njretina®
An affiliate of PRISM Vision Group
September // 2021 // njretina.com

Physicians

Nneka O. Brooks, MD
Nicholas D. Chinskey, MD
Rishabh Date, MD
Leonard Feiner, MD, PhD
Howard F. Fine, MD, MHSc
Eric S. Friedman, MD
Luis A. Gonzalez, MD, MPH
Paul Hahn, MD, PhD
Vincent Y. Ho, MD
Bruce J. Keyser, MD
David Y. Kim, MD
Jennifer M. Krawitz, MD
Marisa K. Lau, MD
Steven A. Madreperla, MD, PhD
Lekha K. Mukkamala, MD
Stuart W. Noorily, MD
Akosua Nti, MD
Alexander D. Port, MD
Jonathan L. Prenner, MD
Daniel B. Roth, MD
Christopher M. Seery, MD
Sumit P. Shah, MD
Harris Sultan, MD, MS
Elizabeth Tegins, MD
Vinod B. Voleti, MD
H. Matthew Wheatley, MD

Locations

North Jersey

Belleville
973-450-5100

Elizabeth
908-409-4900

Morristown
973-630-7700

Ridgewood
201-445-6622

Teaneck
201-837-7300

Union City
201-867-2999

Vauxhall
908-349-8155

Wayne
973-633-9898

Central Jersey

Bridgewater
908-218-4303

Eatontown
732-389-2333

