ANESTHESIA MYTHS FACTS AND FALLACIES
I DON’T HAVE ANY I JUST DO THE SAME WAY EVERY TIME

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PRESENTATION OUTLINE
• Discuss Myths and Examine Rebuttals
• Update Facts on Common Anesthesia Practices
• Expose Fallacies, Lies, and Damn Lies

ANESTHESIA DOGMA
• Definition of Dogma
  • Something held as an established opinion doctrine or code of beliefs
  • Could it be possible that such an exact science is based on myths
  • Is an anesthesia fact really an anesthesia fact; what is evidence based practice
  • Lies just lies
  • Why do we cling to Dogma
MYTHS FACTS AND FALLACIES

• All Patients are 36 degrees Fahrenheit
  • Even moderate hypothermia can cause vasoconstrictive changes
  • Slowing healing, decrease wound oxygen delivery
  • Increase risk of surgical wound infection
  • Impair immune function
  • Delayed recovery/multiple readmissions and reoperations
• Change coagulation mechanisms
  • Decrease platelet activity
  • Reduce metabolic rate
  • Prolong the effect of certain anesthetic drugs

MYTHS FACTS AND FALLACIES

• Intraoperative Hypothermia
  • One of the most common inadvertent complications
  • Least recognized among the other task during operative period
  • Maintain euvolemic status and hemodynamics
  • Bed controller
  • Contributes to increase blood loss, MI, increase post operative recovery, patient discomfort
  • Prolonged Shivering
  • Increase oxygen consumption, increase intracranial pressure, increase intraocular pressure, increase wound pain and damage to surgical site
  • Ventilation management altered
  • Hypocarbia and Alkalotic on ABG

MYTHS FACTS AND FALLACIES

• Hypothermoregulation
  • Hypothermia defined as core body temperature less than 36 degrees F
  • A mild degree of hypothermia is associated with significant mortality and morbidity
  • Maintaining thermoregulation
  • Warming blankets
  • Fluid warmers
  • Pharmacological tools
WARMING DEVICES

- Bair Hugger
  - Cause for post operative infections
- Hot Dog
  - Newer warming tool
- Blanket Toxicity

FLUID WARMERS

- Delivered to venous system at 38 to 40 degrees Fahrenheit
- Decrease effect with low volume and speed - cools before reaching patient
- Rapid infuser does provide benefit

MYTHS FACTS AND FALLACIES

- Effects of General Anesthesia on Thermoregulatory Pathways and Effectors
- Current Modalities treatment relies on Physical methods
- Pharmacological Tools
  - Demerol
- Research regarding temperature sensitive ion channels
- TRPV1 antagonist can cause hyperthermia
- TRPM8 antagonist produce hypothermia

MYTHS FACTS AND FALLACIES

- Demerol/Meperidine
  - More effective treatment for shivering than equivalent doses of other opioids
  - Study: 9 volunteers
    1) Control no opioid
    2) target total plasma Demerol concentration of 0.6 mcg/ml (40mg/hr)
    3) target concentration of 1.8 mcg/ml 120mg/hr
  - Skin and core temperatures were increase to produce sweating then subsequently reduced to elicit vasoconstriction and shivering
MYTHS FACTS AND FALLACIES

Demerol
- Results: Demerol slightly increased the sweating threshold and markedly decreased the vasoconstriction threshold.
- Demerol decreased the shivering threshold nearly twice as much as the vasoconstriction threshold.
- The antishivering efficacy of Demerol resulted at least in part from a large decrease in the shivering threshold rather than from exaggerated generalized thermoregulatory inhibition.
- Alfentanil, Clonidine, Propofol, and volatile anesthetics all reduce vasoconstriction and shivering threshold comparably.

Transient Receptor Potential Channels
- TRPV1, V3, and V4 respond to warm to noxious heat stimuli.
- TRPMB and A1 respond to cool to noxious cold sensation.
- TRPM8 has a prominent role in the sensing of cold temperatures.
- TRPM8 maintains core body temperature.
- 15 Years of Research have evolved the revelation of temperature sensitive ion channels that affect thermoregulation.
- Temperature sensory is tightly linked to voltage dependent gating.
- Researchers from Scripps Research Institute and Duke University in 2017 have isolated the atomic structure of Transient Receptor Potential Melastatin 8.
- This could lead to a potent and selective new drug targeting this sensor.

