

Pharmacology Update 2010:

What's New... What's Old... What really work in a Dental Office!!!

Dr. Michael K. Gaynor

Topics to be covered

Anesthetics

Pain control

Sedation

Antibiotics

Fever Control

Skin Infections

Anesthetics:

Most important group of drugs used in dentistry

Block repolarization phase – prevent influx of K after polarization

Amide Local Anesthetics

- Only ones available

- Esters were too allergenic

- Allergic potential

 - Delayed response

 - No anaphylaxis

- Overdose symptoms:

 - Tremor, convulsions, apnea

- No cross-hypersensitivity

Why don't they work?

- Given in wrong place

- Palatal root of multi-rooted maxillary teeth

Presence of inflammation

- LA are weak bases, inflamed tissue has an acidic pH – reduction in solubility

- Intrapulpal injection—OUCH!!!!

Vasoconstrictor

- Your friend All of the time
- < Systemic toxicity
- < Blood supply to the area
- Ideal conc. for anesthesia: 1:200,000

Idiosyncratic Rx.

- Restlessness, tachycardia, flushing, syncope
- More prevalent in women
- Can cause lots of distress

Drug interactions with VC

- Mao inhibitors Marplan, Nardil
- Severe hypertensive crisis
- Tricyclic antidepressants: Elavil, Triavil
- Cardiac stimulation
- Phenothiazines- Thorazine Stelazine, Mellaril
- major tranquilizers >> hypotension

Amide Local Anesthetics

lidocaine 2% soln. ineffective without epi

mepivacaine 3% sol.

Neo-cobefrin biotransformed to epi like subst.

prilocaine 4% soln. Citanest

Epi 1;200,000 conc.

Max dose < 10cc/ 400mg prilocaine

Methemoglobinemia > 600mg doses

articaine 4% soln- Septodont

Epi 1:200,000 soln

Similar to prilocaine

bupivacaine only Cook-Waite soln after 1/07

0.5% soln with epi 1;200,000

Extended duration of action

Has longer onset

Good surgical anesthetic

Pain Control

Complex subject

2 components:

Perception

Reaction

Methods of pain control

Remove the cause

Block pathway (LA)

Raise threshold (NSAIA)

Prevent reaction (opiates)

Psychosomatic methods

PAIN

Unpleasant emotional experience which may or may not be caused by a noxious stimulus

Not a pure sense

Emotional experience

NSAIA: non-steroidal anti-inflammatory agents

Cause prostaglandin (Pg inhibition)

No effect of Pg already in the system

Block Pg formation

Mainly peripheral in action, but has some effect in the CNS-hypothalamus

Alter perception of pain

Pg potent mediators of pain (10,000x's)

kinins, bradykinins, lymphokines, histamine

Pg. $\frac{1}{2}$ life of 45-60 seconds

97% inactivated in < 90 seconds- need a constant supply

Minute amts cause long lasting hyperalgesia

Pg present in all body tissues

Regulate body's defense mechanisms

Involved in all stages of acute inflammation

Propionic Acid derivatives

Watch active GI problems
To be taken with food or milk
To be taken while LA is in effect
May cause tachycardia in rare patient
Can cause ulcer with long-term use
No anaphylaxis problems

Ibuprofen: Motrin, Advil

Need 600-800mg

Anaproxen Na: Aleve, Anaprox

Need 225-550mg

Flurbiprofen: Ansaid

Need 100mg

Ketoprofen: Orudis

Need 75mg

For sharp stabbing pain:

Alter patient's reaction to pain
Need controlled substance analgesics- opiates
Patient still feels pain
Reduce the reaction to the pain
All have therapeutic ceiling
All are direct respiratory depressants
N & V are dose related
Constipation & urine retention
Elevates CNS pressure
codeine: Tylenol #3, Fiorinal #3, Empirin #3
hydrocodone: Vicodin, Vicodin-ES, Vicodin-
5-10mg q4h >>>addictive

oxycodone: Percodan Class 2 meds
5-10mg q4h >>>>>>addictive

Tramadol: Ultram ??????
25-50 mg q4h
Related to opiates- same problems

Sedation

Nitrous oxide: N₂O
Colorless, non-irritating gas

Pleasant odor and taste
30-40% good soft tissue analgesia
With good oxygenation: no problems
Chronic toxicity an ongoing problem
Not for addictive personalities or recovering addicts
Decreases sensory awareness
Produces dreamy euphoric state-get decrease in anxiety(3
martini high)
Fail-safe systems????????????????????
Problems:
>> spontaneous abortion in staff and patients
>> birth defects
Problems with acute & chronic sinus problems, mouth
breathers, “control patients”
patients with past substance abuse problems

Oral Management

Ease of administration
Acceptance
Safety
No special skills
Reduced intensity of side-effects, overdose,
Idiosyncratic rxs, possibility of anaphylaxis
Longer to get response
- Unreliable response
- Can't titrate patient
- Prolonged duration of action
- Cause CNS depression

Benzodiazepines

All levels of CNS depression
Good skeletal muscle relaxant
Well absorbed orally-predictable response
Some have >>addictive potential
>therapeutic index
> effect on REM sleep

Agents: the best of the group
*oxazepam: Serax 10-25mg

alprazolam: Xanax 0.25-1mg
lorazepam: Ativan 1-3mg

Antibiotics:

Use if signs & symptoms of infection
Use loading dose
Effect not always predictable
I & D hints(refer if possible)
Bacteriocidal Ab work faster(4-8 hours)
Bacteriostatic Ab(12-36 hours)
Sometimes nothing happens!!!!

