

Special Issue for Cardiovascular & Hematological Agents in Medicinal Chemistry

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Current Status of Therapeutics and Preventive Measures for Patients with Thalassaemia and Sickle Cell Disease

Aims & Scope:

Hemoglobin disorders, including thalassemia and sickle cell diseases, are prevalent in populations that evolved in moderate and humid climates where malaria was endemic. Thalassemia is an inherited, autosomal recessive disease that involves a reduced rate of synthesis of a globin chain that is essential for hemoglobin synthesis. This reduced synthesis can cause abnormal hemoglobin molecules to form, leading to anemia in humans. Thalassemia and sickle cell diseases affect all ethnic populations. Extensive literature on these diseases suggests that α -thalassemia and sickle cell trait that are known to protect against malaria. β -thalassemia is associated with people of Mediterranean origin and the Indian subcontinent, particularly Northern India and Pakistan. Sickle cell disease is prevalent on the African continent and, to a greater extent, in tribal areas of central and southern of India.

In the last 3 decades, tremendous progress has been made in furthering our understanding of hemoglobin disorders in terms of their molecular and cellular mechanisms. For example, we now more clearly understand: 1) the nature and types of hemoglobin diseases, 2) the types of animal models that can be used to advance our understanding of these diseases, 3) that early diagnosis is possible (prenatal and preimplantation), 4) that thalassaemia patients, particularly those diagnosed with β -thalassemia, can be treated with blood transfusions, and 5) the risks of repeated blood transfusions for patients with thalassaemia and sickle cell diseases. The purpose of this hot topic is to assess the current understanding of cellular and molecular mechanisms that underlie thalassemia and sickle cell diseases and to review advancements in diagnosing and treating them, including a review of risks associated with blood transfusions and hematological agents (including iron chelating agents/drugs) – as emerging treatments for these diseases.

Key words: Beta-thalassaemia, Sickle cell disease, Blood transfusion, Iron chelating agent, Natural selection, Malaria.

Subtopics:

Cardiovascular Aspects of Thalassaemia and Sickle Cell Disease

Current Global Epidemiology of Thalassaemias and Other Hemoglobin Disorders

Current Status of Iron Chelating Agents in Patients with Beta Thalassaemia Major

Gene Therapy for Beta Thalassaemia

Prenatal Diagnosis for Thalassaemia: Experience in Middle East and Indian Subcontinent

Prenatal Diagnosis of Thalassaemias: Experience in Mumbai

Current Status of Abnormal Hemoglobins in India

Treating Beta Thalassaemia Patients: Experience from Indian Subcontinent

Sickle Cell Trait, G6PD Deficiency and Natural Selection against Malaria: Experience from Tribal Land

Gene Replacement Therapy for Sickle Cell Disease and Other Blood Disorders

Morphological Changes in Berkley Sickle Cell Mice