Easily unrecognized genetic corneal diseases in the Nordic countries

Joni A. Turunen, MD, PhD[1,2]

[1] Eye Genetics Group, Folkhälsan Research Center, Biomedicum Helsinki, Helsinki, Finland

[2] Ophthalmic Genetics and Rare Eye Diseases, Department of Ophthalmology, University of Helsinki and Helsinki University Hospital, Helsinki, Finland

Some rare genetic eye diseases remain undiagnosed in the Nordic countries, exhibiting a prevalence that is unexpectedly high considering their classification as rare disorders. The accurate diagnosis of two inherited corneal diseases, epithelial recurrent erosion dystrophy (ERED) and keratitis fugax hereditaria (KFH), frequently needs prolonged durations, often spanning several years. Both diseases are inherited in an autosomal dominant pattern. ERED is characterized by recurrent corneal erosions that begin in early childhood. The causative pathogenic variants are in the COL17A1 gene. KFH attacks also begin at the median age of 11 years, recur 1 to 6 times a year, and are characterized by unilateral ocular pain, conjunctival injection, and photophobia. The most common misdiagnoses (totalling 50% of the patients) in patient charts are anterior uveitis or anterior chamber cell count (40% of patients and 79% of misdiagnoses), conjunctivitis (14%/27%), and recurrent corneal erosion (13%/25%). KFH is caused by the pathogenic variant in the NLRP3 gene. Our genetic studies suggest a likely founder effect of the diseases in both Finnish and Swedish populations due to their shared population histories. KFH should be considered in the differential diagnosis of anterior uveitis, especially in regions with populations with Finnish or Swedish heritage.