Edison
732-906-1887

Lakewood
732-363-2396

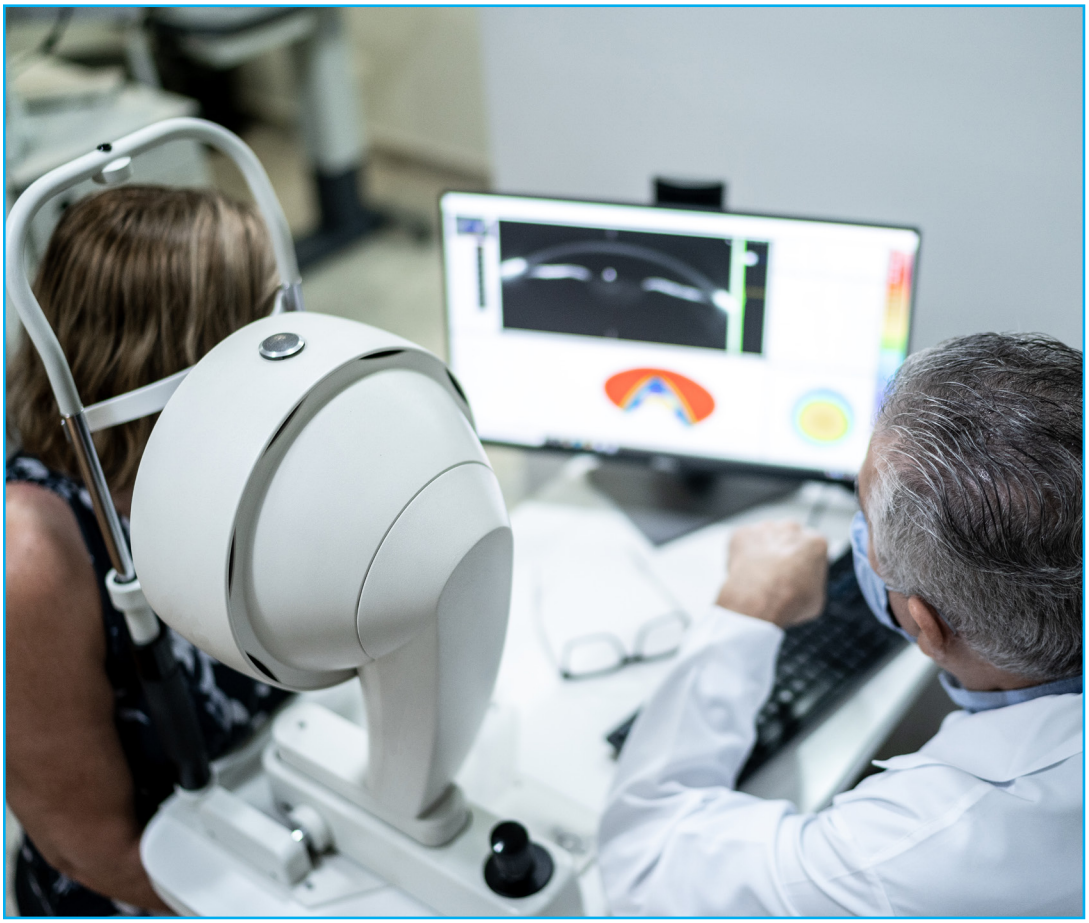
Lawrenceville
609-896-3655

Monroe
609-655-8301

New Brunswick
732-220-1600

Toms River
732-797-3883

Pentosan Polysulfate Sodium (Elmiron) Toxicity



Pentosan polysulfate sodium (PPS; Elmiron) is an oral medication used to treat interstitial cystitis (IC), a chronic inflammation of the bladder. PPS was FDA-approved for the treatment of IC in 1996. In 2018, Pearce et al. first described a novel pigmentary maculopathy in patients taking long-term PPS[1].

Patients with PPS-maculopathy may be asymptomatic, but the most common reported symptoms include blurred vision, metamorphopsia and decreased dark adaptation. Clinical features of PPS-maculopathy often mimic those seen in pattern dystrophy including macular hyper-pigmented spots and RPE atrophy (Image 1).

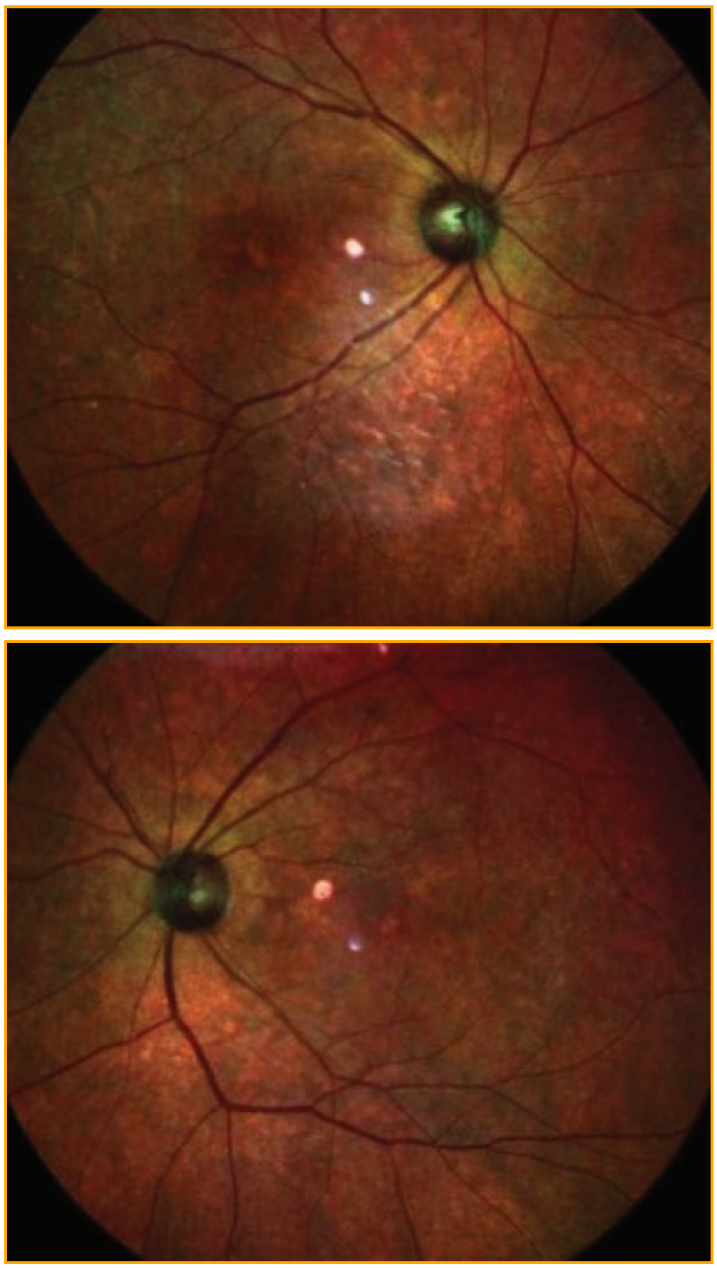
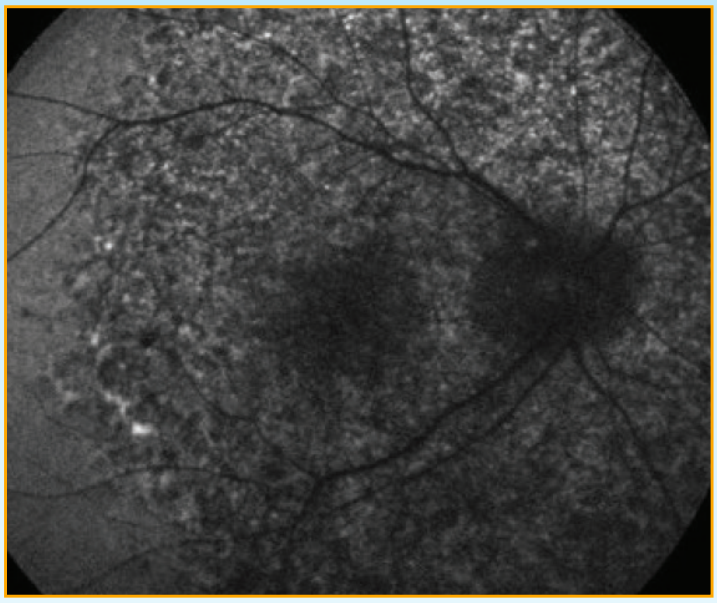


