VOTE

- Peter Strube for Nominations Committee
- Region 3

Herbal Medication and Supplements

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Question?

- List three herbal therapies that would cause concern for anemia and warrant a preoperative CBC or hemoglobin/hematocrit?

- Garlic, ginseng, ginkgo. Garlic is associated with increased bleeding diathesis and ginkgo with unexpected spontaneous bleeding. Hint: Remember the “G’s” for bleeding and coagulation issues. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, pp593-595]-02

History

- Herbal medicine is a ancient art. The arrogance of western medicine has forgotten that its foundation is in decoctions and chants of shamans.
- Herbal medicine is first documented in early Chinese texts during the rule of the Emperor Huang Di in 2697 BC.
- Hippocrates used herbs in his practice.
- The Greek Dioscorides Materia Medica is still one of the worlds greatest references on herbs.
History

- A lot of common drugs have a base in the herbal world
- Morphine from the opium poppy
- Digoxin from foxglove
- Quinine and quinidine from Cinchona tree
- Currently the World Health Organization cites 121 prescription medications are produced directly from plant extracts

Case Study

- 26 year old female in labor presents for elective epidural——
- Second baby, Hx of preterm Labor
- On Fish Oil

Question?

- Identify the 13 best-selling herbal medicines and supplements and also give the scientific name (Genus species) for the herbas.

There really is little information available

- Lee—Herbal Medicines and Perioperative care
  - JAMA 2001; 286: 208-216
  - Anesth Analg 2001; 93:1062-1068
- Miller
- Text books
- New research
- Chapters in certain books
- Random clinical trials

The 13 best-selling herbal medicines and supplements are:

1. Ginseng (Panax ginseng)
2. Ginkgo (Ginkgo biloba)
3. Garlic (Allium sativum)
4. Glucosamine
5. St. John’s wort (Hypericum perforatum)
6. Echinacea (Echinacea angustifolia, E. purpurea, E. pallida)
7. Licorice
8. Chondroitin
9. Creatine
10. Saw palmetto (Serenoa repens)
11. Ephedra (Ma-huang)
12. Kava-kava (Piper methysticum)
13. Valerian (Valeriana officinalis)

Randomised clinical trials of fish oil supplementation in high risk pregnancies. Fish Oil Trials in Pregnancy (FOTIP) Team. BDG. 2000 Mar;107(3):382-95

To test the postulated preventive effects of dietary n-3 fatty acids on pre-term delivery, intrauterine growth retardation, and pregnancy induced hypertension.

38-21% reduction in Preterm Labor

WOW...what does this have to do with an epidural...We will see
Herbals

This is the problem......

The Dietary Supplement Health and Education Act 1994
No regulation

Could market products without any proof of safety or efficacy

Not required to prove outcomes

No regulation of processing or manufacturing

The only compliance is voluntary....????

History

Supplements and herbals have seen a 380-400% increase in use and abuse. The wide spread use has become mainstream.

In 2002 a estimated 54% of the US population used H/S

That number is estimated closer to 20% now

In 2002 1 in 5 adults on prescription medication also used H/S as a self prescribed treatment... also that number is estimated higher now

BIG Money...... In excess of a $15 billion dollar industry

Question??

There are two things that patients usually lie about or do not inform the anesthesia provider about???

NPO

Herbals and supplements...

Why?

Herbals and supplement must be good-----

-----RIGHT???

Why should they tell us more importantly why should we ask?

There is an increase in the morbidity and mortality related to use because we don’t understand or comprehend the polypharmacy relationships between what they are taking and what we use

Lee concluded that : Complications can include MI, CVA, Stroke, Bleeding, inadequate oral anticoagulation, prolonged or inadequate anesthesia, organ failure, transplant rejection and interference with prescription medication.

Survey suggested that a vast majority (excess of 70%) of patients do not inform providers of their use of these supplements and herbs.

