Prescription and OTC Anti-Allergy Medications

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Introduction and overview about the group of drugs being discussed

- Polina Katsova

Over the Counter Anti-Allergy Medications

- An allergy is the response of the body's immune system to normally harmless substances such as pollen and food.
- While in most people these substances pose no problems, in allergic individuals their immune system sees this as a' threat' and produces a response.
- Most allergy sufferers first reach for over-the-counter antihistamine pills, which work by blocking histamine.
- Histamine is a natural chemical produced by mast cells. When your immune system detects a foreign substance, histamine is released and it binds to H1 receptors in blood vessels, causing them to enlarge. Histamine also binds to other receptors causing redness, swelling, itching, and changes in secretions.
- Second generation oral antihistamines block the histamine and keep it from binding to receptors thus preventing those symptoms.

-fexofenadine (Allegra)

-loratadine (Claritin)

- First generation oral antihistamines do the same but also contain ingredients that cause drowsiness.

- diphenhydramine (Benadryl)

Prescription Anti-Allergy Medications

- Prescribed and OTC drugs are regulated by the FDA to ensure that they're safe and effective.
- The same drug may be prescribed or OTC, but the potency will be higher for those that require physician scripts.
- According to the Iodine website there have been a lot more reported side effects with prescription Clarinex vs OTC Claritin.
- There may also be more drug interactions with medications that are prescribed vs OTC.

-Desloratadine (Clarinex)

-Levocetirizine (Xyzal)

-Azelastine HCL (Astelin) 2

Combination Anti-Allergy Medications

- Some allergy medications contain an antihistamine and a decongestant to relieve multiple allergy symptoms.
- Pseudoephedrine is often added as the decongestant. It is a sympathomimetic drug of the phenethylamine and amphetamine class. It shrinks blood vessels in the nasal passages, which is the main cause of nasal congestion.

- loratadine and pseudoephedrine (Claritin-D)

- acrivastine and pseudoephedrine (Semprex-D) 3

Types of allergic reactions

Type I- Immediate or anaphylactic-type

- A mild form would include Allergic Rhinitis (seasonal allergies) that cause things like coughing, sneezing, watery eyes and nasal congestion.
- This type is also responsible for peanut or bee sting allergies that can lead to swelling of the lips, tongue, throat, shortness of breath and anaphylactic shock.
- It is treated with epinephrine, (EpiPen), which acts on Alpha-1 adrenergic receptors to raise blood pressure through vasoconstriction.
- This is the most common type of allergy and also one of the most dangerous if reaches anaphylactic shock.

Type II- Antibody

- Involves specific antibodies called the Immunoglobulin G (IgG) and IgM.
- Often occurs after an organ transplant when the body doesn't recognize the new organ.

-Examples: Rheumatic Fever, Hemolytic Disease of Newborns

Type III- Immune complex-mediated

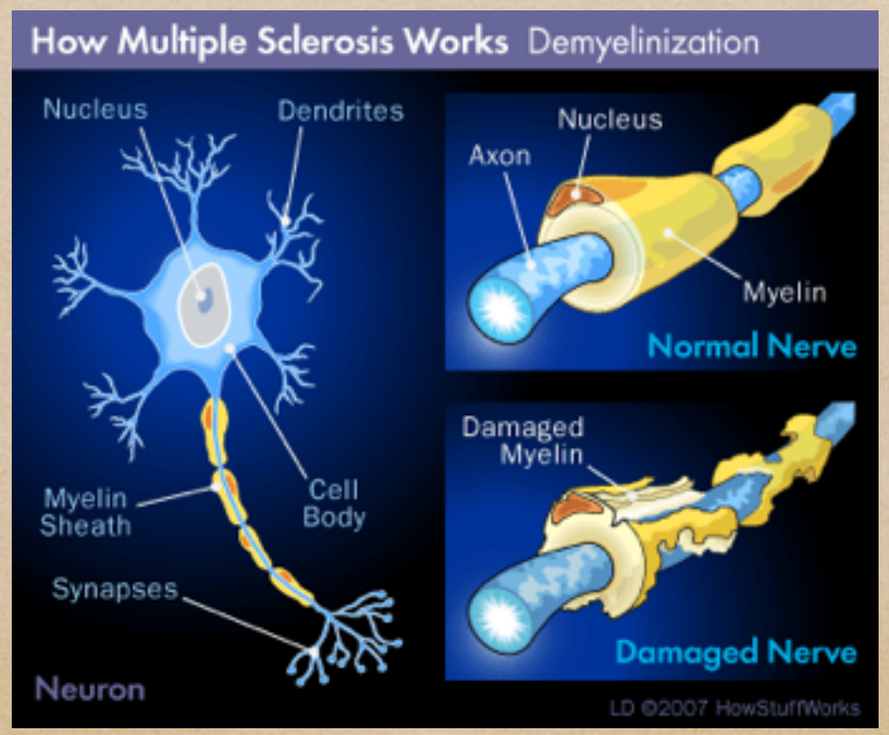
- Immune complexes are the bound form of an antibody and an antigen.
- Occurs when there are more antigens then antibodies. Thus the antibodies bind to multiple antigens causing clumps.

