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Run reversible principal for sedation safety, practitioner and patient serenity

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Sedation techniques have the potential to relieve anxiety, reduce pain and provide amnesia to make uncomfortable diagnostic and therapeutic procedures easy and possible. However the ethical imperative, 'first do no harm' includes safety of both anesthesia and sedation. Safety is challenged because even with the highest level of training, moderate sedation can proceed to deep sedation and even to general anesthesia which will compromise cardio- respiratory function that may lead to serious morbidity and mortality. The wide variability in drug dose-response relationship, as well as inter-patient difference in pharmacodynamics and pharmacokinetics limits the ability to predict the response across the patients. Managing adverse events in remote areas, outside operating room settings as gastrointestinal endoscopy and dental clinic is problematic as most places and personnel do not have the same level of training of an inpatient code team to resuscitate a patient who has cardio-respiratory arrest. It is time to make evidence-based sedation practice apply ultimate criteria for patient safety. We practiced and established run reversible principal (RRP) which recognizes and uses the pharmacological property of aminophylline to antagonize the depressant effect of benzodiazepines, barbiturates, morphine, and propofol on the conscious level as well as the cardio-respiratory functions. Doxapram which is also a respiratory and central nervous system stimulant hastens recovery from dexmedetomidine, propofol and remifentanil. Ephedrine is an indirect sympathomimetic drug increases the bispectral index (BIS) during propofol anesthesia. Thus we add aminophylline, doxapram and ephedrine to our back-up reversible plan in case of cardio-respiratory depression. We will describe our experience with other medications as dexmedetomidine and lidocaine infusion both have the ability to decrease BIS, and narcotic sparing effect without inducing respiratory depression which will make a perfect combination with remifentanil, which is an ultra-short acting narcotic medication that can even be reversed by naloxone. Safe sedation may involve increased cost in medications, training, monitoring, and staffing, which will need to be recognized in the business plans of non-anesthetic departments.

Recent Publications

1. Sohyeon Moonand and Hee Jung Baik (2018) Aminophylline and ephedrine, but not flumezanil, inhibit activity of the excitatory amino acid transporter 3 expressed in Xenopus oocyte and reverse the increased activity by propofol. BioMed Research International 2018:10.
2. Raymond A Dionne (2017) Raise the bar for safe sedation, not barriers for access to care. JADA 148(3):133–137.
3. Huan-Liang Wang, Shu_Hai Tang, Xue-Qin Wang, et al. (2015) Doxapram hastens recovery following total intravenous anesthesia with dexmedetomidine, propofol and remifentanil. Experimental and Therapeutic Medicine 9:1518–1522.
4. Souza M F and Kraychete D C (2014) The analgesic effect of intravenous lidocaine in the treatment of chronic pain: a literature review. Rev Bras Reumatol 54:386–869.
5. Takashi Goto and Satoru Sakurai (2014) The effect of aminophylline reversal of propofol sedation on the emergence and recovery profile: comparison with spontaneous recovery as assessed by the bispecteral index and psychometric behavior responsiveness in volunteers. J. Gifu Dent.Soc. 41(1):1–7.

Biography

Muhammad Saleh Bahadeg has completed his MBBS, King Saud University, Riyadh, Saudi Arabia from Saudi Board of Anesthesiology, Prince Sultan Military Medical City. He is interested in Anesthesia for Transplant Surgeries and Regional Anesthesia.

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