Survey Data

2560 patients responded to the survey

39% admitted using some form of alternative medicine supplements and/or herbal

Of the 39% that reported use... 44% did so without the knowledge of their provider. 56% did not inform the anesthesia provider prior to surgery.

53% of the patients ceased the use of these products before surgery .... what this also say???? 47% kept using them and didn’t tell the provider.
1998 study focused on why do they choose alternative. The study found that more had a distrust or dissatisfaction with traditional western medicine. Most found these alternatives more inline with their values, beliefs, philosophies.

I suggest many may have tried these remedies related to the cost..

Problems

With no regulation... I know regulation...

There is no requirements or safeguards.

Consumers are usually informed of all the great benefits of the “natural” products but no the RISKS>>>>

The advertising is often misleading and causes misinformation. What is natural is not always safe.

The patient should be asking these questions?

Are they safe? Do they have side effects? Are they what they say they are? Drug interactions? Are there any and if so, what?

History and Physical

How do we ask questions????

Do you ask about herbals or supplements? We ask, what medications are you taking? The patient responds... I am not taking any medications.

Why is this? Patients don’t consider herbals/supplements medication. It’s natural...

ASK>>>>>>>>>

Pre-op

Make sure you to obtain a adequate history

This history will help you avoid potential complications. When we ask about specific herbals/supplements you will be able to understand what the complications.

Examples of complications include; cardiac issues, low blood sugars, bleeding, increased sedation effects, change in metabolism, interactions with medications.

Pre-op

Ask specifically about Herbal and supplement use

Document Document Document Document

Be open to discussing the herbal and supplements and how they can interact with anesthesia and surgery.

Example: They are on fish oil and ginger,,, they may need a transfusion.

Remember advertising sells these drugs and people will and do fall victim to false claims.
This is what they see

- A majority (55-60%) of adds claim they treat, cure or prevent a disease.
- Nearly all (75-80%) “information” sites actually sell drugs or link to the companies that sell them—are these sites trust worthy?
- Nearly all lay people believe that internet cites are accurate—WOW

Where can WE go?

- www.fda.gov/medwatch for a history of adverse events

Information at:
- www.quackwatch.com
- www.consumerlab.com
- www.naturaldatabase.com
- www.snoopes.com
- www.iherb.com
- www.cspinet.com
- www.healthletter.tufts.edu

If the claim sounds false it probably is—be careful.

Current Thoughts

- All Herbals and Supplement should be stopped at least two weeks prior to surgery.
- Should this be part of the preop physical?
- Should be asking if they stopped them when they get the phone call about surgery?

Interactions

- All medications, herbals and supplements still follow certain principles.
- Interactions, reactions, non-compatibility tachyphlaxis
- A single medication can have a cause and effect relationship
- Toxicology...

Question?

- List the herbal medicines and supplements that may alter coagulation homeostasis and/or bleeding time

The following herbals and supplements may alter coagulation status and/or bleeding time, especially when used concomitantly with warfarin (coumadin): ginkgo, garlic, dong quai, daneshen, feverfew, ginger, DHEA (dehydroepiandrosterone), androstenedione, and glucosamine sulfate. Of special note, garlic in combination with other herbals may increase the risk of bleeding. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, pp577-611]
There are Thousands and Thousands of Herbals and supplements. We will focus on only the big ones....

You will encounter things not on this list... please take the time to look them up and learn.

The patient with hypertension, tachycardia, agitation and restlessness has a serotonin-like syndrome. St. John’s wort, often used as a “natural remedy” for depression can produce or potentiate the serotonin-like syndrome. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, p610]-02

The patient presents with hypertension, tachycardia, agitation, and restlessness. Patient history reveals current treatment with fluoxetine (Prozac), and they also report taking “some alternative medicines for depression.” What syndrome does this patient exhibit and which herbal medicine has potentiated the syndrome?

This is used for mood enhancement. To use for short term therapy for mild depression. (few clinical trials) or other somatoform disorders.