-Examples: Lupus, Rheumatoid Arthritis

Type IV- Delayed or cell-mediated

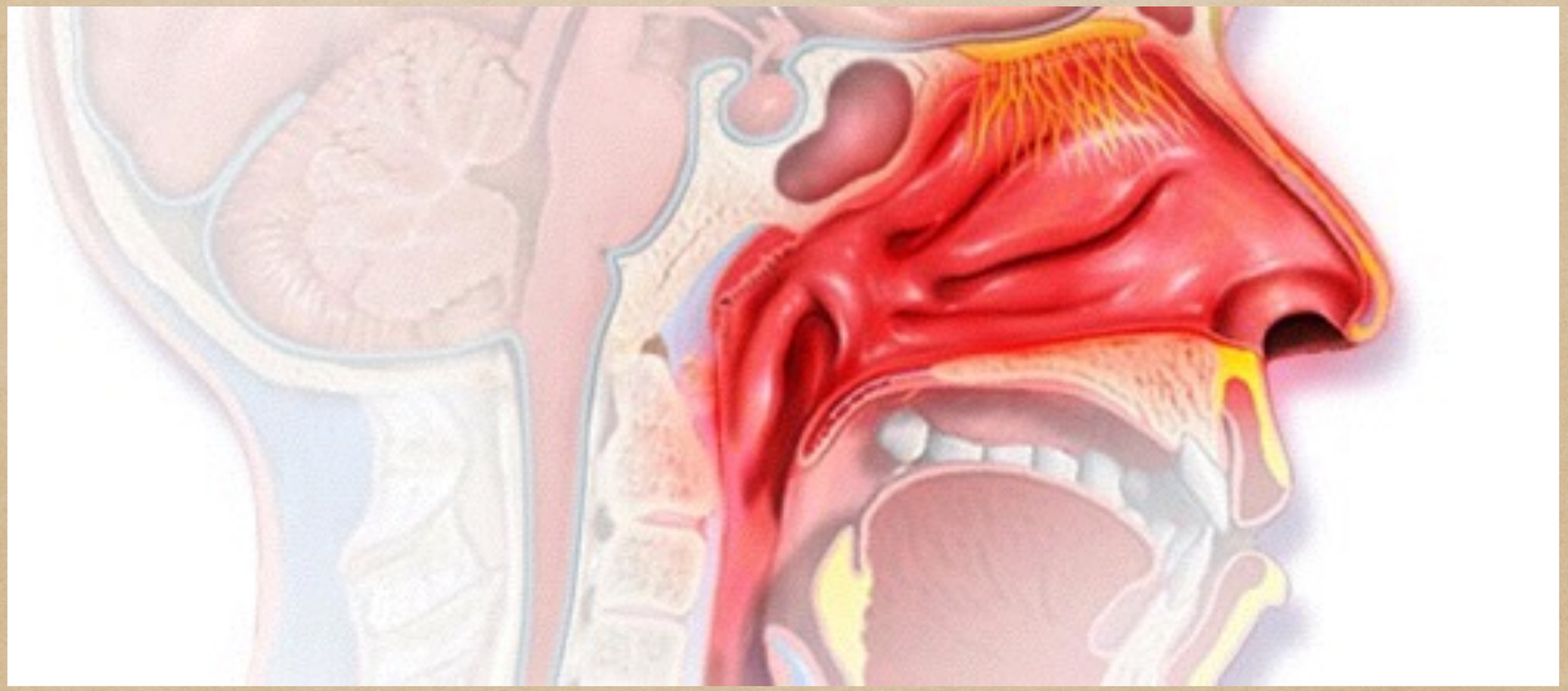
- Involves T1 cells attracting and activating macrophages.
- It is cell-mediated and antibody dependent.

