Factors Affecting Visual Outcome of Myopic Choroidal Neovascularization Treated With Verteporfin Photodynamic Therapy

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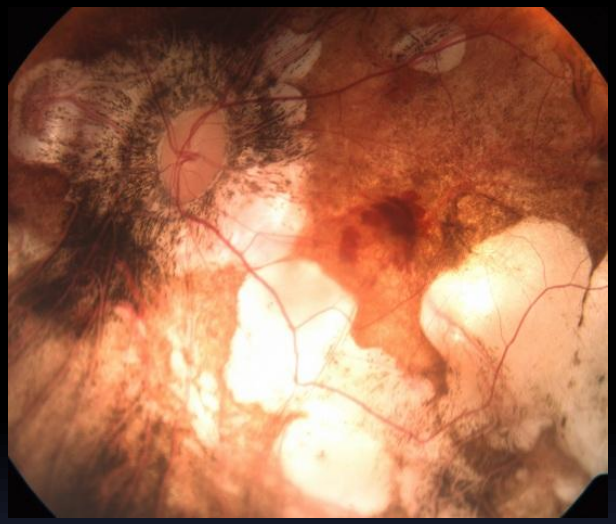


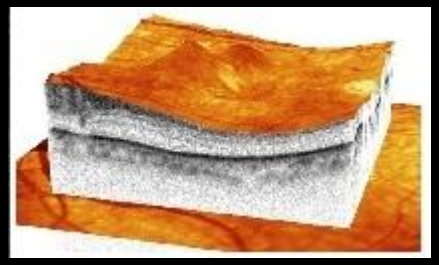
Dr Tan receives travel support from Bayer.

The off-label use of PDT is discussed in this presentation

Background & Objectives

- The prevalence of myopia is increasing, and is considerably higher in some populations, such as Asians
- **Myopic choroidal neovascularisation (CNV)** affects **5 - 10%** of high myopes (spherical equivalent ≤ -6D).
  - If untreated, myopic CNV generally carries a poor visual prognosis & may cause permanent visual impairment
- The **objectives** of our study were to:
  1. Evaluate the **visual outcomes** of myopic CNV
  2. Investigate the effect of novel **risk factors** on final visual acuity (VA), such as lesion size, time to treatment and treatment variables

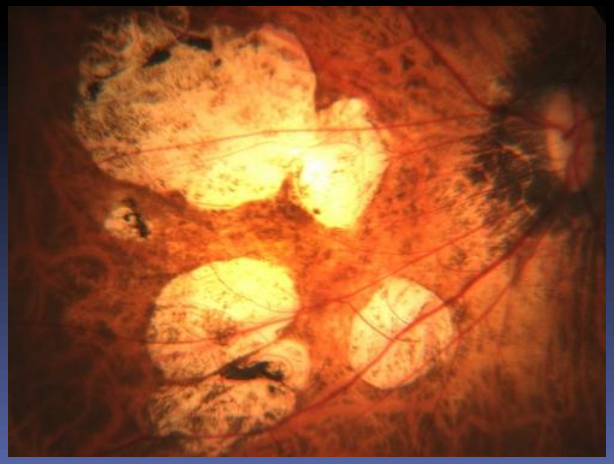
Methods

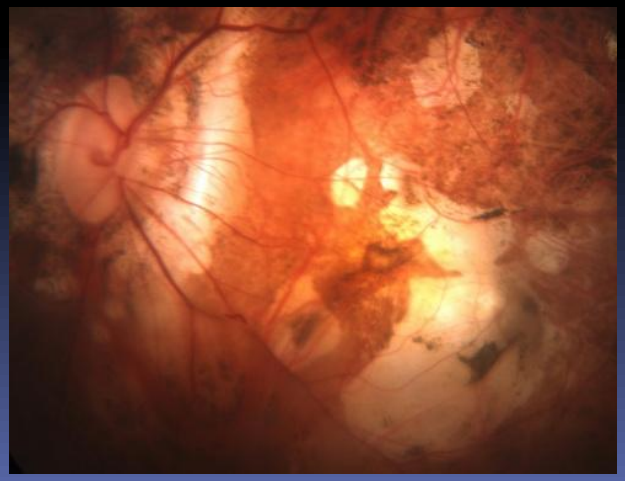


- Interventional case series of 18 consecutive cases of myopic choroidal neovascularisation treated at the National Healthcare Group Eye Institute, Singapore
- Myopic CNV was diagnosed using **standardized diagnostic criteria**:
  - **Refraction**: Spherical equivalent -6D or higher
  - **Clinical features** of pathologic myopia on slit lamp biomicroscopy
  - Presence of CNV network seen on confocal slit-lamp ophthalmoscopy **fluorescein** and **indocyanine green** angiography
  - No evidence of age-related macular degeneration or polypoidal choroidal vasculopathy
- **Visual outcomes**: moderate visual loss was defined as loss of ≥ 3 lines of best-corrected visual acuity (BCVA)

