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A Comprehensive Review of Thalassemia: From Genetic Mutations to Modern Therapeutic Approaches

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Abstract: *Thalassemia is a type of inherited blood condition that makes it hard for the body to make enough hemoglobin, leading to anemia.*

Each year, about 100,000 babies are born with thalassemia. This condition is more common in people with Italian, Greek, Middle Eastern, Southern Asian, or African backgrounds. There are two main types of thalassemia, called alpha and beta, named after the parts of the protein that carry oxygen in red blood cells that are missing. Both types are passed down in the same way. If a parent has the changed thalassemia gene, they can pass it to their children. A child who gets one changed gene is a carrier, also known as having thalassemia trait. Most carriers are healthy and don't have symptoms. Doctors usually find thalassemia through blood tests, hemoglobin tests, and genetic tests. People with serious thalassemia need regular blood transfusions, medications like deferoxamine, deferasirox, or deferiprone, and sometimes a bone marrow transplant. Bone marrow transplant is the only sure way to cure thalassemia. This paper talks about the different types of thalassemia, what causes them, how they affect the body, possible problems, ways to prevent them, and how to treat them.[1].

Keywords: Thalassemia, Bone Marrow Transplant, hemoglobin, inherited disease

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