

**Author(s)**

Principal: Marcelo Nicolela  
Presenting: Marcelo Nicolela, M.D.  
Contributing: Anne Belliveau  
Terry LaVatte  
Michele Archibald  
Raymond LeBlanc  
Balwantray Chauhan

**Abstract Title:**

Prospective longitudinal study in glaucoma patients with specific optic disc phenotypes: Baseline characteristics and endothelin-1 related vascular reactivity.

**Purpose:**

To evaluate baseline characteristics and endothelin-1 release induced by cold in three groups of open-angle glaucoma patients with distinct optic disc phenotypes.

**Design:**

Prospective longitudinal cohort.

**Participants:**

136 open-angle glaucoma patients.

**Main Outcome Measures:**

Functional (standard automated visual field) and structural (HRT, disc photograph) progression.

**Methods:**

Open-angle glaucoma patients with either focal, diffuse or sclerotic types of optic disc damage were identified after reviewing optic disc photographs of our patients and invited to participate in this prospective longitudinal study. Patients were treated according to a previously determined target intraocular pressure, following a treatment algorithm. Patients were evaluated every 4 months with SITA automated perimetry, scanning laser tomography, scanning laser polarimetry, optical coherence tomography, stereophotography of optic discs, scanning laser Doppler flowmetry and pulsatile ocular blood flow readings (not all tests performed in every visit). Plasma

levels of endothelin-1 were also measured before and after wearing a head-vest garment containing a cooling fluid and before and after immersing one hand in cold water (13 °C) for five minutes (blood collected from both arms). We will present the baseline characteristics and the results of the endothelin-1 tests.

#### Results:

48 patients with focal, 44 with sclerotic and 44 with diffuse optic disc phenotypes were enrolled. After a mean follow-up of 16 + 7 months, 4 patients lost follow-up (3 withdrawn and one died). Patients with diffuse disc damage were significantly younger than the other two groups (63 years old, versus 69 and 72 for the focal and sclerotic groups respectively). There were more females in the focal group (62%, compared to 54% and 39% for sclerotic and diffuse groups respectively). The prevalence of self reported systemic diseases such as diabetes, systemic hypertension, ischemic heart disease, stroke, sleep apnea and migraine did not differ significantly between the groups, although patients with sclerotic damage had the highest prevalence of ischemic heart disease (30%) and patients with focal damage the highest prevalence of migraine (28%). Results of endothelin-1 provocative tests are being analyzed and will be presented at the meeting.

#### Conclusion:

Some demographic characteristics and associations with systemic diseases differ between groups of patients with distinct patterns of optic disc damage, confirming our previous studies and possibly suggesting different pathogenic mechanisms associated with these various patterns. This study will be able to evaluate the long term stability of the disease and, ultimately, the response to IOP lowering therapy in each group of patient with distinct optic disc phenotypes.