There is Always skin to skin....Awkward!!
• Redheads
  • Urban myth in the anesthesia community
  • Redheads anesthetic requirements are increased
  • Redheads bleed more
  • Red hair color (RHC) have a reduced sensitivity to general anesthesia and/or pain response anecdotally
  • Melanocortin-1 receptor (MCRI). RHC produce a variant allelic MCRI
  • MCRI appear in midbrain where pain perception is regulated
  • Evidence that the gene influences a response to injury and discomfort
  • 2012 study in Anesthesia and Intensive Care resulted in no increased recovery times or pain between those with red hair and those with darker hair.

• Give Succinylcholine for Rapid Sequence Induction
  • Healthcare facilities are considering removing Succinylcholine
  • December 2015, the US Food and Drug Administration approved Sugammadex for rapid reversal of neuromuscular blocking agents
  • The combination of Rocuronium and Sugammadex may be an alternative to Succinylcholine
  • Rocuronium has a similar onset of action compared to Succinylcholine at a dose of 1.0-1.2 mg/kg.
  • Sugammadex safe and effective reversal of Rocuronium Vecuronium in 3 minutes or less. At a dose of 16 mg/kg reversal at 1.5 minutes
  • Studies show no statistical intubating difference between succinylcholine and Rocuronium. Succinylcholine provides the desired clinical conditions due to short duration of action
MYTHS FACTS AND FALLACIES

• Cricoid Pressure - to hold or not to hold

  Sellick Maneuver
  • 1961 Brian Sellick
  • Sellick’s study involved filling cadaver stomachs with water, placing the body in Trendelenburg while using the maneuver. Success noted by lack of water in the oropharynx.
  • Performed with one thumb and second finger to occlude upper end of the esophagus by applying backward pressure to the cricoid cartilage against the body of C5 vertebra.
  • Cricoid pressure should be performed with a pressure of 30 Newtons to occlude the esophagus to prevent aspiration of gastric contents during induction of anesthesia.

MYTHS FACTS AND FALLACIES

• Adverse Events Using Cricoid Pressure

  Cricoid Cartilage Fracture
  • Airway Obstruction
  • Esophageal Rupture with Rapid increase in Gastric Pressure/vomiting
  • Potential for Cervical Spine or Laryngeal Trauma
  • Increase risk of Aspiration with Premature Application-retching/vomiting
  • Decrease Lower Esophageal Sphincter (LES) tone from 24 to 15mmHg when a force of 20 Newtons was applied
  • LES decrease to 12mmHg with 40 Newtons decreasing the physiologic barrier to gastric content regurgitation

MYTHS FACTS AND FALLACIES

• Medicolegal

  • ASA Closed Claims 1990-2007
  • 17% of Law Suits attributed to Respiratory Complications
  • 3% were Specific to Aspiration
  • 40% of Aspiration Events Occurred during Induction
  • 19% Intraoperatively after Induction

  • Larger Damage Awards given in Cases where Providers omitted Cricoid Pressure
MYTHS FACTS AND FALLACIES

- Standard of Practice in Preventing Aspiration
- Necessitated the Application by the Fact We Perform the Maneuver
- Classified as an Integral Part of Anesthetic Technique
- Retrospective Study Evaluating Malpractice Claims
  - 789 Claims over 15 year period
  - 41 Anesthesia Related to Difficult Intubations or Aspirations of Stomach Contents
  - Judge ruled against anesthesia for failing to apply cricoid pressure
  - Judge stated we cannot assert that cricoid pressure is not effective until more random controlled trials are performed especially since it has been a part of anesthesia since the 1960's.
- Despite Approval or Disapproval of Cricoid Pressure
  - Part of anesthetic technique by those assessing the legal ramifications of its use or lack thereof

- Evidence Supporting the Use of Cricoid Pressure is surprisingly poor quality
  - Studies are small, observational, unblinded, and non controlled
  - Value is applied in an inconsistent fashion in actual clinical practice
- Lack of Knowledge and Skill by Providers
  - Surface Anatomy
  - Hand Finger Position
  - Amount of Force involved in Proper Cricoid pressure.
  - Only 55% of Providers correctly identified the Cricoid Cartilage
  - 17.5% applied the correct pressure of 30 Newtons or 3-4 kg

