A genetic-epidemiological study published in the July issue of Cell Host and Microbe has found an association between the susceptibility to HIV infection and a genetic mutation common in people of African descent [1].

The molecule in question is the duffy antigen receptor for chemokines (DARC) on the surface of red blood cells. It is responsible for capturing certain chemokines (signalling molecules involved in inflammatory processes), thus regulating their concentration in the blood.

DARC is also the receptor for the malaria pathogen Plasmodium vivax [2]. A genetic polymorphism that disrupts expression of the DARC gene on red blood cells confers resistance against P. vivax malaria [3], which may explain why this polymorphism is associated with African origin.

W. He and colleagues [1] investigated the influence of this mutation on the outcome of human immunodeficiency virus (HIV) infection in the African American population. Their results show that African Americans that do not express the DARC receptor on their red blood cells are 40% more susceptible to infection with HIV-1. Once a person is infected with HIV, however, the disease progresses faster in those who are DARC-negative, while DARC-positive individuals with an HIV infection survive on average two years longer.

He et al. present a model suggesting how the complex interplay between chemokines, their receptors and circulating HIV particles could explain these seemingly contradictory observations.

Surely more studies will follow and are needed to put these interesting first findings into perspective.

References

This article was published on 17 July 2008.
Citation style for this article: Editorial team. Study links genetic polymorphism to susceptibility to HIV infection. Euro Surveill. 2008;13(29):pii=18933. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=18933