Figure 1: Fundus photo of PPS-maculopathy demonstrates scattered hyper- and hypo-pigmented spots in the posterior pole of both eyes

Like pattern dystrophy, pathologic findings in PPS-maculopathy are often more apparent on fundus autofluorescence (FAF) imaging than clinical exam. FAF findings can be striking and are key to the diagnosis of PPS-maculopathy. Reported FAF changes include densely-packed hyper- and hypo-autofluorescent spots in a circumscribed pattern involving the posterior pole (Image 2). For cases in which the peripapillary retina is affected, a unique FAF pattern of a peripapillary hypo-autofluorescent halo has been described[2]. This FAF finding helps distinguish PPS-maculopathy from hereditary dystrophies (such as ABCA-4 related disease) which typically demonstrate peripapillary-sparing.

The vast majority of patients treated for interstitial cystitis are female. In a series of 35 cases of PPS-maculopathy reported by Hanif et al., 97% of included patients were female[2]. Like many other toxic maculopathies, the risk of toxicity increases with increased cumulative dose exposure. As of August 2020, there was only one reported case of PPS maculopathy in a patient taking the drug for less than 5 years. In the Hanif series, the median length of PPS exposure was 15 years.

Following the initial publications on PPS-maculopathy, a retrospective electronic medical record was performed to identify patients with “Elmiron” or “Pentosan Polysulfate” listed in the medical history[3]. Thirty-two patients were identified with PPS exposure. On review of prior retina imaging, 55% were determined to have possible PPS-maculopathy. This percentage likely



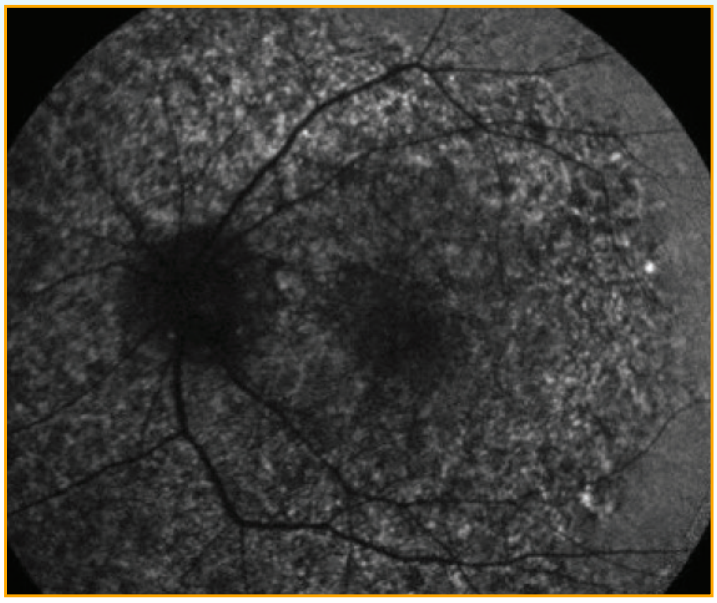


Figure 2: Fundus autofluorescence of the same patient reveals a striking pattern of hyper- and hypo-autofluorescent speckling in a circumscribed pattern involving the posterior pole. Note how the pathology is much more apparent on FAF imaging than the fundus photo. A peripapillary hypoautofluorescent halo is present, indicating involvement of the peripapillary tissue which helps distinguish PPS-maculopathy from the peripapillary-sparing typically seen in ABCA-4 related hereditary dystrophies.

