Anticancer drugs might be of benefit to sickle-cell patients

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Sickle cell disease (SCD) is an inherited blood disorder caused by a genetic mutation that leads to the generation of a mutant form of the beta-globin chain of hemoglobin (Hb). Red blood cells containing Hb with this mutant beta-globin chain change shape upon deoxygenation and this causes them to get stuck in blood vessels, depriving the surrounding tissues of oxygen, which can lead to organ damage.

Although hydroxyurea, a treatment for SCD that works by increasing fetal Hb (HbF) expression, benefits some adults with moderate and severe SCD, it does not work for all individuals. Now, hope for a new therapy for SCD has been provided by the work of Laure A. Moutouh-de Parseval and colleagues working for Celgene Corporation.

In the study, lenalidomide and pomalidomide, immunomodulatory anticancer drugs, were both shown to be more effective than hydroxyurea at inducing HbF expression by erythrocytes derived in vitro from CD34+ cells from healthy individuals. In addition, the effects of pomalidomide and hydroxyurea on HbF expression were synergistic.

As pomalidomide was able to induce HbF expression in CD34+ cells from patients with SCD, the authors suggested that it might provide a new therapy for SCD, either alone or in combination with hydroxurea.

Furthermore, because the induction of HbF has been shown to be of some benefit to individuals with beta-thalassemia (a hereditary anemia caused by decreased beta-globin production), the authors also suggested

that pomalidomide might be a good therapeutic for the treatment of beta-hemoglobinopathies other than SCD, such as beta-thalassemia.

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