



Alternative Medicines: Alternative Problems

Americans are spending millions of dollars each year on alternative medications, many of which are unregulated and downright dangerous. The lecturer will review recent cases in which such medications have resulted in disastrous outcomes. The toxicology of such misadventures and their treatment will be discussed as well.

- Develop an understanding of the toxic complications of alternative medications, including their interaction with other medications.
- Learn how to manage the unusual toxicities that result from inappropriate use of novel over-the-counter therapies.
- State the most common alternative medications that are potentially lethal.

MO-40
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FACULTY

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ALTERNATIVE MEDICINES: ALTERNATIVE PROBLEMS

(MO-40)

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INTRODUCTION

Traditional Medicine: Freedom from physical disease and pain. External control where the doctor is responsible for the healing process.

Asklepians Ancient Greek God of Medicine: Identify external agents of disease and develop weapons against them (antibiotics, chemotherapy, antidotes)

Alternative Medicine: All body systems and functions are harmoniously balanced and integrated with each other and the environment. Internal control where the patient takes responsibility for the healing process (only assisted by the health care provider).

Hygeians Greek Goddess of Health: Explore ways of increasing internal resistance to disease (tonics, herbs, vitamins, diet, exercise)

Treats the individual instead of the symptoms. Focuses on the human being instead of the disease.

Focuses on empowering the individual to accept responsibility for health maintenance. Emphasizes sound nutrition, a balanced lifestyle, appropriate exercise, rest, sleep and emotional tranquility as essentials.

Recognizes the importance of the musculoskeletal system as a potential source of interference with nerve transmission and the body's energy pathways and as a reflection of the individual's internal physical and emotional state.

Alternative Therapies: Acupuncture, Aromatherapy, Biofeedback, Chelation
Chiropractic therapy, Colon therapy, Detoxification therapy, Diet, Energy medicine, Fasting, Herbal therapy, Homeopathy, Humor therapy, Hydrotherapy, Magnetic Fields, Naturopathic Medicine, Nutritional therapy, Osteopathy, Hyperbaric oxygen, Psychic therapy, Religious prayer/healing, Traditional Chinese medicine, Yoga.

United States (1990s): 60 million people had tried alternative therapies, 15 billion dollars spent, nearly 50 million visits to alternative medicine practitioners.

Herbal Medications

Increasing use in the United States. \$2-3 billion industry (1997) and growing. Many mistakenly assume they are safer. Increasing reports of adverse reactions and deaths. Herbs may be purchased without a prescription, grown, foraged. Patient medicines may be domestic or imported.

Lack of strict FDA Regulation. Dietary Supplement Health & Education Act 1994. Loosened FDA regulation. Difficult to regulate quality. Inaccurate or incomplete ingredients, adulterants, inconsistent dosing, cultural and language barriers.

Ginkgo: 5 million prescriptions in Germany alone. Used to treat peripheral vascular disease, free radical scavenger, increase cerebral circulation

St John's Wort: Used in Europe to treat depression and sleep disorders. Better than placebo, similar to standard antidepressants (6 week onset) "Herbal Prozac". 1997: 50 million dollars in sales.

Ephedra: (Chinese Ma Huang) Marketed as an alternative to Ecstasy. Weight reducer, increase stamina (promises euphoria/ hallucinogenic effect with no health risks). Deaths reported.

Feverfew: European antipyretic, for migraines, contains parthenolide (serotonin antagonist).

Ginseng: Used for centuries in China as an aphrodisiac. Builds up general viability, increased physical capacity. (Most products don't contain enough to make a difference).

Ginger: (Chinese rhizome) For motion sickness, indigestion.

Pennyroyal: (Hispanic) Used to treat colic in adults and infants. Also used as an abortifacient. Can cause hepatotoxicity and liver failure.

Echinacea: (Native American) Acts as an immunostimulant, increases phagocytosis, promotes activity of lymphocytes, used to prevent the common cold.

Saw palmetto: (Native American) Used to treat BPH increases urinary flow, reduces conversion of testosterone to DHT.

Kava: Root of the tropical black pepper, South Pacific psychoactive drug, sleep aid, relaxant, benzodiazepine-like effect, made into a tea.

CASE #1 **Swamp Seizures**

HISTORY

A 23 year old man and his older brother were foraging for wild ginseng in the midcoastal Maine woods. The younger brother took three bites from one of the plants collected in a swampy area. Within 30 minutes he vomited and had convulsions. On arrival of paramedics, he was unresponsive and cyanotic.

CLINICAL COURSE

His pupils were dilated, and he was salivating profusely. Several more tonic clonic seizures occurred. He was intubated, and transported to an ER where he received lavage and activated charcoal. He developed ventricular fibrillation and died about 4 hours after the ingestion.

The root was identified as water hemlock (*Cicuta maculata*). Other names: Beaver poison, children's bane, death-of-a-man, poison parsnip, fool's or false parsley. Same family as parsley, parsnips, celery and carrots, Smells like fresh turnips, tastes sweet.