- LMA for Obese patients-to insert or not insert
  - Literature does not support a fixed value of BMI as an absolute contraindication for use of Laryngeal Mask Airway (LMA)
  - LMA designed to sit in the hypopharynx and the proximal portion of the cuff
  - Positioned under the level of Rami of mandible and tonsils
  - LMA selection by ideal body weight
  - Allows easier insertion and fewer complications versus actual body weight size
  - Too large risk cuff locations in the oral cavity resulting sore throat and nerve damage
  - Obese are inclined to have smaller upper airways = smaller mask
  - Air leak significantly lower in ideal weight group
MYTHS FACTS AND FALLACIES

• Study of LMA Use in Obese Patients
  • 150 Obese (BMI 30-35) Morbidly Obese (BMI>35) 150 Non Obese (BMI<30)
  • Failure Rate for Planned LMA 2/142 1.4%
  • Suggest LMA safe means of managing airway in appropriately prepared and selected obese and morbidly obese patients
  • Study with 1095 Patients with mean age of 44 and mean weight of 66kg
    • BMI >30 increase risks by two-fold

MYTHS FACTS AND FALLACIES

Cochrane Systematic Review
Randomized Control Trial

• Patients received General Anesthesia and LMA
• Outcomes included few problems when LMA used on Obese Patients
• Due to catastrophic outcomes of potential complications more research needed before recommendation on obese patients

Lawsuit

• 2 Anesthesiologist and 1 CRNA
• Found negligent because of choice to use LMA in morbidly obese patient
• 44 yo F with BMI 49; Hx of GERD DM
• Aspirated with neurological damage
• Awarded 10,541,808

MYTHS FACTS AND FALLACIES

• The One Time at Band Camp Phenomenon
  • Once I did this and the outcome was this. So it must happen all the time.
  • Observation or indications rather than documented or scientific analysis
  • Limited in value due to potential weakness
  • Informal Fallacy - I know a case where...
  • Can be considered within the scope of scientific method
  • Case Studies
  • Careful of Cherry-picked or non represented samples
  • Cognitive Bias
    • People remember notable or unusual experiences rather than typical examples
MYTHS FACTS AND FALLACIES

Evidence Based Practice (EBP)

Definition – integration of individual clinical expertise with the best available external clinical evidence from systematic research

Interpretation – evidence is at times flawed from interpretation

The Clipboards - Rules developed from interpretation of research

Medicolegal system relies on EBP

Defensive Medicine is a result of inappropriate interpretation of EBP

The "Lawyers Dose"

SCIP JCAHO AORN

MYTHS FACTS AND FALLACIES

• Mallampati Score is an Indicator of a Difficult Airway
  • Review: Mallampati evaluation is to judge the size of the tongue in relation to the oral cavity
  • Why the evaluation: the tongue must be displaced for adequate laryngoscopic view
  • How: the patient is seated with the tongue maximally protruded. Mashour et al. found that neck extension increase mouth opening by over 1 cm and reduced grades compared to neutral neck position
  • Outcome: Mallampati has poor to intermediate sensitivity

• Mallampati
  • Improvement: combining mallampati with Thyromental Distance (TMD) or other airway evaluation can improve accuracy at predicting difficult intubations

• Thyromental Distance
  • Estimates Mandibular Space
  • During laryngoscopy the tongue is displaced into the mandible and short TMD suggest inadequate space for tongue
  • TMD alone is not a very accurate predictor 15-70%
MYTHS FACTS AND FALLACIES

• MALLAMPATI
  
  • Always Test - Upper Lip Test
  • The ease of laryngoscopy is significantly affected by mandibular mobility
  • Class 1: lower incisors can bite upper lip above vermilion line
  • Class 2: lower incisors can bite upper lip below vermilion line
  • Class 3: lower incisors cannot bite upper lip
  • This test is more easily an easy intubation rather than those that are difficult