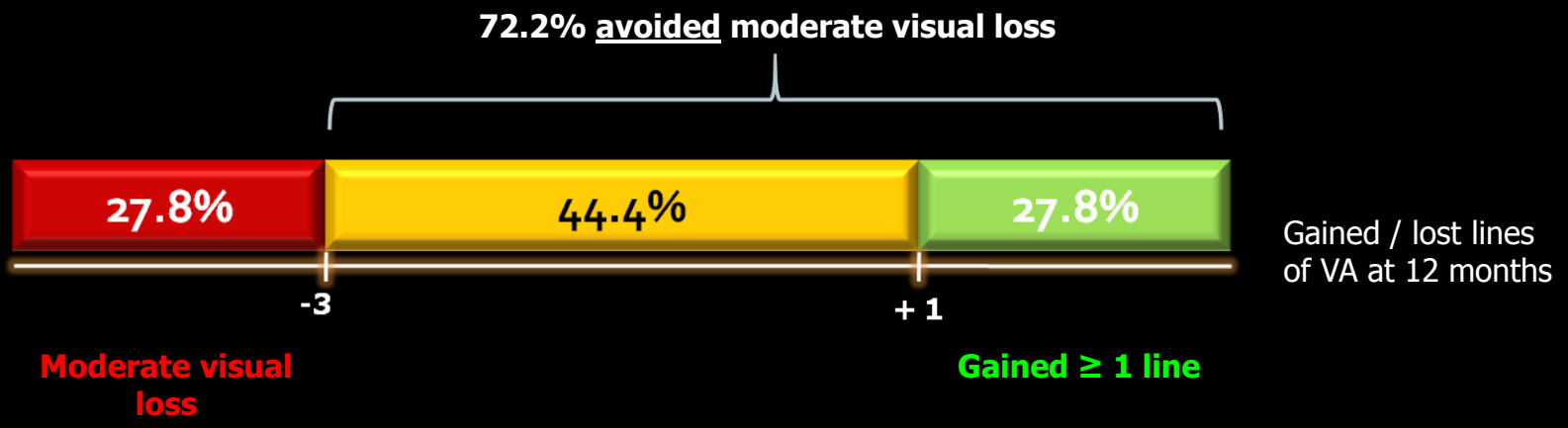
Demographics

Clinical characteristics of patients	
Male : Female	6 : 12
Age (mean ± SD)	55.4 years ± 14.4
Refractive error (mean ± SD)	-11.3 D ± 3.6
Initial LogMAR BCVA (mean ± SD)	0.57 ± 0.39
Greatest Linear Dimension (GLD) (mean ± SD)	1564 µm ± 1003





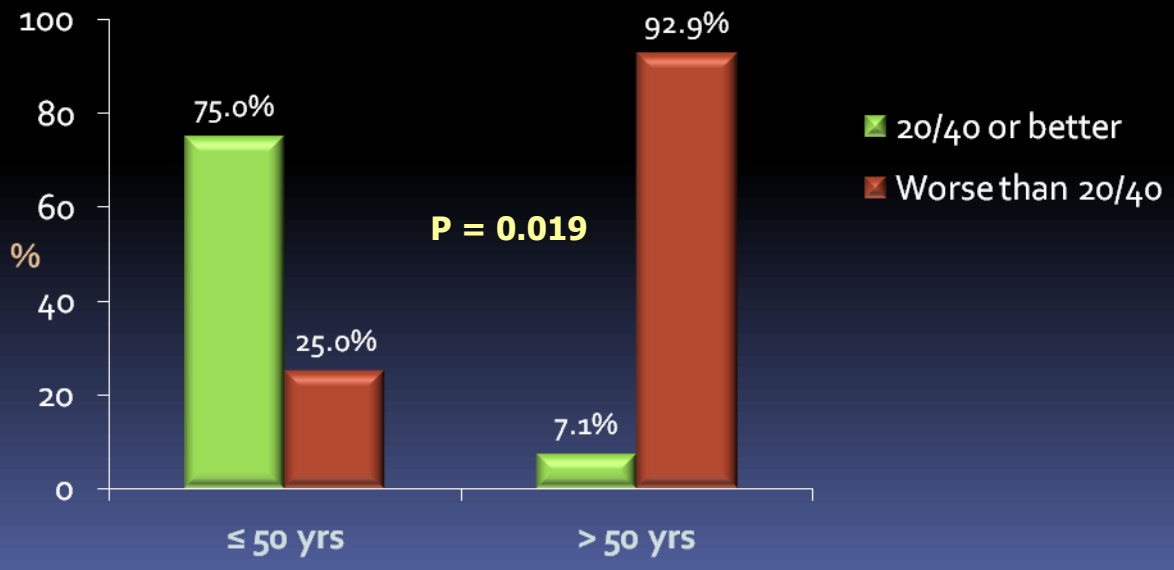
Visual outcomes



- Mean final VA at 1 year 0.87 vs. 0.57 at presentation
- 72.2% avoided moderate visual loss, with 27.8% **gaining** ≥1 line
- Better visual outcomes were associated with:
  - Younger patients
  - Lesion size / Greatest linear dimension (GLD)
  - Reduced PDT duration (1/2 or 2/3 duration)
  - Early treatment