Active compounds are hypericin and hyperforin.

Action: inhibits the reuptake of serotonin (5-HT), NE and Dopamine

Has a mild MOA-B activity so it may interact with MOA inhibitors or SSRI.

Can also get serotonergic syndrome with reaction to medication

Increases metabolism of some agents --->CYP-3A4

Can potentiates the effects of many serotonergic agents. Example: lidocaine and alfentanil.

May inhibit additional pathways that affect coumadin and NSAIDS

The recommendation as with all herbals and supplements is to stop this drug at least two weeks prior surgery...

If they are using it for mild depression they may need to stop it sooner so they can do a taper.

Interacts directly with: antihypertensives, oral contraceptives, antidepressants, anti-seizure medications, and transplant and HIV medications.

May inhibit additional pathways that affect coumadin and NSAIDS

The recommendation as with all herbals and supplements is to stop this drug at least two weeks prior surgery...

If they are using it for mild depression they may need to stop it sooner so they can do a taper.

Decreased Digoxin Levels; Enzyme inductions; Prolonged anesthesia

Case reports of prolonged emergence and cardiovascular toxicity

Half-Life of the active compounds are 4.2.4 hours (hypericin) and 9 hours for hyperforin.

The long half-life makes this a risky drug

It can also inhibit norepinephrine receptors and this may cause excessive sedation when combined with narcotics.
Ephedra
- Contains alkaloids including ephedrine, pseudoephedrine, norephedrine, methylphenedine and norpseudoephedrine.
- It has been suggested for weight loss, diet, increased metabolism, bronchodilator, asthma and the common cold.
- It causes a dose dependent increase in blood pressure and heart rate. This is done through a non-catecholamine sympathomimetic agent that shows alpha 1 and alpha 2 and beta effects.
- FDA banned this product recently.
- Risks include: MI, CVA, uncontrolled BP, Increased HR
- Do you remember the problem with Halothane?

Echinacea
- Most commonly used to treat viral, bacterial or fungal infection
- Common cold prevention, UTI and URI
- Long term use can cause immunosuppression and thus affect wound healing or allow for opportunistic infections. This usually occurs after 8wks of use.
- Hepatotoxicity can occur although there is no evidence
- Inhibits the P450—CYP3A4 enzyme pathway

Garlic
- Used for lipid lowering and hypertension, help decrease the risk of atherosclerosis by lowering the BP and thrombus formation and lipids. Also used as a antibacterial, antiviral and antifungal.... Mouth wash: Yes, Mouth wash.
- Few case reports of esophageal hematoma from bleeding
- Stop at least 2 weeks prior to surgery
- May augment the effects of coumadin, heparin, NSAIDS and aspin.
- May cause perioperative bleeding and hypotension

Ephedra
- Known to cause hypersensitivity myocarditis, tachyphylaxis from long term use that has occurred at catecholamines... This leads perioperative hemodynamic instability.....
- Uncontrolled hypotension, hypertension (moa) stroke and MI
- Stop at least 24 hours prior to surgery. 2 weeks is better
- This drug is trouble... Removed by FDA ban
- Half life is 5.2 hours and 80% excreted unchanged in the urine

Echinacea
- Should be avoided in patients that either require or will require immunosuppression
- Stop medication early
- Contraindicated in Autoimmune disorders and cardiac Disease
- If there is hepatic activity can lead to toxicity of some drugs

Garlic
- Garlic inhibits platelet aggregation, reduces thromboxane, increases fibrinolytic activity and increases streptokinase activated plasminogen activator (9-a).
- These effects are dose-dependent
- These effects appear to be irreversible and may potentiate the effects of other inhibitors. i.e. prostacyclin, indomethacin, diphenhydramine and may interact with budesonide, plasmin and aspirin.
- Can lower blood pressure.
- Irreversible platelet effects dictate that garlic be stopped well in advanced of surgery.
Question?

