

Reaction: Anaphylaxis

There are different types of allergic reactions and the most deadly is anaphylactic shock. This is described as a systemic allergic reaction that affects mast cells, the immune system, and basophils. In order to have an anaphylactic reaction you have to have already been exposed to the allergen. An example of this is Timmy was stung by a bee for the first time and had no reaction. However, the next time Timmy is stung by a bee he quickly begins to see a rash form on his arm and begins to have difficulty breathing. This is because when he was first stung, he was exposed to the allergen and IgE antibodies were produced, and they attached to mast cells. The second time Timmy was exposed to the antigen it attached to the IgE antibodies that were made the first time and a chain reaction began. A signal was sent through the IgE antibody that led to an influx of calcium entering the cell which leads to degranulation of the mast cell. The degranulated cell then releases histamine which binds to receptors and increases vascular permeability. Histamine plays a different role in different parts of the body. For example, in the lungs histamine produces smooth muscle contractions which can lead to obstruction, wheezing and shortness of breath. This is why Timmy was having difficulty breathing after being stung by the bee for the second time. In order to stop this reaction, epinephrine must be administered. Epinephrine works by constricting blood vessels and reduces vascular permeability. This allows the smooth muscles of the air way to relax, allowing time for help to arrive and for Timmy to be transported to a hospital to receive complete medical help. In some cases, one dose of epinephrine is not enough, and a second dose is required. You should wait five to seven minutes in between doses of epinephrine.