

Introduction to Pharmacology

Ø Pharmacology:

1. Drug names:

- a. Brand names: names controlled by the business firms.
- b. Generic names: names that any business firm may use.

2. Controlled substances act:

- a. Schedule I: it has no accepted medical usefulness & have a high potential for abuse, as heroin.
- b. Schedule II: it has high potential for abuse & have accepted medical usefulness, as morphine.
- c. Schedule III: it has less abuse potential than the drugs in schedule I & II & has accepted medical usefulness, as acetaminophen.
- d. Schedule IV: it has a low abuse potential & have accepted medical usefulness, as Phenobarbital.
- e. Schedule V: it has a low abuse potential & have accepted medical usefulness, as cough preparations.

3. Prescriptions:

- a. Writing prescriptions: it must include:
The prescriber name, address & telephone – name of the patient & date of prescription – name, strength & quantity of the drug – directions for use – prescriber signature – prescriber license number.
- b. Recording prescriptions: record must be kept of each drug.
- c. Prescriptions & the telephone:
 - Narcotics cannot be ordered without a written prescription.
 - It is against the law for an assistant to call in any prescription.
 - When a pharmacist calls, notify the dentist.
 - Never try to evaluate a patient reaction to a drug.

Ø The terminology of drug effects:

Drug interactions – potentiation – antagonism – drug tolerance – intolerance – hypersensitivity – side effect – secondary effect – idiosyncrasy – overdose – substance abuse – addiction – chemical dependence – physical dependence – withdrawal illness – psychological dependence.

Substance abuse:

- a. Cocaine: a powerful CNS stimulant & a vasoconstrictor.
- b. Alcohol: it is a depressant & a very commonly abused drug.
- c. Narcotic analgesics: they produce euphoria.
- d. Barbiturates & anti-anxiety agents: they are depressants.
- e. Amphetamines & hallucinogens: they are stimulants.

Ø Routes of drug administration:

Inhalation – topical – transdermal – rectal – oral – sublingual
– parenteral – subcutaneous – intramuscular – intravenous.

Ø Drugs commonly used in dentistry:

1. Antibiotics:

- They are chemical substances that inhibit the growth of bacteria & other microorganisms.
- Prophylactic antibiotic administration.
- Superinfections.
- Types of antibiotics:
 - a. Penicillin: penicillin V is against most orofacial infections – extended spectrum penicillin.
 - b. Cephalosporins: a broad spectrum antibiotics, active against gram negative & positive organisms.
 - c. Erythromycin: used with penicillin sensitive patients or penicillin resistant.
 - d. Tetracyclines: administration from the second trimester of pregnancy to 8 years may produce permanent discoloration of teeth. Slight staining – moderate staining – severe staining.

2. Antifungal agents:

Nystatin is effective against candida albicans.

3. Epinephrine:

It is a vasoconstrictor & a vasodilator.

- a. Use in local anesthetic: as vasoconstrictor.
- b. Use in gingival retraction.
- c. Use in controlling diffuse bleeding.
- d. Use in treating severe allergic reactions.

4. Atropine sulfate:

Controls the secretion of saliva & mucus.

5. Corticosteroids:

Used to reduce inflammation.

6. Agents for control of anxiety:

- a. Antianxiety agents: used as premedication or sedation.
- b. Sedative & hypnotic agents: hypnotics produce sleep, sedatives reduce excitability.
 - Barbiturate sedative hypnotics, ultra short – short – intermediate – long acting.
 - Non barbiturate sedative hypnotics.

Ø Pain control in dentistry:

1. Analgesics:

- a. Mild: as ibuprofen.
- b. Moderate: as codeine.
- c. Strong: as codeine, oxycodone hydrochloride, meperidine hydrochloride, morphine, hydromorphone.

2. Sedation:

- a. Levels of sedation: conscious – deep sedation.
- b. Modes of administration: oral or intramuscular – intravenous – nitrous oxide sedation.

3. Planes of analgesia:

Plane 1 – plane 2 – plane 3.

4. Nitrous oxide oxygen sedation:

Nitrous oxide & oxygen in which it produces pleasant, relaxing experience.

5. General anesthesia:

- Stage I analgesia in which the patient is fully conscious.
- Stage II excitement start unconscious, it is an undesirable stage.
- Stage III general anesthesia the patient becomes unconscious with no pain or sensation.
- Stage IV respiratory failure or cardiac arrest.

Ø Local anesthetics:

1. Chemistry & composition:

Amides as lidocaine, or esters as procaine.

2. Modes of action:

Temporarily blocking generation & conduction of nerve impulses.

3. Duration:

Short acting – intermediate acting – long acting.

4. Epinephrine in local anesthetics:

Added in the ratio of 1:50000, 1:100000, or 1:200000.

5. Contraindications:

History of heart condition – interact with other drugs.

6. Local anesthetic cautions:

- a. Administration into a blood vessel.
- b. Infected area.
- c. Localized toxic reaction.
- d. Systemic toxic reaction.
- e. Temporary numbness, or paresthesia.

7. Topical anesthetic:

Liquid – ointment.

Ø Injection techniques:

1. Injection techniques:

Infiltration – nerve block (inferior alveolar, incisive or mental) – periodontal ligament injection - intraosseous.

2. Local anesthesia set up:

Carpules – syringe – disposable needles.

3. Precautions:

- Keep cartridge in room temperature.
- Don't use cracked or discolored cartridge.
- Don't leave needle attached.
- Never save cartridge for reuse.