Highest concentration of cicutoxin in the root. Deaths in children from toy whistles made from the plant stem. May be absorbed across the skin. Causes GI upset, salivation, seizures, status epilepticus, rhabdomyolysis, metabolic acidosis.

MMWR 1994; 43(13):229-231.

CASE #2 When Smoke Gets in You Eyes (and Kidneys)

HISTORY:

A 35 y/o woman was admitted to the general medical floor with a one week history of nausea, vomiting, and bloody diarrhea.

PHYSICAL EXAM:

The patient was confused, hypotensive (BP 70/50 mmHg) and oliguric. A maculopapular erythematous rash with desquamation was noted all over the body. CXR revealed bilateral infiltrates.

CLINICAL COURSE:

An initial diagnosis of Toxic Shock Syndrome. She was intubated and placed on a ventilator and hemodialyzed for acute renal failure. Vaginal swabs and blood cultures

were negative. Fiberoptic bronchoscopy revealed edematous, inflamed mucosa, with purulent secretions. She improved over the next six days, but renal function remained poor.

Her husband admitted that she had been receiving treatment for vitiligo from a “native physician” prior to admission. Twice each day she was confined to room for 30 min, inhaling smoke from burning substances over an open fire. Substances included dried lime, dried leaves and a brick-red powder.

The dried lime was found to be filled with liquid mercury and sealed with wax. The red powder was inorganic mercuric oxide. Serum Hg was measured at 111.3 mcg/dL . With BAL chelation therapy, her renal function improved after 4 weeks. However, her cerebellar ataxia and fine tremor persisted for another 6 months.

Anaeth Intens Care 1994; 22:305-6.

CASE #3 High Chaparral Poisoning

HISTORY

60 y/o developed fulminate hepatic failure requiring liver transplantation after chronically ingesting herbal chaparral. She had been taking 1-2 caps for three weeks because of “flu-like” symptoms. Additionally she was ingesting garlic, and an herbal tea made from nettle and chick weed.

Med Hx: CAD Meds: Diltazem, atenolol, ASA, NTG. Liver Biopsy: Acute hepatitis

Chaparral is touted as a “free-radical scavenger” that slows the aging process.

Other hepatotoxins: Jin Bu Huan, germander, comfrey, mistletoe, skullcap, margosa oil, mate tea, Gordolobo yerba tea, pennyroyal (squaw mint)

Gordon DW, Rosenthal G, Hart J, et al: Chaparral ingestion. JAMA 1995;273;489.

CASE #4 The Case of Cosmic Consciousness

HISTORY

A 20 year old college student on spring break took 8 tablets of a product called Ultimate Xphoria, although the package recommended 2-4. The product was promoted as

delivering “increased energy, inner visions, sexual sensations, and cosmic consciousness” He developed tingling sensations and a headache. Later he was found by friends in cardiopulmonary arrest. He was pronounced DOA upon arrival to the ED.

Corner’s report: Death from synergistic effects of ephedrine, pseudoephedrine, phenylpropanolamine, and caffeine.

Variety of Products: Ener-Max, Up Your Gas, Herbal Ecstasy, Ripped Fuel, Super Weight Loss, Ma Huang or ephedrine, may also contain pseudoephedrine, PPA, caffeine (guarana). Typical sympathomimetic syndrome with hypertension and cardiotoxicity.

Also see: Zahn KA, Li Raymond, Pursell RA: Cardiovascular toxicity after ingestion of “Herbal Ecstasy” J Emerg Med 1998; 17(2):289-291.

CASE #5 The Worst Headache of My Life!

HISTORY

The patient is a 33 y/o Korean woman with no significant medical history who presented with new onset, diffuse headaches for a 3 month period. Her headaches were accompanied by 2 weeks of vomiting and diplopia. She denied history of trauma, bleeding disorder, or syncope. Her PMD had recently given her a brief trial of ergotamine/caffeine with no relief.

She had been in the US for nine years and had been treating herself with 120mg of ginkgo biloba daily over the past two years as a “smart drug” to improve her mental alertness and overall brain function.

Her only physical finding was a mild right facial droop.

Lab analysis revealed prolonged bleeding times but were otherwise normal.

CLINICAL COURSE

MRI of the brain demonstrated large bilateral subdural hematomas with a mass effect. Neurosurgery evacuated the subdurals through bilateral burr holes and she recovered following a prolonged hospitalization.

Extracts from the leaves of the Ginkgo biloba tree have been used medicinally for centuries. In China, tea is made from parts of the ginkgo tree for the treatment of asthma and bronchitis. In Germany and France, because of reports that ginkgo may increase blood flow in both systemic and cerebral vessels, extracts have been used to treat peripheral vascular disease. It is also taken for other CNS symptoms including difficulties with concentration and memory, confusion, lack of energy, depressed mood, anxiety, tinnitus, dizziness and headache. In the US, there has been a recent increase

in the use of this herbal medication as a “smart drug”.

The major components of ginkgo are flavonoids and terpenoids. Ginkgolide B is a potent inhibitor of platelet activating factor (PAF). PAF induces platelet aggregation, increases microvascular permeability, systemic vasodilatation, increases cerebral blood flow and granulocyte activation.