-Examples: Contact Dermatitis, Multiple Sclerosis 4



Diseases and conditions they are intended to treat

- Carlos Pareja



OTC (Over-the-Counter)

•diphenhydramine (Benadryl)

-It is indicated for the relief of allergy associated symptoms such as sneezing, runny nose, itchy throat, and itchy and watery eyes.
-It used to neutralized the action of histamine in many directions, and it is recommended for the relief of allergic symptoms. Benadryl is to be taken 4 times daily by patients with acute or chronic urticaria and by those with hay fever.
-Urticaria are red welts on the skin that itch intensely, sometimes with dangerous swelling, caused by an allergic reaction, typically to specific foods.

•fexofenadine (Allegra)

-This drug can be used in adults and children 2 years of age and older. Allegra is an antihistamine indicated for the treatment of symptoms of seasonal allergic rhinitis, itchy nose, watery eyes and chronic idiopathic urticaria (CIU).
-According to Medscape, Chronic idiopathic urticaria (CIU), is defined as the occurrence of daily, or almost daily, wheals and itching for at least 6 weeks, with no obvious cause, has not been the subject of detailed epidemiological studies.
-Also, It is often used as a potential treatment for mild to moderate allergic asthma. According to a long-term Brown University study published in the Annals of Allergy, Asthma and Immunology (Vol. 84 No. 5, 2000), individuals with allergic rhinitis are about three times more likely to develop asthma.

•loratadine (Claritin)

-Claritin is a heavily advertised drug that is safe and effective for chronic hives, seasonal nasal allergies. Also created to treat outdoor allergens such as pollen and molds.
-Claritin is used to treat seasonal allergic rhinitis commonly called hay fever.

PRESCRIPTION

•desloratadine (Clarinex)

-Clarinex is the successor to its enormously popular allergy drug Claritin.
-Clarinex is often used against hives and indoor allergies.
-Clarinex allergy drug is used for treatment of hives and reactions to dust and animal dander which are often produced by pets, mice or cockroaches. Animal dander is composed of tiny, even microscopic, flecks of skin shed by cats, dogs, rodents, birds and other animals with fur or feathers and this can cause an allergic reaction to certain people.
-Clarinex new labeling states that patients can drink grapefruit juice without fearing that it will affect bioavailability of the drug. In addition, broadened labeling states that the drug can be used for patients with both seasonal allergies and mild to moderate asthma.

•azelastine (Astelin)

-Azelastine is an antihistamine; oral antihistamines are effective in treating most symptoms of seasonal allergic rhinitis, but are generally marginally effective in relieving nasal congestion, the number-one complaint of allergy sufferers.
-Azelastine hydrochloride (ASTELIN Nasal Spray) may improve nasal congestion in patients with symptomatic seasonal allergic rhinitis.
-Astelin is indicated for the treatment of the symptoms of seasonal allergic rhinitis (patients 5 years of age and older) and nonallergic vasomotor rhinitis (patients 12 years of age and older).

•levocetirizine (Xyzal)

-Xyzal is indicated for treating nasal allergies in young children.
-Xyzal is used for children age six months and older for the relief of symptoms of perennial allergic rhinitis (indoor allergies) and chronic idiopathic urticaria (chronic hives); for children age two years and older is indicated for symptoms of seasonal allergic rhinitis (outdoor allergies).

Combined anti-allergy medications

OTC

- **loratadine and pseudoephedrine (Claritin -D)**

-Claritin-D was approved by the FDA for the treatment of symptoms associated with seasonal allergic rhinitis.
-Recent studies have demonstrated that loratadine plus pseudoephedrine significantly reduces nasal congestion and relieves symptoms of rhinitis more effectively than either loratadine or pseudoephedrine alone.