Younger patients had better visual outcomes

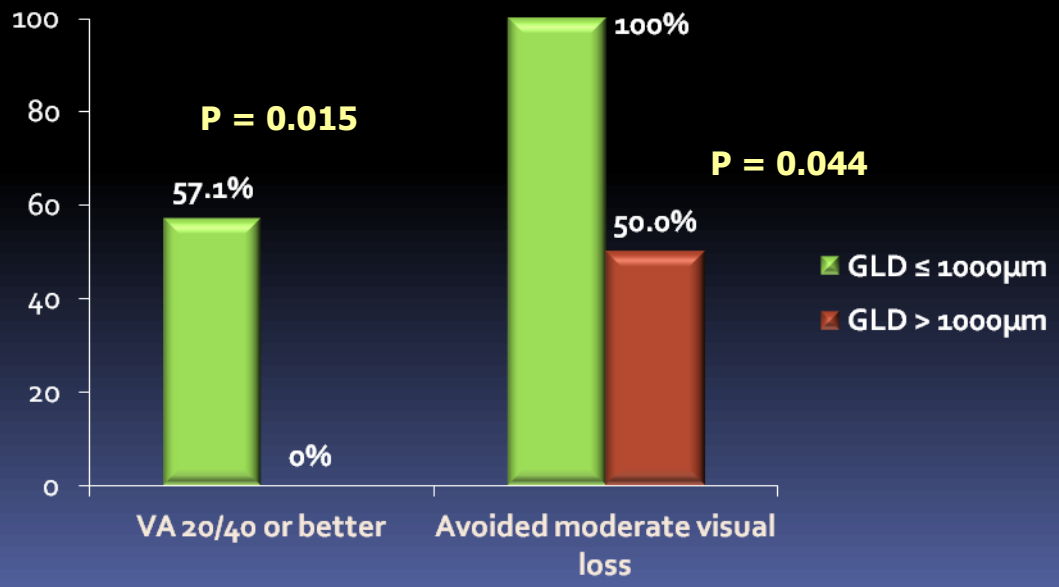
- Those with final VA 20/40 or better were younger (mean age **39.0** years vs. **61.6** years for those with VA worse than 20/40, p = 0.001)
- 75% of those aged ≤ 50 yrs had VA 20/40 or better compared to only 7.1% of those above 50 yrs (p=0.019)

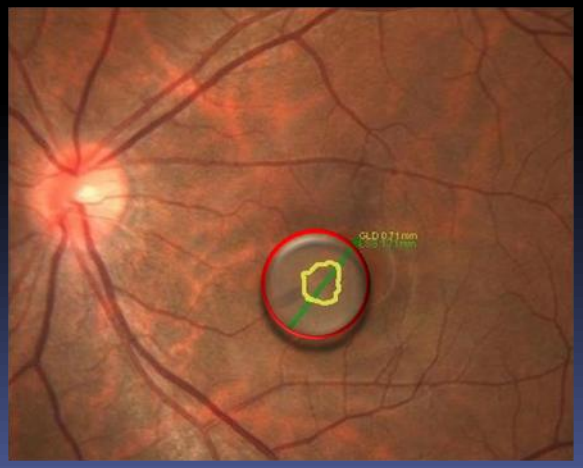


Lesion size / GLD

Those with greatest linear dimension (GLD) ≤ 1000 µm had better visual outcomes compared to larger lesions > 1000 µm :

- 100% avoided **moderate visual loss** vs. 50% for those > 1000 µm (p=0.044)
- 57.1% attained **final VA 20/40** or better vs. 0% (p=0.015)
- Mean 12-month VA was 0.32 logMAR units vs. 1.26 (p=0.001)
- Mean **VA improvement** +0.12 logMAR units vs. worsening by -0.55 in those with GLD > 1000µm