Rowin J, Lewis S: Spontaneous bilateral subdural hematomas associated with chronic Ginkgo biloba ingestion. Neurology 1996;46:1775-76.

See also Vale S: Subarachnoid haemorrhage associated with Ginkgo biloba. Lancet 1998; 352:36.

CASE #6 www. Herbal Poisoning. com

HISTORY

The patient is a 31 yr old male found by his father in an agitated, incoherent and disorientated state. Paramedics noted tonic/clonic seizures with decorticate posturing. In the ED he was lethargic but belligerent. His mental status improved after treatment with haloperidol.

He reported finding a description of the liqueur “absinthe” at a site on the World Wide Web entitled “What is Absinthe?”

([http:// www.gumbopages.com/food/misc/beverages/absinthe.html](http://www.gumbopages.com/food/misc/beverages/absinthe.html))

He purchased the main ingredient, essential oil of wormwood, electronically from a commercial provider of essential oils used in aromatherapy. He admitted to ingesting 10 ml of the essential oil assuming it was actual absinthe liqueur.

The patient's labs demonstrated hypernatremia, hypokalemia, and acidosis (pH=7.27). Hematuria was present with no RBCs detected and his serum creatinine was 4.4. A diagnosis of new onset seizure, renal failure and rhabdomyolysis was made.

Absinthe, a French liqueur made from the wormwood plant (*Artemisia absinthium*) originated in the 18th century. The use of wormwood extract is recorded in ancient Egypt, and its ingestion to exterminate abdominal tapeworms dates back to the Middle Ages. The drink has a tart taste and dazzling blue-green color. It gained popularity in Europe and became a favorite of artists and writers. Absinthism, a syndrome of hallucinations, sleeplessness, tremors and convulsions is associated with long term ingestion of the liqueur.

Weisbord SD, Soule JB, Kimmel PL: Poison on line- Acute renal failure caused by oil of wormwood purchased through the internet. NEJM 1997;337(12):825-6.

CASE #7 The Herbal Darwin Award* Winner

HISTORY

22 y/o male presented to ED 4 hours after ingesting an extract of foxglove prepared by according to *Fester's Guide to Poisons*, obtained by a mail order. The patient gathered 3 wheelbarrows full of foxglove plants which he crushed and mixed with 180 proof vodka. He then strained the extract through coffee filters. Foxglove contains cardiac glycosides similar to digitalis. He experienced nausea 90 minutes after drinking 1 oz of the extract, so he took the antidote recommended in the Guide: potassium chloride.

He presented to the local Emergency Department bradycardic with Mobitz Type I AV block. The serum potassium level was 4.6mmol/L. Serum digoxin level was 7.8 ng/ml (digitoxin level= 172 ng/ml). He was subsequently treated with 37 vials of Digibind FAB fragments (valued at \$11,000) with gradual clinical improvement over a 2 week period.

Rich SA, et al: Treatment of foxglove extract poisoning with digoxin-specific FAB fragments. *Ann Emerg Med* 1993; 22:1904.

*The Darwin Award is for those individuals who contribute to the "survival of the fittest" by eliminating themselves from the gene pool.

CASE #8 Too Much of a Good Thing

HISTORY

The patient is a 32 year old normally healthy male who presents with a complaint of chest pain, palpitations, and headache. He denies drug use, drinks socially and admits to using "health food remedies" "for whatever ails me."

PHYSICAL EXAM

Gen: The patient is agitated, appears uncomfortable
V's: P=150 BP=220/140 RR=32 T=98
HEENT: Pupils 5mm
Lungs: CTA CV: Irreg RR no m's
Abd: soft nontender, normoactive BS Rectal: (-)Heme
G/U: Normal ext gent, marked *priapism* noted
Ext: (-)c/c/e strong periph pulses
Neuro: No focal def, motor/sensory intact

LABORATORY DATA

ECG: Rapid a fib, rate 150/min, no ischemic findings
CBC: WBC=11.5 Hgb=12.4
Lytes: Na=139 K=4.2 Cl=101 HCO₃=23
Glucose: 110 BUN/Cr: 12/0.6
ETOH: 60 Tox screen: Neg for standard drugs of abuse

This patient presented with a unique toxidrome consisting of headache, palpitations, tachycardia, hypertension and priapism. Management of his new onset atrial fibrillation might include a CCB (diltiazem) or digitalis. The patient's blood pressure could be managed with benzodiazepines, labetalol, clonidine or, nitroprusside.

The differential diagnosis of priapism includes sickle cell anemia, leukemia and spinal cord injury. Drug related aphrodisiacs include Yohimbine, Spanish Fly (*canthardin*), Love Stone (*bufotenine*), Testosterone, Amyl nitrite and GHB.

This patient admitted to intentionally overdosing on Yohimbine, in order to "enhance my sexual high" His rapid atrial fibrillation and hypertension were treated with clonidine and digoxin. Yohimbine is an alpha II antagonist. Clonidine is the antidote of choice due to its opposing effect on the same alpha receptor.

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