MYTHS FACTS AND FALLACIES

• Mallampati
  
  • Study
  • Good Extension and Lower Mallampati score improved successful predictions by 24-31%
  • Clinical study for Bedside Screening test for Predicting Difficult intubations remain limited
  • Mouth Opening
  • Mallampati Score
  • Thyromental Distance
  • Neck Movement
  • Body Weight
  • History of Difficult Tracheal Intubation

MYTHS FACTS AND FALLACIES

• Beta Blockers
  
  • Theory - Beta blockers prevent cardiac events in patients undergoing intermediate or high risk surgery with a history of coronary artery disease or at least one risk factor for CAD
  • DECREASE Trials - Dutch Echocardiographic Cardiac Risk Evaluation Applying Stress Echocardiography
  • Majority of guidelines surfaced in 2009
  
  • Problem - Trials have been discredited
  • Serious Methodological Flaws
  • Falsified descriptions of how outcomes were determined
  • Fictitious databases
**Beta Blockers**

**MYTHS FACTS AND FALLACIES**

**Beta Blockers**

- Bouri et al conducted a meta-analysis of published RCTs
  - 5264 patients randomized to Beta Blockers and 5265 to Placebo
  - Patients who received BB had 27% increase risk of all-cause mortality
  - Six studies evaluated rates of non-fatal myocardial infarction, non-fatal stroke, and hypotension
  - Studies excluded the DECREASE trials
  - Beta blockers decrease rate of certain nonfatal outcomes
  - Increase risk of stroke due to decrease blood pressure and heart rate

**2014 ACC/AHA Guidelines**

- Beta Blockers should continue in patients undergoing non-cardiac surgery who have been on drugs chronically
- May begin Beta Blockers for patients with intermediate or high risk myocardial ischemia or for patients with 3 or more risk factors
- Risk Factors
  - Heart Failure
  - Coronary Artery Disease
  - Renal Insufficiency
  - Diabetes Mellitus
  - Cerebral Vascular Attack

**Beta Blockers**

- Initiation of therapy should be long enough in advance to assess the safety and tolerability of any beta blocker before surgery
- Systematic review of 17 studies found that perioperative BB started within one day or less for non-cardiac surgery decreased risk of non-fatal myocardial infarction but increased risk of nonfatal stroke and hypotension
- Patients already taking BB should continue to take them in the perioperative period - current AHA guidelines
- Multicenter RCT are needed to address the knowledge gap on BB
MYTHS FACTS AND FALLACIES

Watch out Labor and Delivery - it’s a FULL MOON

- Lunar effect from the Moon
- Theory of gravitation on fluid water including amniotic fluid
- Termination to all L&D anesthesia providers
- No evidence or correlation between the two
- 2001 study by astronomer Daniel Caton
- Meta-analysis of 20 years of data including 15 million births - no correlation

Cognitive Bias
- Noticing only what supports a belief and ignoring all evidence to the contrary
- Believed to be true because it has been around for so long

The QUIET Word - Does it really make things busier?
- Multicenter single blind randomized controlled trial
- Validated allocation technique
- Conducted between 0800 and 2000 using a two tail Mann Whitney U test with a p value <0.05 - considered statistically significant

Results
- Quiet group contained 18 night shifts
- Control group contained 24 night shifts
- Admissions with quiet uttered 3.1 with SD 2.6
- Control group 1.7 with SD 1.3
- Statistically significant at p value 0.04

Quiet Word
- Statistics versus Superstition
- Shuld et al concluded no evidence to show moon phases, zodiac signs or Friday the 13th influenced surgical blood loss or surgical frequency
- Eisenburger et al found lunar cycles do not appear to correlate with acute coronary events, MI and sudden death nor birth to lunar cycles
- Lamb et al concluded there is evidence to support uttering the Quiet Word does increase the work load
MYTHS FACTS AND FALLACIES

Medicines Macbeth
Instead of Macbeth, actors use the euphemism “the Scottish Play” to avoid disaster.
Hospital emergency admissions increase 1.3% year to year.
Leads to increased stress of staff and resources
Absolutely no utterance of the Q word

• Conclusion
  • A Jury of your Peers
  • Most are not medical nor anesthesia personnel
  • It is all good until you go for litigation
  • Just because you can doesn’t mean you should