TNF-Alpha Inhibitors Overview

TNF-? inhibitors are medications that work to block tumor necrosis factor. TNF-?, released by macrophages, is the "master regulator" of the inflammatory (immune) response in many organ systems and directs other cytokines and lymphocytes to cause cell destruction and inflammation. Autoimmune diseases are caused by an overactive immune response. Etanercept and infliximab inhibit TNF-? activity. These drugs prevent the activation of macrophages and the destruction of phagocytosed material, helping to treat autoimmune disorders.

PLAY PICMONIC

Mechanism

Downregulates Pro-inflammatory Cytokines

Downregulator shooting Side-toe-kite In-flames

TNF-? inhibitors, such as etanercept and infliximab, downregulate cytokines, which leads to inflammation. This response is because TNF-? is the "master regulator" of the inflammatory (immune) response in many organ systems and directs other cytokines to cause cell destruction and inflammation. Autoimmune diseases are caused by an overactive immune response.

Decreased Lymphocyte Activation and Migration

Down-arrow Lime-lymphocytes Migrating

TNF-? is an acute phase reactant released from macrophages. This release causes fever and hypotension and does so by leukocyte (lymphocyte) recruitment. Thus, TNF-? inhibitors block this pathway and decrease lymphocyte activation and migration.

Granuloma Breakdown

Granny-llama Breakdown

Macrophages release TNF-?, which is used to induce and maintain granuloma formation. Inhibition of TNF-? causes granulomas to break down. This breakdown is not always helpful, as in diseases like TB, granuloma breakdown leads to disseminated disease.

Treats

Crohn's Disease

Crown-of-intestines

TNF-? inhibitors are useful in treating IBD, such as Crohn's disease. This disease is characterized by noncaseating granulomas and lymphoid aggregates, leading to transmural bowel wall inflammation.

Rheumatoid Arthritis

Roman King-Arthur

Rheumatoid arthritis is an autoimmune disease that can be treated with TNF-? inhibitors. It is characterized by cytokine and type III and IV hypersensitivity-mediated destruction of synovial joints.

Juvenile Rheumatoid Arthritis

Child Roman King-Arthur

Also known as juvenile idiopathic arthritis, juvenile rheumatoid arthritis is a seronegative arthritis and inflammation of the synovium of joints, usually without a known cause. This condition is treated with newer TNF-? inhibiting drugs.

Psoriasis

Sorcerer

Psoriasis is a common skin autoimmune disorder characterized by silvery scaling plaques and papules, which typically develop on the knees and elbows. TNF-? inhibiting drugs are often used to treat this disorder.

Ankylosing Spondylitis

Anchor-spine

Ankylosing Spondylitis is a chronic inflammatory arthritis that is associated with "bamboo spine" on x-ray and HLA-B27 serum protein. It can be treated with this class of medications.