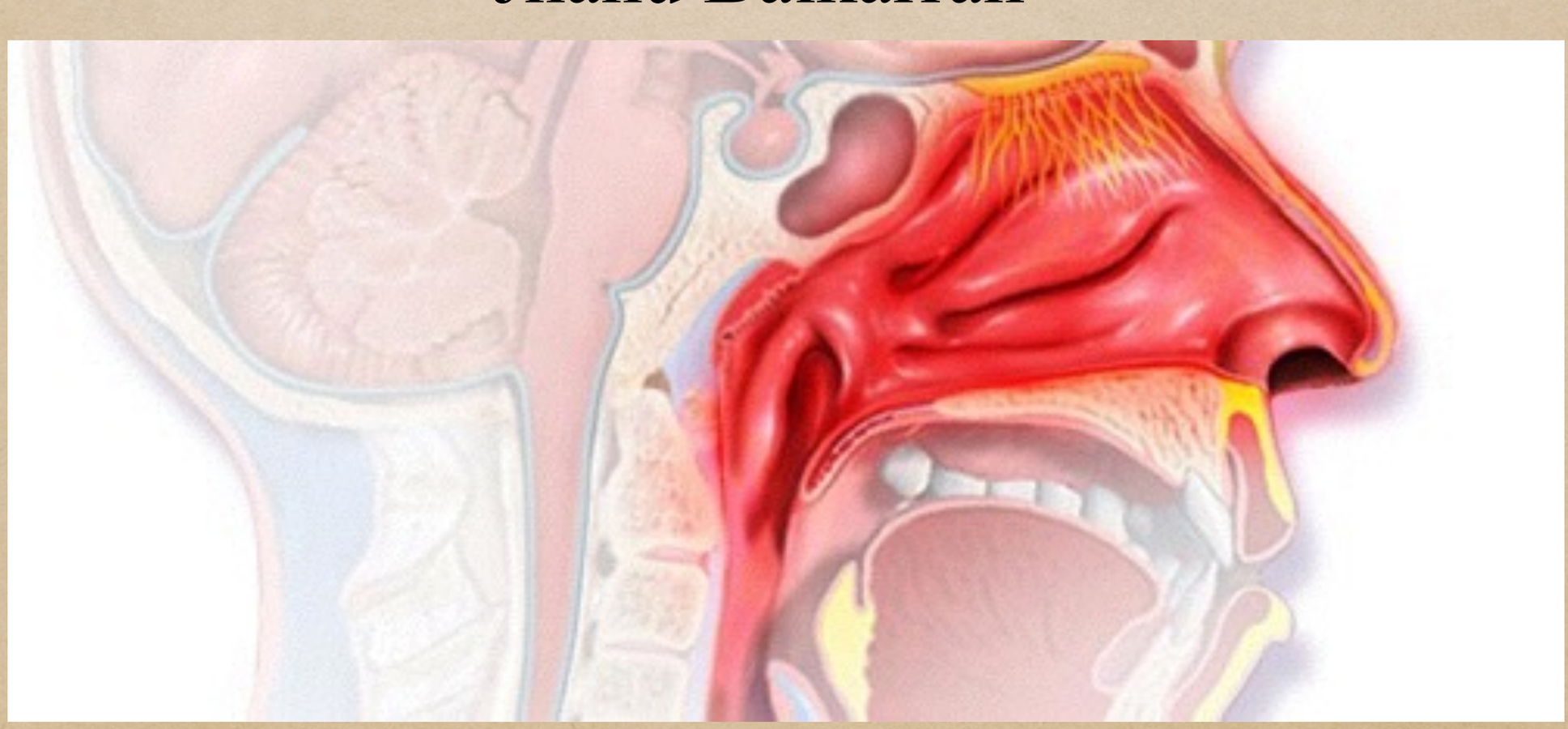
Prescription

- **pseudoephedrine and acrivastine (Semprex - D)**

-Semprex-D has been shown to be effective in treating manifestations of seasonal allergies including runny nose, itchy and watery eyes, sneezing and nasal congestion, with many patients experiencing relief within one hour.
-Semprex-D reduced the intensity of sneezing, runny nose, itching and watery eyes more than pseudoephedrine alone, and reduced the intensity of nasal congestion more than acrivastine alone, demonstrating a therapeutic contribution of each of the components.

Overview of the system or the process (for example, circulatory system, blood coagulation process) where these drugs work and how those systems function in health