Which herbal medicine inhibits thromboxane synthase and thus has synergistic effects with other antiplatelet agents?

Ginger

- Ginger contains anticoagulant components. It inhibits platelet aggregation by acting as an inhibitor of arachidonic acid, epinephrine, and adenosine diphosphate and collagen.
- There is also a dose dependent relationship.
- There is a reduction in thromboxane synthase and prostaglandin synthetase and there was no reduction in bleeding time, platelet count or platelet function.
- Ginger administered prior to induction of anesthesia can be prophylactic for PONV (1 gram). TOXIC is greater than 2mg/kg/day.

Question?

State four anesthetic concerns for the patient taking ginger as an herbal supplement?

- Four anesthetic concerns for the patient taking ginger are: (1) interaction with antiplatelet agents, possibly leading to coagulation disorders and increased risk of bleeding; (2) potentiation of barbiturates; (3) prolonged asleep time; and, (4) increased gastric motility, decreasing the risk of aspiration. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, p594]-02
Feverfew

- Used to treat headaches, as a fever reducer and pain reliever
- Parthenolide in feverfew inhibits platelet aggregation
- Used for treatment of migraines. With increased duration of use 3.5-8 years there is no difference in ADP or thrombin stimulated platelet aggregation. However serotonin induced platelet aggregation is decreased.
- Some suggestions indicated it may help with chronic inflammation
- This supplement/herbal interacts with antiplatelet and anticoagulants.

Ginko

- Ginko is used to enhance memory, PVD, macular degeneration, vertigo, tinnitus and erectile dysfunction
- Ginko alters vasoregulation, acts as a antioxidant and modulates neurotransmitter. It also inhibits platelet activating factor.
- The active product terpenoids are thought to cause these effects
- Stop 2 weeks prior even though the active half life is 3-10 hours
- This is a circulatory stimulant; some interaction with MAO inhibitors and SSRI
- Case reports indicate increased bleeding in patients.

Question?

- Identify the two best-selling herbal medicines that may cause hypoglycemia?

- Garlic, especially when taken concomitantly with chlorpropamide, may cause hypoglycemia. Ginseng has potential to cause hypoglycemia also, especially if the patient is taking oral hypoglycemics. [Rozen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, pp593, 569; Ezekiel, Handbook of Anesthesiology, 2002-2003 ed., p21]-02
Ginseng

- Most action is associated with ginsenosides...not sure of mechanism
- more action but the current thoughts are that it acts like steroids
- Bioassay evidence in the central nervous system
- Reports to protect the body from stress and help restore homeostasis
- Some action on glucose control and may see hypoglycemia
- Inhibits platelet aggregation and prolonging the coagulation times of thrombin and activated partial thromboplastin.

Valverian

- Valverian is a powerful nerve stimulant, carminative and antispasmodic.
- It has a sedative influence on the central nervous system, and is used as a sedative to the frontal nerve centers in conditions of insomnia united to hypertensive, hypochromic, neuralgic pains and the like. The drug delays sleep and promotes deep, 6 to 8 cycles of sleep. It is of special use and benefit to those suffering from nervous overstrain.
- It has a remarkable influence on the spinal system, and is used as a pain reliever, sedative and sleep aid.
- Dose dependent sedation and hypnosis
- This appears to be mediated through the GABA neurotransmitter and receptor function
- It will potentiate the anesthetic effects and adjuncts through the GABA system
- TAPER when this herbal is used chronically

Kava

- Kava is a powerful nerve stimulant, carminative and antispasmodic.
- It has a sedative influence on the central nervous system, and is used as a sedative to the frontal nerve centers in conditions of insomnia united to hypertensive, hypochromic, neuralgic pains and the like. The drug delays sleep and promotes deep, 6 to 8 cycles of sleep. It is of special use and benefit to those suffering from nervous overstrain.
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Question?

