



Anesthetic Concerns Associated with the Use of Complimentary and Alternative Medicines

Michael P. Cogan, BSN, SRNA

Yana Krmic, BSN, SRNA

Shannon McDonnell, BSN, SRNA

Nick Rallakis, BSN, SRNA

Background and Significance

- Approximately 15 million adults take herbal preparations
- Gained widespread use with the purpose of maintaining wellness or to treat a variety of illnesses
- Significant concerns related to:
 - No FDA regulation
 - CAM therapies may have powerful pharmacologic effects
 - May vary in potency and be contaminated
 - Potential serious interactions & side effects



Purpose

1. Review the incidence of use of herbal preparations by surgical patients
2. Determine how selected herbal preparations may cause adverse events in the perioperative period
3. Make recommendations for practice



Literature Review

- Literature search conducted for the period 1998 through June 2009:
 - CINAHL via EBSCO
 - MEDLINE
 - PubMed
 - Cochrane Database of Systemic Reviews
 - Web of Science
- Limited to English language-only articles
- Keywords for individual searches and combinations of MeSH terms including:
 - alternative medicines, CAM, anesthesia, complications, adverse reactions



Herbal Medicines: Current Trends in Anesthesiology Practice

- Methods:
 - 755 patients surveyed regarding herbal medicine use *following* the pre-anesthetic evaluation
- Results:
 - 64% (N=482) of patients reported using at least one herbal agent
 - 70% did not report use during routine assessment by the anesthesia provider during the pre-anesthetic evaluation
- Strengths:
 - Large sample
 - Questionnaire developed and validated based on a market survey to determine the most commonly used herbal/vitamin preparations
- Weaknesses:
 - Survey was administered by the anesthesia provider
 - May have caused underreporting of herbal use

Use of Complementary and Alternative Medications by Surgical Patients

- Methods:
 - Descriptive study explored CAM use in ambulatory surgical patients at a metropolitan level I trauma center in the Southeast
 - 500 patients were randomly surveyed
- Results:
 - 43% (N=208) used at least one herbal preparation
 - 20% (N=92) took agents that inhibit coagulation
 - 14% (N=70) took herbals that affect blood pressure
 - 7% (N=36) used agents that produce sedative effects
- Strengths:
 - Large sample size
 - Non-experimental design using random selection
 - Increases generalizability

Incidence and Risk of Adverse Perioperative Events Among Surgical Patients Taking Traditional Chinese Herbal Medicines

- Methods:
 - 601 patients surveyed two weeks prior to surgery
 - Attending anesthesiologists blinded to the patients TCHM use, recorded unanticipated perioperative events
- Results:
 - 80% (N=483) used self-prescribed TCHM in the two weeks prior to surgery
 - 8% used TCHM by prescription
 - Compared with nonusers:
 - TCHM by prescription users had a statistically significant increase in duration of anesthesia (160 vs. 120 minutes, $p < 0.01$)
 - were more likely to have an adverse perioperative event (adjusted relative risk 2.21)
- Strengths:
 - Blinding decreases potential for bias
- Weaknesses:
 - Patient self-assessment of TCHM use may be inaccurate due to reporting bias

Ma Huang

- Uses:
 - Asthma, fatigue, weight loss, fluid retention, arthritis, fever, low blood pressure, bronchitis, allergic symptoms, flu and the common cold
- Anesthetic Concerns:
 - Side Effects:
 - Hypertension, arrhythmias, palpitations, CVA, seizures, psychosis and tachycardia
 - Tachyphylaxis:
 - Consider use of direct-acting sympathomimetics



Kava Kava

- Uses:
 - Anxiolytic, antistress and sedative properties
- Anesthetic Concerns:
 - High potential for causing herb-drug interactions through inhibition of CYP450 enzymes
 - Potential for interaction with alprazolam
 - Inhibits CYP450 enzymes
 - Increases plasma alprazolam concentrations to toxic levels
 - Increases sedative effects of anesthetics



St. John's Wort

- Uses:
 - Treatment of depression, anxiety, sleep-related disorders, and obsessive-compulsive neurosis
- Anesthetic Implications:
 - Concomitant use with serotonin-reuptake inhibitors (SSRI) can cause serotonergic syndrome which manifests as hypertonicity, myoclonus, hallucinosis, autonomic dysfunction, hyperthermia and even death
 - Activates CYP450 system
 - Increases elimination of certain drugs (e.g., oral contraceptives, anticoagulants and anti-viral drugs)



Ginseng

- Uses:
 - Counteract fatigue and improve vitality
- Anesthetic Implications:
 - Inhibits platelet-activating factor, platelet aggregation, thrombin and thromboplastin
 - Causes further bleeding when combined with aspirin, heparin, warfarin and non-steroidal anti-inflammatory drugs
 - May decrease blood glucose, use caution with non-insulin dependent diabetics



Recommendations for Practice

1. More research is needed to assess the interactions between herbal preparations and anesthetic medications
 - Experimental studies are difficult to conduct and the literature largely consists of case reports, cohort and descriptive studies
2. Anesthesia providers need to:
 - ask questions regarding use of herbal and CAM therapies in a non-judgmental manner during the pre-operative assessment
 - be familiar with potential side effects and drug interactions in order to determine potential effects prior to surgery and avoid adverse outcomes
3. When possible, CAM use should be discontinued 1 to 2 weeks prior to surgical procedures



References

- Hofbauer, R., Frass, M., Kaye, A., Baluch, A., & Kaye, A. (2007). Pharmacology of herbals and their impact in anesthesia. *Current Opinion in Anesthesiology*, 20(4), 294-298.
- Kaye, A. D., Clarke, R. C., Sabar, R., Vig, S., Dhawan, K. P., Hofbauer, et al. (2000). Herbal medicines: Current trends in anesthesiology practice--a hospital survey. *Journal of Clinical Anesthesia*, 12(6), 468-471.
- Kaye, A., Kucera, I., & Sabar, R. (2004). Perioperative anesthesia clinical considerations of alternative medicines. *Anesthesiology Clinics of North America*, 22(1), 125-139.
- Lee, A., Chui, P., Aun, C. S. T., Lau, A. S. C., & Gin. T. (2006). Incidence and risk of adverse perioperative events among surgical patients taking traditional chinese herbal medicines. *Anesthesiology*, 105(3), 454-461.
- Norred, C. L., Zamudio, S., & Palmer, S. K. (2000). Use of complementary and alternative medicines by surgical patients. *AANA Journal*, 68(1), 13-17.
- Raduege, K.M., Kleshinski, J. F., Ryckman, J. V., & Tetzlaff (2004). Anesthetic considerations of the herbal, kava. *Journal of Clinical Anesthesia*, 16(4), 305-310.
- Teng, C.M & Ko, F. N. (1998). Antiplatelet agents isolated from medicinal plants. *Research Communications in Molecular Pathology and Pharmacology*, 102(3), 211-225.
- Wren, K., Kimbrall, S., & Norred, C. (2002). Use of complementary and alternative medications by surgical patients. *Journal of Perianesthesia Nursing*, 17(3), 170-177.