- Jhanu Balkarran

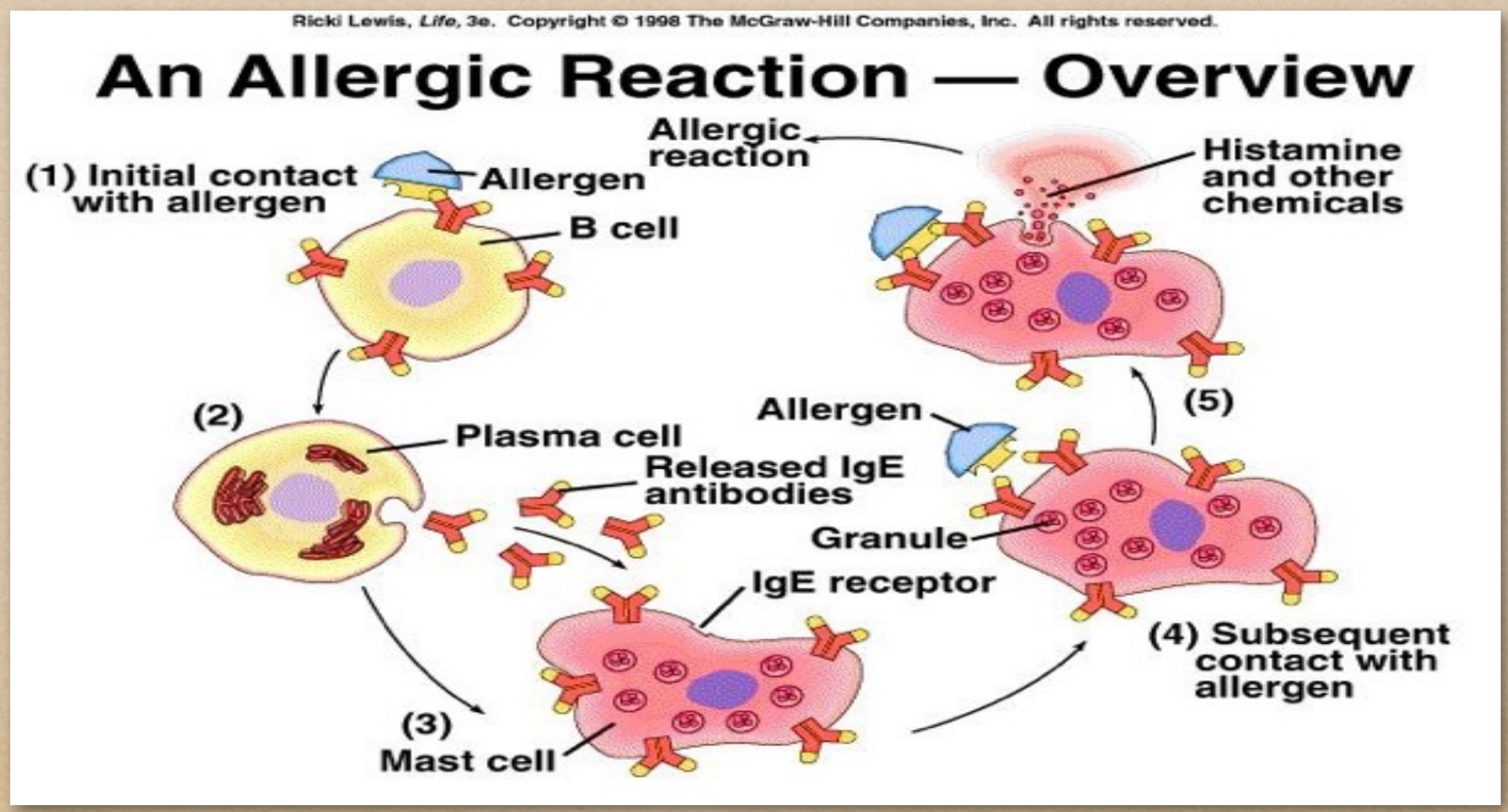


Pharmacokinetics

1. It is the study of how drugs can move in the human body. Pharmacokinetics revolves around , Absorption ,Distribution, Mechanism ,and Excretion. These drugs can be administered by oral tablets, ophthalmic drops and nasal spray, When a drug (tablet form) enters in the human body it most pass the “First- pass Effect”, which is the liver. The liver can activate the drug by biotransformation or choose not to activate it. The drugs can either be an hydrophilic, which can not pass through the blood brain barrier , or an lipophilic drug, which can pass through the blood brain barrier. Once the liver transform the drug, it will then enter the blood vessel and into the organs. The drug will then progress and delivered throughout the entire body and to the targeted site. It will do so while traveling to unwanted sites in the body, which results in side effects of medications.