- Which alternative/Herbal medicine may create a syndrome of hyperaldosteronism characterized by hypernatremia, hypertension, hypokalemia, and suppression of the renin-angiotensin system?
Licorice 

- Licorice (Glycyrrhiza glabra) ingestion may create hyperaldosteronism syndrome. Glycyrrhetinic acid inhibits 11-beta-hydroxysteroid dehydrogenase leading to excess glucocorticoids which bind to mineralocorticoid receptors, producing a mineralocorticoid response. Discontinue the herbal medicine at least 2 weeks before elective surgery. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, p600]

- Common use is for gastric/duodenal ulcer, gastritis, cough and bronchitis.

- Chronic use can cause hypertension, hypokalemia and edema.

- Uncontrolled studies show reductions in ADH, Aldosterone and plasma renin activity.

- Inhibits the P450 CYP3A4 liver enzyme—levels are not yet known.

- Known interactions with ACE inhibitors, Dig, Steroids, Insulin, Diuretics, Laxatives and increasing K loss and oral contraceptives.

- Do not take with CHF, HTN and can alter aldosterone levels.

- Several ongoing studies looking at being used to decrease Body Fat.

Wild Cherry

- Inhibits P450 CYP3A4... clinical significance is still unknown.

- A powerful expectorant that loosens and expels phlegm from the lungs and has helped bronchitis, colds, flu, dry coughs, tuberculosis and many other pulmonary complaints. It also acts as a mild sedative that not only may calm coughs, but also nervous irritability and nervous indigestion.

Milk Thistle

- This herbal may be beneficial. It has liver protective properties. It may help prevent liver damage and hepatotoxic drugs such as excessive alcohol, rheumathem and beta blockers, and prednisolone.

- Used for Steroid Abuse, to decrease Cholesterol and acute myocardial infarction.

- You may see this being used in Liver transplant patients and liver failure patients.

- Post 30 days of use there was an improvement in AST and ALT.

Vitamin E

- Used as an antiaging agent, to prevent stroke and pulmonary emboli, treatment to prevent atherosclerosis and promote wound healing, antioxidant and to decrease cholesterol.

- Complications include increased bleeding and hypertension.

- Decreased platelet aggregation.

- No clinical evidence of hypertension problems in the OR.

- Used in Infant formula to decrease anemia.
Identify the herbal medicines and supplements that inhibit platelet aggregation?

- Garlic, evening primrose (Oenothera biennis), fish oils (omega-3 fatty acids), and DHEA (dehydroepiandrosterone) are known to inhibit platelet aggregation. Request PT, INR, platelet counts, and hemoglobin/hematocrit during preoperative evaluation. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, pp588-591-593]

Fish Oil

- Fish oil is oil derived from the tissues of oily fish. Fish oils contain the omega-3 fatty acids eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), precursors of eicosanoids that are known to reduce inflammation throughout the body, and are thought to have many health benefits.
- Studies suggest that it is helpful with cardiovascular disease, CAD, depression, anxiety, increased new born outcomes and many more.
- Some early studies are looking at using it for depression and suicide prevention...also used for aggressive behavior, symptoms, Parkinson’s and psoriasis. This is to name a few...it is used for a wide array of conditions.
- Bleeding in high doses...greater than 3 grams per day
- Interacts with some anticoagulation medications and oral contraceptives.

Goldenseal (Hydrastis canadensis), sold as an antidiarrhetic, an anti-inflammatory, and hemostatic agent, may oppose the anticoagulant effects of heparin and warfarin. An unusually large dose of Goldenseal can cause a labile blood pressure, cardiac inotropy, CNS stimulation, muscle spasms, decreased seizure threshold, and respiratory distress. [Roizen and Fleisher, Essence of Anesthesia Practice, 2nd ed., 2002, p599]

You might want to look into

- Melatonin
- Chondroitin sulfate
- Glucosamine
- Creatine
- Evening primrose
Questions

Vote for Peter Strube Nominations Committee....

Thank You