over-estimates the true incidence of toxicity since there is a selection bias in patients referred to a retina practice. The majority of the patients included in the study had been evaluated prior to public awareness of PPS-maculopathy. At the initial visit, 78% of patients had been diagnosed with age-related macular degeneration. The overlap in clinical features between PPS-maculopathy and AMD underscores the importance of reviewing medication lists as drug toxicities may masquerade as more common conditions.

Given that the risk of macular toxicity from PPS has only recently been identified, formal screening guidelines have not yet been established. Nonetheless, it is prudent for all patients with PPS-exposure to undergo retina evaluation. FAF imaging should be obtained since PPS toxicity is often more apparent on FAF than clinical exam. For practices that have the ability to query their electronic medical record, a search for “Pentosan Polysulfate” or “Elmiron” may help to identify patients that would benefit from further evaluation.

References:

1. *Pearce WA, Chen R, Jain N. Pigmentary Maculopathy Associated with Chronic Exposure to Pentosan Polysulfate Sodium. Ophthalmology. 2018;125(11):1793-1802.*
2. *Hanif AM, Armenti ST, Taylor SC, et al. Phenotypic Spectrum of Pentosan Polysulfate Sodium-Associated Maculopathy: A Multicenter Study. JAMA Ophthalmol. Sept 2019.*
3. *Skopis G, Ohning CR, Levinson JD, Kasi SK. Characteristics of Pentosan Polysulfate Sodium Maculopathy and Similarities with Other Maculopathies Commonly Managed in a Retina Practice. JVRD. 2021 Accepted for Publication.*

At the forefront of clinical research

NJRetina continuously conducts clinical trials at key locations. Our clinical research coordinators will be happy to discuss the inclusion/ exclusion criteria or any other aspect of these studies with you or your patients. If you have any questions, please feel free to contact:

Joe Martinez - Teaneck: 201-837-7300

Dina Christodoro - Toms River: 732-797-3984 and Edison: 732-906-1887

Enrolling Studies:

Dry AMD

Vauxhall

GTSCOPE: A Study of Disease Progression in Genetically Defined Subjects With Geographic Atrophy Secondary to Age-Related Macular Degeneration

Teaneck and Toms River

Gallego: A phase II, multicenter, randomized, single-masked, sham-controlled study to assess safety, tolerability, and efficacy of intravitreal injections of FHTR2163 in patients with geographic atrophy secondary to age-related macular degeneration (Gallego)

Diabetic Macular Edema (DME)

Teaneck

Gleam: A prospective, randomized, double-masked, active comparator-controlled, multi-center, two- arm, phase 3 study to evaluate the efficacy and safety of intravitreal KSI-301 compared with intravitreal aflibercept in participants with **visual impairment secondary to treatment- naive diabetic macular edema.**

Diabetic Retinopathy

Teaneck

Pavilion: A Phase III, Multicenter, Randomized Study of the Efficacy, Safety, and Pharmacokinetics of the Port Delivery System with Ranibizumab in Patients with Diabetic Retinopathy

Teaneck

Altitude: A Phase 2, Randomized, Dose-escalation, Observation-controlled Study to Evaluate the Efficacy, Safety, and Tolerability of RGX-314 Gene Therapy Delivered via One or Two Suprachoroidal Space (SCS) Injections in Participants with Diabetic Retinopathy (DR) Without Center Involved-Diabetic Macular Edema (CI-DME) (ALTITUDE)

Retinal Vein Occlusion

Balaton: A prospective, randomized, double-masked, active comparator-controlled, multi-center, two-arm, phase 3 study to evaluate the efficacy and safety of intravitreal KSI-301 compared with intravitreal aflibercept in participants with visual impairment due to treatment- naive macular edema secondary to retinal vein occlusion (RVO) – Teaneck

Beacon: A Phase III, Multicenter, Randomized, Double-Masked, Active Comparator-controlled Study To Evaluate The Efficacy And Safety Of Faricimab In Patients With Macular Edema Secondary To Branch Retinal Vein Occlusion – Toms River

To read past issues of our newsletter, visit njretina.com.