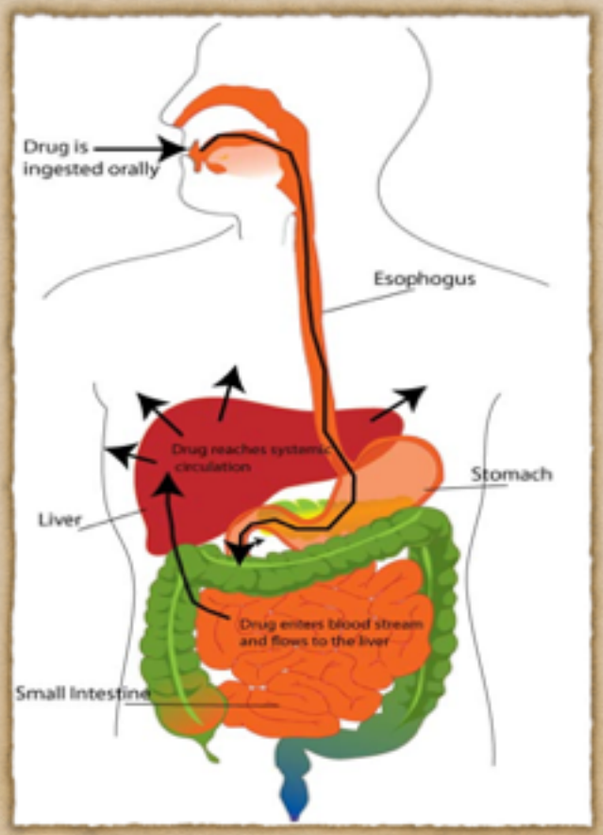
OVERVIEW

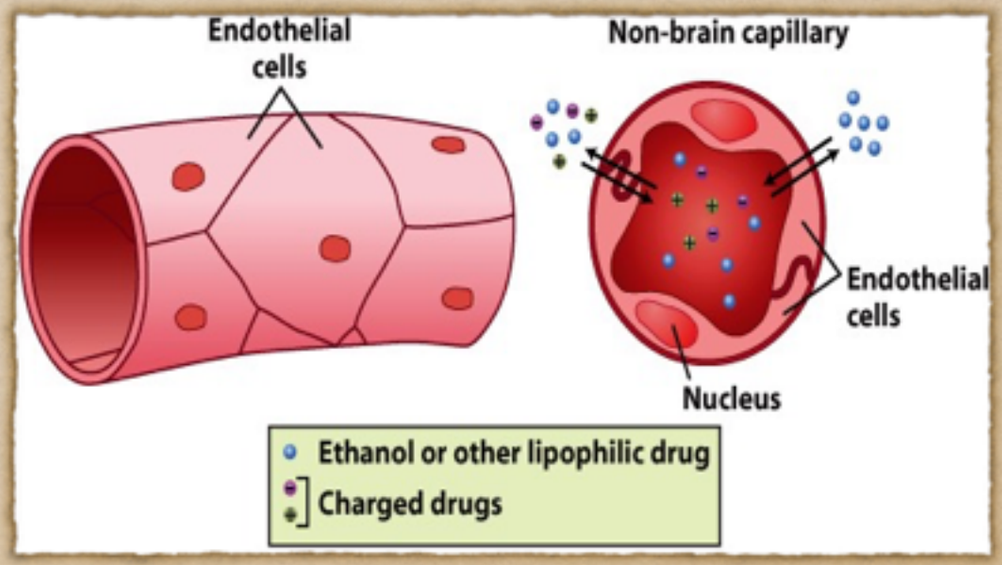
Histamines are part of our body defense mechanism. In an allergic response, the plasma cell produces Immunoglobulin E (IgE) antibodies which is released and bind to mast cells once it detects foreign objects which are not limited to, but such as pollen, animals fur, viruses, and germs. Since histamines are part of our body defense system, it is in our blood stream. As mentioned earlier in this power point ,once histamines is triggered, it will attach itself to the histamine (H1) receptors on the cells and causes it to swell as part of the defense.



