
**1 de Dezembro** **08h30 | 10h00 – Sala 1**

**Retina Médica | Medical Retina**

Moderadores | Chairs: Maria Luz Cachulo (CHUC), Diogo Cabral (HGO), Luis Mendonça (HB)

**CO 3**

## EYS-ASSOCIATED RETINAL DEGENERATION: NATURAL HISTORY, GENETIC LANDSCAPE AND PHENOTYPIC SPECTRUM

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**Introduction:** Eyes shunt homolog (*EYS*) is the third most frequently mutated gene in inherited retinal diseases (IRDs) worldwide, and the single most commonly mutated IRG gene in Portugal.[1,2] Despite initially associated with a relatively homogeneous and slowly progessive form of retinitis pigmentosa (RP), recent studies have highlighted its genetic, phenotypic, and clinical heterogeneity.

**Purpose:** To describe the natural history, genetic landscape, and phenotypic spectrum of EYS-associated retinal degeneration (EYS-RD)

**Methods:** Single-center retrospective cohort study conducted at an inherited retinal degeneration (IRD) referral center in Portugal. Patients with biallelic EYS variants were invited to participate. Every patient underwent a cross-sectional examination comprising a comprehensive ophthalmologic examination including best-corrected visual acuity (BCVA), dilated slit-lamp anterior segment and fundus autofluorescence (UWF-FAF) imaging; and spectral domain-optical coherence tomography (SC-OCT). Additional information was collected from the patient file. Main outcome measures included clinical/demographic, genetic, and multimodal imaging data. BCVA variation during follow-up was used as an endpoint to describe EYS-RD natural history.

**Results:** Fifty-eight patients (59% males; mean age 52±14 years) from 48 Caucasian families of Portuguese ancestry were included. Twenty distinct EYS variants were identified, eight of which are novel. In 32.8% patients, onset of symptoms was in early adulthood (21-30 years). On UWF imaging, 75.0% patients (n=41) were graded as typical, while 25.0% were atypical. Overall, a negative was found between age and BCVA ($r=-0.50$; $p<0.001$), with an average loss of 1.45 letters per year of follow-up. Higher BCVA and alrger ellipsoid zone (EZ) widths were larger EZ widths, thus presenting an overall better prognosis.

**Conclusions:** This study expands the genetic spectrum of EYS-RD by reporting 8 novel variants. A high frequency of atypical phenotypes was identified. These patients patients have better BCVA and larger EZ widths, thus presenting an overall better prognosis.