Penicillins:

Phenoxymethyl penicillin V
> Gram + spectrum
< gram – effect
Few side effects
Clinically not very effective
Allergy becoming a problem
Good for normal oral spectrum
Cranberry juice for women
Amoxicillin
Broad spectrum: includes Gram- bugs
< MIC
therapeutic index
bid or tid dosing
still allergy problems
sensitive to penicillinase

Augmentin:

Amoxicillin + 125mg clavulanate K
Irreversibly binds with beta-lactamases
Expands spectrum
Staph & strep penicillinase producers
bid or tid

Cephalosporins:

5-10% cross-hypersensitivity with penicillin

Broad spectrum
< MIC, > therapeutic index
Nephrotoxicity problems(> 50 years old)
3 generations available
Good for osteomyelitis infections

1st generation best for odontogenic infections
cephalexin: Keflex
cephadrine: Velosef
3rd generation: expanded gram- spectrum
< gram + activity
cefixime: Suprax
refractory periodontitis

Macrolides:

Similar spectrum to phenoxymethyl
penicillin V
Bacteriostatic

Erythromycin not very effective
All agents have same spectrum
Takes 12-36 hours to work

Clindamycin

BLACK FLAG DRUG

Effective against staph & strep
Drug of choice for staph osteomyelitis
Lots of GI effects
Diarrhea, N & V
Skin eruptions may be serious
Pseudomembraneous enterocolitis

Azithromycin

DRUG OF CHOICE FOR PENICILLIN ALLERGY

5 days of therapy
Good compliance
Few side effects
Great for upper respiratory infection

Dr. Michael K. Gaynor LTD

practice limited to endodontics

Dear Patient --- Welcome to our practice! The following information is needed for our files and is very important.

Mr./Mrs./Dr./Ms. _____ **Date of Birth** _____

Address: _____
_____ **City** _____ **State** _____ **Zip** _____

Home Tel. _____ **Cell #** _____

Occupation: _____ **Work Tel. #** _____

Dental Insurance Program _____ **Policy holder's name** _____

SS#/ID#: _____ **Date of birth:** _____

Physician: _____ **Telephone #** _____

Date of Last Exam: _____

Referred to us by: _____

Person responsible for the account: _____

Patient Health History

Are you under the care of a physician? If yes, what is the condition being treated? _____

Have you ever been hospitalized or had a serious illness? If yes, what was the nature of the illness? _____

Please place an X if you have or have had any of the following diseases or problems:

_____ **Rheumatic fever or rheumatic heart disease**

_____ **Congenital heart disease**

_____ **Heart valve replacement surgery**

_____ **Have you ever had an artificial joint replaced? how long ago** _____

_____ **Cardiovascular disease (heart attack, coronary insufficiency, stroke, cardiovascular Stent placed**

_____ **Do you have chest pain upon exertion?**

_____ **Are you short of breath after mild exertion?**

_____ **Do your ankles swell?**

_____ **Do you get short of breath when you lie down, or do you require extra Pillows when you sleep?**

_____ **Have you ever required a blood transfusion. How long ago?** _____

_____ Have you had surgery, x-ray treatment, or chemotherapy for cancer? Please elaborate on the type of cancer and when you were treated _____

_____ Have you ever been treated for a chronic pain syndrome or neuralgia? _____

Have you ever had any of the following conditions:

| | |
|---|---|
| _____ Asthma | _____ Bronchitis |
| _____ Hay fever | _____ Hives or skin rash |
| _____ Seizures or fainting spells | _____ Diabetes (insulin) _____ Diabetes no meds |
| _____ AIDS | _____ Hepatitis _____ Type |
| _____ Arthritis | _____ Rheumatoid arthritis |
| _____ Kidney problems | _____ Lupus Erythematosus _____ type |
| _____ Thyroid condition _____ Hyper _____ Hypo | |
| _____ High blood pressure _____ Last time it was checked | |
| _____ Pneumonia | _____ Tuberculosis |
| _____ STD | _____ Herpes _____ Shingles |
| _____ Hemophilia | _____ Bleeding disorder |
| _____ Do you have contact lenses in? | |
| _____ Do you have any condition or problem that is not listed, that we should know about? _____ | |

Are you taking any of the following:

| | | |
|---------------------|--------------------------|--------------------------------|
| _____ Antibiotics | _____ Anticoagulants | _____ Blood Pressure Meds |
| _____ Steroids | _____ Tranquilizers | _____ Aspirin related products |
| _____ Insulin | _____ Oral Hypoglycemics | _____ Digitalis or heart drugs |
| _____ Nitroglycerin | _____ Antihistamines | _____ Oral contraceptives |

Are you allergic or can not take any of the following:

| | |
|--|-------------------|
| _____ Local anesthetics (Novocaine)? | _____ Sulfa Drugs |
| _____ Penicillin or other antibiotics? | _____ Iodine |
| _____ Barbiturates, sedatives? | _____ Codeine |

Please list all prescription and non-prescription drugs you take on a regular basis? _____

Attention Women: Is there a possibility that you are pregnant? Y N

Date _____ Signature _____