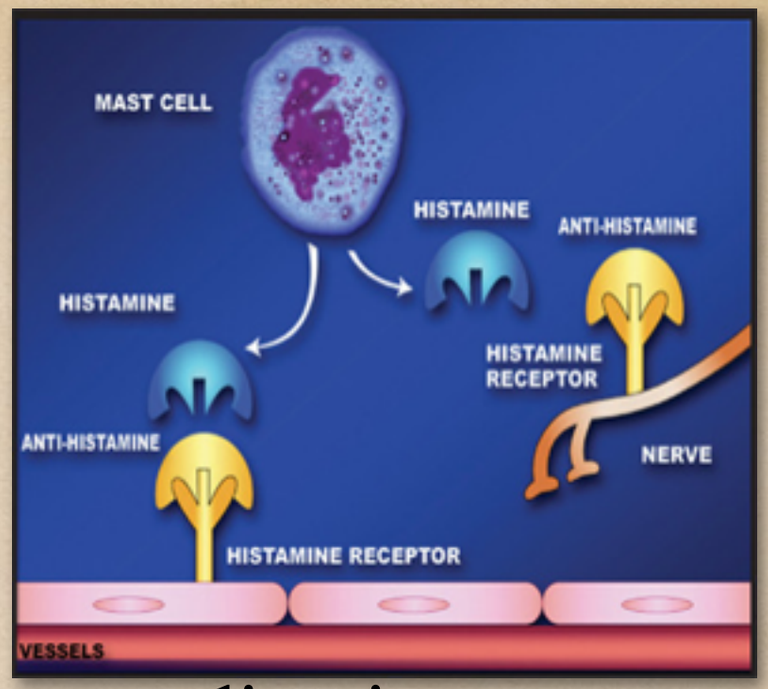
Liquid or capsule routes

- **1)**Drug is given by tablet to swallow orally ,nasal pathways, or intravenously
- **2)**Tablet goes down the stomach, and proceed into the small intestine which disintegrate the pill. Nasal spray targets congested nostrils directly.
- **3)**The pills will pass through endothelial cells and blood vessels
- **4)**Small molecules of the pill enters the hepatic portal vein ,first –pass effect.
- **5)**Lastly it enters the blood stream to be distributed throughout the body.





DESIRE GOAL



Now the main goals of these allergy medication are to target the histamine receptors H1 and block it. Taking the medications before or after contact of what-ever triggers the allergic reaction can help relieve allergy symptoms which are not limited, but such as runny nose, itchy eyes, and skin rash. Some individuals will not know that they are allergic to certain things. These medications are designed to help individuals to relieve allergy symptoms , and allow our immune system to be back on track of protecting us.

Drugs (brand and generic names) and their uses for treatment / management of disease process. Include MOA, drug-receptor interactions

- Sylvia Lee

Uses for Treatment

OTC (Over-the-Counter)

These drugs work by blocking the effects of the naturally occurring chemical, histamine in the body. By blocking one or more types of histamine receptors, it prevents activation of cells by histamine, which often involves in different types of allergic reactions in our body.

Used to treat sneezing, runny nose, watery eyes, hives, skin rash, itching, and other cold or allergy symptoms

1. **Diphenhydramine (Benadryl): sedating**
2. **Fexofenadine (Allegra): non-sedating**

- It lacks the cardiotoxic potential of terfenadine (antihistamine used for allergy treatment), because it does not block the potassium channel, which involves cardiac cells.

3. **Loratadine (Claritin): non-sedating**

- A long-acting tricyclic antihistamine with selective peripheral histamine H-1 receptor antagonistic activity.

Prescription:

Prescribed drugs may contain stronger dosage, and can be used for more selective treatment by blocking different chemical in our body.

1. desloratadine (Clarinex)

- tricyclic antihistamine that is selective & peripheral H-1 antagonist action.
- doesn't enter the central nervous system: doesn't cause drowsiness

2. azelastine (Astelin): nasal sprays

- An antihistamine formulated as a metered-spray solution for intranasal administration
- Exhibits histamine H-1 receptor antagonist activity in isolated tissues (ex. nose) in human body (its major metabolite called desmethylazelastine, possesses H-1 receptor antagonist activity)

3. levocetirizine (Xyzal):

- Third-generation (drugs with increased efficacy with fewer adverse drug reactions), H-1 antihistamine, non-sedative
- Often used to treat symptoms of year-round (perennial) allergies, or symptoms for seasonal allergies.

Uses for Treatment

Combination Drugs:

Combination drug is a fixed-dose combination, which combines 2 or more active drugs in a single dosage form:

For both drugs: “pseudoephedrine” shrinks blood vessels in the nasal passages

1. Loratadine & pseudoephedrine (Claritin-D):

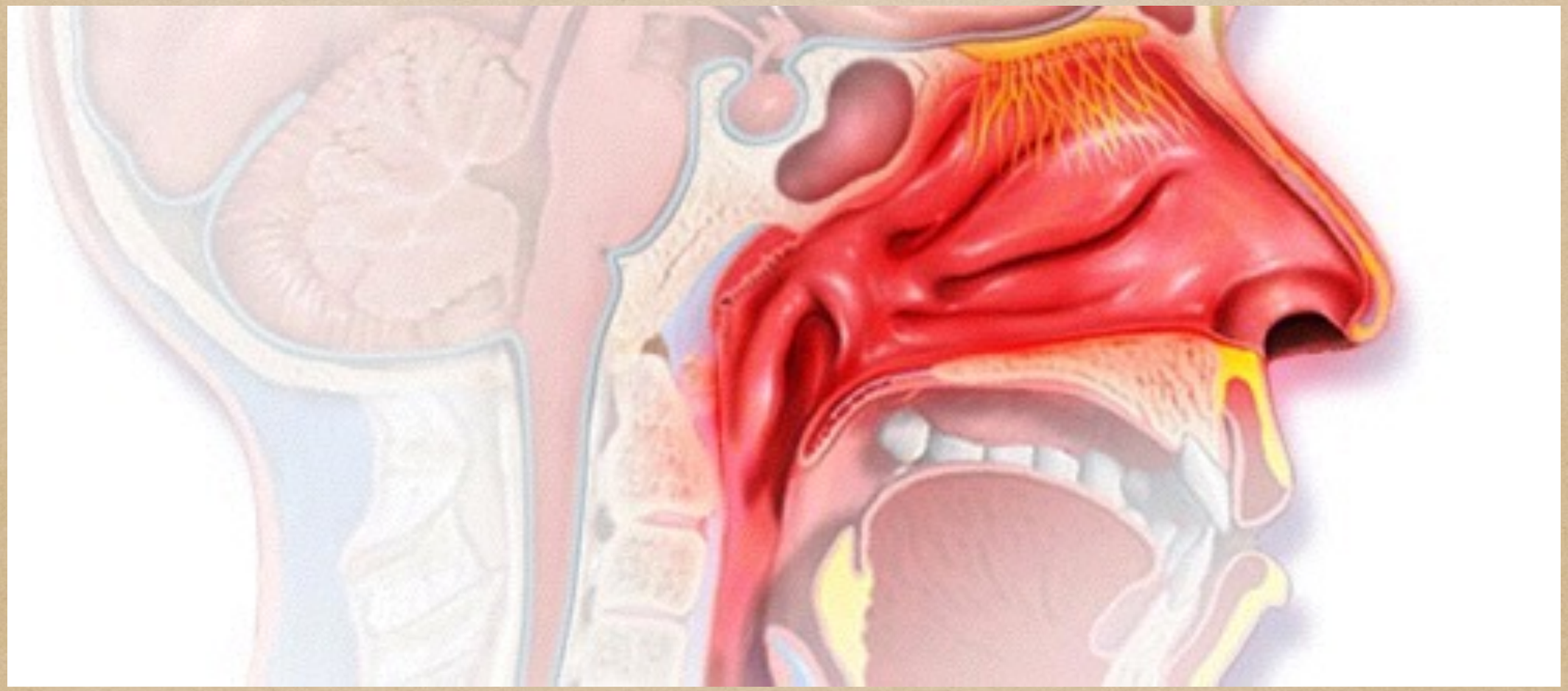
- It is used to treat sneezing, runny or stuffy nose, itchy or watery eyes, hives, skin rash, itching, other allergic symptoms and the common cold.

2. Acrivastine & pseudoephedrine (Semprex-D):

- It is used to temporarily relieve symptoms caused by common cold, flu, allergies, or breathing illnesses

Major adverse effects and reactions, oral/dental side effects and effects on dental treatment

- Gehan Ibrahim



OTC medications and their adverse effects

Allegra

- Headache, vomiting, fatigue, dizziness, fever, drowsiness, diarrhea, nausea, dyspepsia(indigestion).

No significant effects on dental treatment

Benadryl (adverse effects frequently not defined)

Effects on dental treatment: Xerostomia (dry mouth) and dry mucous membranes. May contribute to periodontal disease and oral discomfort.

Claritin

- Headache, abdominal pain, nervousness, fatigue.

Effects on dental treatment: Xerostomia (dry mouth) and stomatitis (inflammation of the mucous membrane in the mouth).

Prescription medications and their adverse effects

Clarinex

- Fever, headache, irritability, diarrhea, insomnia, fatigue, dizziness, upper respiratory tract infection, cough.

Effects on dental treatment: Xerostomia (dry mouth).

Astelin

- Headache, drowsiness, cough, upper respiratory tract infection.

Effects on dental treatment: Bitter taste, xerostomia, aphthous stomatitis AKA"canker sore"(small shallow sore inside mouth), glossitis (inflammation of the tongue),and burning sensation in throat. Astelin may also contribute to periodontal disease and oral discomfort.

Xyzal

- Diarrhea, drowsiness, fatigue, constipation, vomiting, weakness, cough.

Effects on dental treatment: Xerostomia (dry mouth) and changes in salivation.

Combined medications and their adverse effects

Claritin D (Loratadine and pseudoephedrine)

- Headache, abdominal pain, nervousness, fatigue.

  Effects on dental treatment: Xerostomia(dry mouth).

Semprex D (Acrivastine and pseudoephedrine)

- Headache, insomnia, dizziness, nervousness, nausea, dyspepsia (indigestion), somnolence (sleepiness).

  Effects on dental treatment: Xerostomia (dry mouth).

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