Oral medicine sheet #4
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Medications used in oral medicine

the most used drugs in dentistry are dedicated to relief pain “analgesics” and eradicate infections “antibiotics”. There are other drugs used for other diseases like immune-mediated diseases, diseases affecting salivary flow, TMJ diseases, and headaches.
The goal of any treatment is “Cure” and this can be accomplished through: accurate diagnosis and appropriate treatment.
There are two main concepts you should be familiar with: treatment and management.
Management is overall treatment.
For example, the treatment for a patient with caries is removal of caries, while management includes the treatment and oral hygiene instructions, diet advice, and smoking cessation.

Drugs are either topical or systemic.
Usually systemic medications are used for dental pain
topical drugs are used for simple and mild mucosal diseases “ulcers, erosions”.
Some patients use clove to relief dental pain “which is not effective”, some even put aspirin at the site of pain which will cause ulceration.

Systemic analgesics:
1- NSAID’s
2-Paracetamol “like Panadol”
3-Opioids or narcotics

NSAID’s are named like that because their anti-inflammatory effect have been discovered after the first anti-inflammatory drug “Cortisol, which is a steroid”.
NSAID’s mechanism of action:
Arachidonic acid is converted to various metabolites “prostaglandins, leukotrienes, and thrombaxines” by cyclooxygenase “COX” enzyme. Theses metabolites have several functions including transmitting pain “through stimulation of peripheral nerves”, and NSAID’s work on inhibiting “COX”.
NSAID’s can be selective “work on COX1” and non-selective “work on both COX1 and COX2”
The non-selective NSAID’s “like aspirin” affect the platelets, and this results in increasing the bleeding tendency, and they cause inhibition of prostaglandins which line the stomach and they decrease the effect of the acids in the stomach on its walls “people who take a lot of non-selective NSAID’s have more tendency to have peptic ulcers”.
Selective NSAID’s don’t affect the synthesis of prostaglandins, and they generally have lesser side effects than the non-selective ones, but they increase the risk of MI and other cardiac side effects.
Side effects of NSAID’s include “peptic ulcers, bleeding tendency, nephrotoxicity, teratogenic effect (premature closure of ductus arteriosus in the heart so it’s not good to be given in the third trimester of pregnancy)”
Examples of NSAID’s: Brufen, Doloraz can be called “زيت سمك” by some patients, naproxen, vlotaren “voltrex”.

Reye’s syndrome: children who are virally infected (sore throat, herpes stomatitis) and given aspirin, they may get Reye’s syndrome “hepatic toxicity, and hepatic encephalopathy”, so children with viral infections shouldn’t be given aspirin.

Paracetamol:
Its mechanism of action is unknown.
It has analgesics and antipyretic activities, and it’s safe “OTC”.
But when used improperly, toxicity “hepatic toxicity and liver failure” from paracetamol will result.
For children this drug is found as suspension which contains a lot of sugar so it should be given to children with care not to induce caries “it should be sugar free”

Opioids and narcotics:
like: morphine, codeine, … etc.
It has limited effect on toothache, so their use in dentistry is very limited but it can be given to patients with severe mucositis “after radio/chemo- therapy” or to patients with pain related to cancer.
They are controlled drugs, which means the prescription can’t be written by anyone just by specialists and there are limited number of dozes that are allowed to be prescribed, because these drugs are addictive.
Side effects: dependence, constipation, respiratory depression “that’s why these drugs aren’t given after accidents or for unconscious patients”, urinary retention.

In certain cases combination analgesia is used,
NSAID’s with paracetmol.
Paracetamol with opioids.
Topical with systemic analgesics “especially in oral ulcers.

Antibiotics: can be
Antibacterial
Antifungal
Antiviral
Antiprotozoal “used in the oral cavity very rarely”
Antihelminthic “used in the oral cavity very rarely”

Antibacterial medications
mainly used for odontogenic infections, which are polymicrobial “more than one microbe cause the infection (aerobic, anaerobic, gram +ve, gram –ve, bacilli, cocci)” so the antibiotic used should be a broad spectrum antibiotic.
The main antibiotic used is Penicillin “which has acceptable side effects”, (MOA for antibiotics should be known).
Metronidazole “flagyl”, clindamycin,and cephalosporins are also used in the oral cavity.
The type of antibiotic to be prescribed depends on:
1- Type of the disease.
2- Patient’s status.
3- Procedure to be done.

Indications for antibiotics can be:
1-Theraputic: to treat an infection.
2-Prophylactic: antibiotics are given in order to prevent an infection.

Theraputic indications:
1-Odontogenic infections with facial “fascia” space involvement.
2-Odontogenic infections with altered vital signs.
3-Odontogenic infections in immune-compromised patients “even if the infection isn’t severe”.
4-Aggressive and rapidly progressing infections “osteomyelitis, actinomycosis, acute necrotizing ulcerative gingivitis (this is the only gingivitis that requires antibiotic for treatment)”.
5-Trauma and fractures patients.