PDT duration / time to treatment

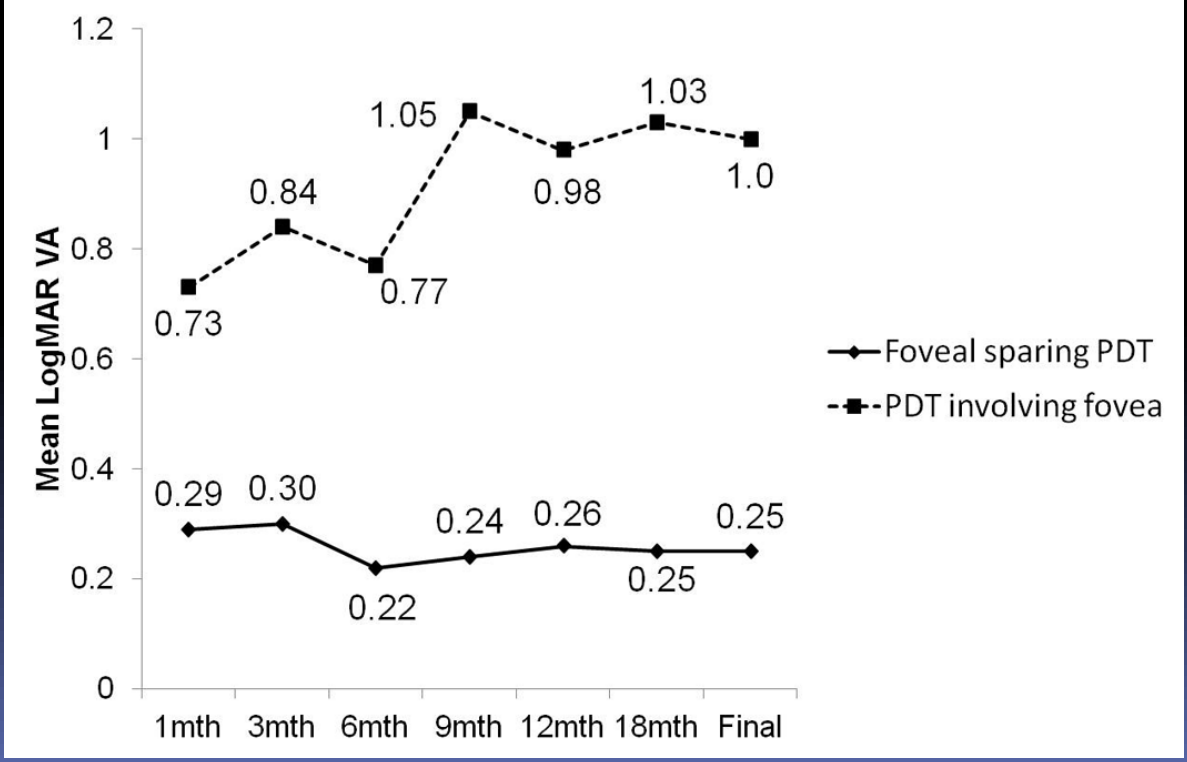
- Those treated with **reduced PDT fluence*** ($^2/_3$ or ½ duration) had better visual outcomes in terms of:
  - Avoidance of moderate visual loss (83.3% vs. 66.7%)
  - Final VA 20/40 or better (50% vs. 8.3%)

- **Early treatment** affected outcomes:
  - 88.9% of those treated **within 2 weeks** of symptom onset avoided moderate visual loss vs. 55.6% of those who presented later
  - At 1 year, mean LogMAR VA 0.57 (treated within 2 weeks) vs. 1.08 (p=0.065)

* Off-label use of PDT is discussed

Foveal sparing PDT

- Good VA outcomes shown in PDT not involving fovea
  - Mean LogMAR VA better than 0.26.
  - 78% of patients had VA 20/40 or better at 2 years.



Discussion

- Myopic CNV is an important condition because it affects younger, economically active patients with greater visual requirements
- The prevalence of myopia is high and increasing in many populations
- Several **novel risk factors** affecting the visual outcomes of myopic CNV have been identified in this study:
  - Foveal sparing PDT
  - Reduced PDT fluence
  - Earlier treatment
  - Younger age
  - Smaller lesion size

Implications of risk factors

- Earlier treatment:
  - Our study emphasizes the need for patients to present early once symptoms occur and for ophthalmologists to initiate treatment early
  - Patient education is an important factor in managing this condition
- Foveal sparing PDT:
  - PDT has been shown to cause chorioretinal atrophy, which may affect visual acuity
  - This may be of greater significance in high myopes due to the thinner retina and choroid
  - By avoiding the fovea, patients achieved VA comparable to those treated by anti-VEGF

Conclusion

- With appropriate and early treatment, up to 72.2% of patients with myopic CNV may avoid moderate visual loss
- **Early presentation** and **prompt treatment** offer better outcomes, emphasizing the need to educate patients on symptoms of the disease
- The age of the patient and lesion size are important factors affecting prognosis
- Further studies are required on the potential effects of reduced fluence PDT on reducing visual loss