I. CASE HISTORY:

- Chief Complaint: A 61 year old Hispanic male complains of decreased distance and near vision OU with the association of a “black spot” central OS for the last 8 years. Patient denies any flashes, floaters, ocular pain, curtain over his vision or associated headaches. Patient was last examined at the VA 8 years ago and reports he has not had eyes examined since.
- Patient demographics:
  - 61 year old Hispanic male
- Ocular History
  - Unremarkable
- Medical History:
  - Schizophrenia
  - Hemiparesis secondary to cerebrovascular accident
  - Hypertriglyceridemia
  - Asbestosis
  - Dyslipidemia
- Medications:
  - Aspirin 81mg
  - Atorvastatin Calcium 40 mg
  - Calcium 500mg/Vitamin D 200 units
  - Gabapentin 300mg
  - Omeprazole 20mg
  - Tramadol 50mg
  - History of Celexa-Abilify-Desyrel
    - Discontinued 8 years prior

II. PERTINENT FINDINGS:

- Entering Acuities: OD: 20/30-2, OS: 20/40-2
- BCVA: OD: 20/20-2, OS: 20/30+
- Extraocular motilities: full OU
- Pupils: PERRL/APD-
- Anterior segment: unremarkable except NS grade 1 OU
- Goldmann Tonometry: OD: 13mm Hg OS: 13mm Hg at 10:35am
- Dilated fundus examination:
  - Optic disc: OD: 0.2 H/V, OS: 0.25 H/V; pink distinct rims OU
  - Vasculature: normal caliber OU
  - Macula: “yellow-dot” appearance in fovea with red halo surrounding foveal pit; (-) hemes/breaks/edema OU
  - Periphery: flat and intact; no holes or tears 360 OU
- Amsler Grid:
  - OD: (-) metamorphopsia, scotoma
  - OS: small scotoma over foveal region, (-) metamorphopsia
- Fundus photo:
  - Remarkable for yellow spot in foveal region with reddish halo surrounding foveal pit OU
- Fundus Autofluorescence (FAF):
  - Subtle hypoautofluorescence in macula OS>OD
- Optical coherence tomography (OCT):
  - Macular hole involving RPE, outer segment and inner segment layers without edema OU
- Fluorescein angiography (FA):
  - Hyperautofluorescence at fovea without any leakage OU
- Humphrey Visual Field (HVF) 10-2:
  - Poor reliability, no significant defects noted OU
- Humphrey Visual Field (HVF) 24-2:
  - Poor reliability, no significant defects OD, central scotoma OS

III. DIFFERENTIAL DIAGNOSIS:
- Welder's maculopathy
- Tamoxifen retinopathy
- Juxtafoveal macular telangiectasia
- Foveolar vitreomacular traction
- Closed macular hole
- Achromatopsia
- Alkyl nitrite abuse
- Acute retinal pigment epithelitis
- Stargardt disease
- Laser pointer maculopathy
- Macular dystrophy

IV. DIAGNOSIS AND DISCUSSION:
- The above patient was diagnosed with solar maculopathy based on the appearance of the OCT in addition to the reported history of sun-gazing. This was confirmed in a follow-up with a retinal specialist.
- OCT is an integral part of making the proper diagnosis especially as only 51% of these patients have been shown to give an accurate history of sun-gazing, as reported by Rai et al.
- Other images obtained which helped confirm the diagnosis include fundus photos, FAF, FA, HVF 24-2 and HVF 10-2, as these are supportive adjunct tests to further determine the nature of the condition and its extent. They also aid in following structural and functional progression and resolution.
- Solar maculopathy is a rare condition caused by cumulative solar radiation that surpasses the ocular defense mechanisms against ultraviolet (UV) damage. It is first described by Bonetus, a Swiss physician in the 17th century.
Although there are known gatekeepers of UV radiation including the cornea, lens and retina, prolonged sun-gazing has been shown to cause the unique formation of an outer retinal hole in the foveal pit which may lead to permanent vision loss.

The schizophrenic population has long been associated with solar maculopathy. The assumption has been that this is because of a psychotic tendency to stare at the sun for long periods of time.

Research has been underway in the measurements of retinal nerve fiber layer and macular integrity among the schizophrenic population via Cirrus spectral domain optical coherence tomography.

Recently, it has been revealed that retinal nerve fiber layer thickness, macular thickness and macular volume are significantly decreased when compared to healthy non-schizophrenic controls. This difference is more pronounced with increased chronicity of the condition. A limitation to this study was the difficulty in controlling for any role of anti-psychotic medications that the subjects were using.

This study suggests that schizophrenics may be more prone to damaging the macula after even small periods of sun-gazing since they are at a distinct disadvantage of having thinner maculas.

This is the first case report to make such a correlation according to the investigation through available literature.

V. TREATMENT, MANAGEMENT:

Since the clinical presentation in this case reveals a likely chronic rather than acute state with significant damage noted in the photoreceptor and retinal pigment epithelium layers as revealed on OCT, there are no curative treatments available at this time.

Although visual acuity often improves after acute incidences, given the longstanding nature of this patient's condition, it is likely that the vision OS is permanently reduced with a lasting subjective central scotoma. Commonly bilateral, solar maculopathy sometimes has asymmetry between the eyes as in this case with greater damage OS than OD.

Systemic corticosteroids have been used for treatment in certain instances with some reported success. However, this was shown to be most beneficial for cases with macular edema. Corticosteroids have also been shown to have a possible retinal protective benefit from light exposure but are not the standard of care.

It can only be stressed to use UV protection for preventative measures of further damage.

This patient will be followed every 6 months for visual changes and given an amsler grid to self-monitor vision.

VI. CONCLUSION:

Solar maculopathy is a diagnosis that can be made from a thorough evaluation of the macula with various imaging techniques which are especially important in the absence of historical evidence of sun-gazing.

The OCT is specifically becoming an increasingly important tool in the diagnosis and management of these patients regarding not only formulating the diagnosis but assessing the extent of damage and likely prognosis.
Preventative measures should be recommended for all patients who spend time in the sun but specifically within the schizophrenic population as they are potentially at greater risk of sun damage due to their thinner maculas.

VII. REFERENCES:


**I will not be able to attend Residents day on Saturday as I am an Orthodox Jew and as such observe the Sabbath on Saturday. I was granted permission by Dr. De Rosier to have my co-author present my research if accepted and I was assured this would not be a reason for my abstract not to be accepted. Dr. De Rosier requested that I make a note of this on this case outline.**