\*\*regarding infections with facial space involvement, here “facial” refers to fascia, which has potential “not real” spaces with the muscles (these spaces aren’t present in normal circumstances, they appear when there’s inflammation) antibiotics are important in this case to prevent the infection from continuing to other facial spaces “because the fascia is one continuous sheet”.

\*\*Patients with fever can be diagnosed without measuring their temperature, by their dry eyes and cracked lips.

Prophylactic indications:
1-To prevent local infection in the oral cavity “surgical site infections” (like when there’s a long surgery to remove a wisdom tooth).
2-To prevent distant infections (like patients with prosthetic heart valves “or any other prosthesis (knee joint, hip joint, etc)”, they are given antibiotics to prevent infective endocarditis).

There are some cases where antibiotics are not to be given in dentistry:
1-Pulpitis
2-chronic gingivitis
3-localized dental abscess
4-flare up after endodontic treatment

Antifungal medications:
Used to treat fungal infections in the oral cavity, mainly candidal infections.
Usually topical antifungal drugs are used, systemic antifungal are rarely used “in severe cases, or in patients with immune-suppression”.
Candidal infection is called “disease of diseases” because its presence indicates that there are other underlying diseases, candida is an opportunistic microbe, so as a treatment antifungal drugs are used, while as a management the underlying disease should be treated.
Antifungal therapy should continue at least two weeks after the clearance of symptoms.
Antifungal drugs can be:
1-polyene: nystatin, amphotericin.
2-azole: miconazole, fluconazole, -azole.
They differ in their mechanism of action
Polyene are used as topical drugs, while azoles are used both systematic and topical.

Side effects:
1-they cause hepatic toxicity.
2-they have a lot of drug-drug interactions, especially with warfarin “increase the bleeding tendency a lot”.
3-candida can form resistance for these drugs “like bacteria”
4-they are not safe to be given in pregnancy.

Antiviral medications:
They’re used to treat many diseases that affect the oral cavity like herpes, they are effective when given in a very early stage of the disease.
Anti-herpes drugs:
aciclovir and its derivatives, valacyclovir.
MOA: the drug will be phosphorylated and will cause inhibition to the viral replication.

Immune modulating drugs
there are a lot of immune mediated diseases that affect the oral cavity like oral ulcers, lichen planus, and salivary glands diseases, and the immune modulating drugs are used to suppress the negative effects of inflammations “the uncontrolled release of mediators”.
Steroids are the main immune modulating drugs, they inhibit the release of interleukin, they inhibit the transcription of immune related genes, and they inhibit the cellular inflammatory processes. Their effect is very diverse and affects many parts of the body so they’re called “magic drugs.
In addition to the diseases mentioned earlier they are used for pemphigus, severe aphthous ulcers, erythema multiforme.
They can be topical or systemic, the topical drugs are either mild potency, medium potency, and high potency “the more severe the disease the more potent drug you should use”.
They should be used carefully because of their side effects “either topical or systemic”,
topical side effect for steroids, is candidal infection “because steroids reduce the immunity”, so patients should take antifungal drugs in addition to steroids to prevent candidal infection.
Steroids can also be given as intralesional injections, in patients with severe lichen planus or, for patients with recurrent labial swelling due to allergy, or even with scars.
Systemic steroids are used with severe ulcers “which don’t respond to topical steroids”, or in patients with both oral and skin lesions, facial palsy, they even can be used as prophylactic in patients with adrenal insufficiency, before exodontias in order to prevent adrenal crisis (loss of consciousness, hypotension, hypoglycemia, bradycardia) “because the patient will go under stress during exodontias, and there will be no source of steroids “exogenous or endogenous” during the procedure, so the patient will collapse without prophylactic steroids.

Nearly all body systems have side effects from steroids:
1-Hypertension
2-diabetes
3-osteoporosis
4-peptic ulcerations
5-acne, skin rash
6- predisposition to cancer
7-moon face appearance

Cyclosporine is used for immune-supression “in transplantation”, can be used in the oral cavity.
Other immune-suppression drugs like (topical calcineurin inhibitors; tacrolimus), they inhibit transcription of interleukin 2

Steroid sparing drugs, they are used in patients who take a lot of steroids to reduce the dose of steroids they’re taking “cyclosporine, azathioprine … etc”

Biologics.
They are modern drugs, synthesized by recombinant DNA technology, these drugs are used to inhibit specific inflammatory pathways, so their side effects should be less than other non specific inflammatory inhibiters, can be used in osteoporosis, cancers.
Any drug’s name that ends with “mab” is considered biologic (mAb = monoclonal antibody).
They also have side effects like osteo-necrosis (esp. bisphosphonates), after dental extractions.

**Nearly all men die of their remedies, and not of their illnesses.** **Molière**