

Welcome to this lesson today on immune system disorders and diseases. Today we're going to be talking about various immune system disorders and diseases and how they affect the body. So we're going to start today by talking about allergies.

So allergies are substances that enter the body and cause an immune system attack. And so this immune system is responding to an allergen in the case of allergies. And an allergen is generally a harmless substance that enters the body and causes this immune system attack, such as dust or pollen or food or sometimes medications, pet dander, et cetera. So they're these normally harmless substances that are causing a person to have an immune system attack. And that's what allergies are.

So basically it causes a person's mucous membranes to become inflamed. So we're going to take a look here at what happens when a person is experiencing allergies. So let's say that you are allergic to pollen, as many people are. So you are outside on a day, just kind of hanging out in the yard. And you inhale some pollen as you're outside.

So as you inhale that pollen, it'll enter your system. And it's going to attach or bind to B-cells in your body. So this is a B-cell. And this is going to be pollen. So it attaches to receptors on this B-cell.

What then happens is that it causes effector B-cells to make and secrete IgE antibodies to that allergen. It's making IgE antibodies to that allergen. So these are the antibodies being produced to this allergen by these effector B-cells. So desensitization therapy basically what that does is it's a way in order to treat allergies that basically stimulates the body to produce IgG antibodies instead of IgE. So it's a treatment for allergies.

But anyway, so these IgE antibodies are produced by these effector B-cells. And then what's going to happen is that those antibodies are going to attach to mast cells. So this would be a mast cell. And a mast cell is a type of white blood cell that's found in your tissues.

So when those antibodies attach to this mast cell, it stimulates the release of histamines. So these in here, these little dots are histamine granules. So when these antibodies attach to the mast cell, it causes these histamine granules to be released into the body.

And the release of these histamine granules is what causes inflammation. So it causes the inflammation of your mucus membranes, which leads to that yucky feeling when you have allergies. So antihistamines are drugs that you can buy-- you can go to the drugstore and buy them over the counter-- that provide short-term allergy relief, because it blocks the effects of these histamines here. So in a nutshell, that's kind of how allergies work.

So anaphylactic shock is a type of whole-body allergic reaction. It's a very, very serious entire body allergic reaction. And generally, somebody who goes into anaphylactic shock would then have to be injected with epinephrine, which is a drug that will help reverse the effects of that allergy.

So let's talk about some autoimmune disorders next. So autoimmune disorders are when the immune system attacks normal healthy body cells. So these different disorders right here are examples of autoimmune disorders. So again, autoimmunity is a type of disorder in which the person's own body cells are attacked.

So rheumatoid arthritis is one of these types of disorders where joint tissue is attacked. And basically, this causes the joints to become inflamed. And it can be really painful. So rheumatoid arthritis is a type of autoimmune disorder.

Type I diabetes is another type of autoimmune disorder in which insulin-producing cells of the pancreas become attacked. So those cells become attacked. The pancreas can no longer produce insulin, which can be an issue. So people who have Type I diabetes generally have to use injectable insulin in order to control their blood glucose levels.

And lupus is another type of autoimmune disorder that's characterized by a butterfly rash on the face. And basically, with lupus, antibodies are produced to a person's own DNA. So lupus has a wide range of effects on the body. It's not just one particular effect. It can affect many organs of the body, because of the way in which a person's own DNA is attacked.

And lastly, we're going to talk about deficient immune responses, or immunodeficiency. So this is when a person's own immune system is weak or can even be almost nonexistent. It's not functioning normally or properly.

So AIDS is a common example of immunodeficiency. And it stands for Acquired Immune Deficiency Syndrome. So AIDS is a disease caused by the HIV virus. And basically what happens is that a person's own immune system is just not working, so it makes them susceptible to contracting many other types of diseases.

And generally, because their immune system is so weak, they can't fight these other diseases off. So their immune system is very weak or almost nonexistent. So usually a person who has AIDS will generally die of some sort of other disease, because they're so susceptible to these other diseases because of their weakened immune system.

So this lesson has been an overview on immune system disorders and diseases.