But people can also have allergic reactions to other medications used duringsurgery.

GENERAL POST OPERATIVE COMPLICATIONS

The immediate post operative complications are

- Primary hemorrhage (starting during surgery) or reactionary hemorrhage (following postoperative increase in blood pressure) - replace blood loss and may require return to theatre to re-explore the wound.

Basal atelectasis: minor lungcollapse.

Shock: blood loss, acute myocardial infarction, pulmonary embolism orsepticaemia.

Low urine output: inadequate fluid replacement intra-operatively andpostoperatively.

Acute confusion: exclude dehydration and sepsis. May also be due to other various causes, including pain, sleep disturbance, medication or metabolic disturbances.

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Pain.

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Nausea and vomiting: analgesia or anesthetic-related; paralyticileus.

CONCLUSION

Regional anesthesia is the use of local anesthetics to block sensations of pain from a large area of the body, such as an arm or leg or the abdomen. Regional anesthesia allows a procedure to be done on a region of the body without your being unconscious.

Major types of regional anesthesia include.

•Peripheral nerve blocks. A local anesthetic is injected near a specific nerve or bundle of nerves to block sensations of pain from the area of the body supplied by the nerve. Nerve blocks are most commonly used for surgery on the arms and hands, the legs and feet, the groin, or theface.

•Epidural and spinal anesthesia. A local anesthetic is injected near the spinal cord and major nerves that enter the spinal cord to block sensations of pain from an entire region of the body, such as the lower abdomen, the hips, or thelegs.

The intra operative complications of regional anesthesia are as fallows.

HYPOTENSION

Hypotension is common during spinal anesthesia (SA) and is caused by a decrease in systemic vascular resistance (SVR) and/or cardiac output (CO). The effect of the dose of bupivacaine administered intrathecally on the changes in CO in elderly patients is largely unknown.

Hemodynamic perturbations are common under anesthesia. bradycardia IS commonly observed during the administration of regional anesthesia and various mechanisms have been postulated for these hemodynamic changes. In addition, surgical manipulation of different neural structures also causes similar changes. Conclusions: Two forms of bradycardia during regional anesthesia were registered, one caused by vagal mechanisms and the other by the sympathetic denervation of the heart. The time when bradycardia occurred could not be predicted, but treatment with atropine was successful in all cases.

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