



Dr Wong Hon Kiat

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TTSH GRAND ROUNDS

History

- ✿ 58 year old male
- ✿ Past medical history of:
 - i) ESRF secondary to DM on hemodialysis
2x/week
 - ii) Type II DM
 - iii) Hypertension
 - iv) Pancytopenia secondary to
Myelodysplastic syndrome

History

★ P/w:

1) Bilateral red eyes x 1/52

- sudden drop in vision both eyes

- a/w tearing

- Underwent L Phaco/IOL 2/12 ago

uneventful. BCVA at 1 month is 6/9

- Underwent recent R Phaco/IOL 2/52 ago

uneventful op

On examination

- ✱ BE cornea oedema
- ✱ New vessels on iris present in BE
- ✱ AC deep.
- ✱ LE RAPD present
- ✱ IOP RE 58 LE 58
- ✱ VA CF 1 meter BE

Impression

Neovascular glaucoma

Discussion

- ✿ Possible causes of NVG:
 - i) Exacerbation of new vessels growth in an underlying hypoxic eye
 - ii) Proliferative DR exacerbated by cataract operations.
 - iii) Ocular ischaemic syndrome secondary to underlying ischaemic factors: ESRF, hypt, DM, aneamia.
 - iv) Ischaemic CRVO

Discussion

- ★ What next?
- ★ Management...
 - ★ Acute management
 - ★ Long term plan

Treatment

- ✿ Referred to glaucoma team
- ✿ Started on anti-glaucoma medications:
 - i) G Timolol bd BE
 - ii) G Alphagan bd BE
 - iii) G Travatan on BE
 - iv) G Pred Forte 3H BE
 - v) G Atropine BD BE.
 - vi) IV diamox 500mg stat

Treatment

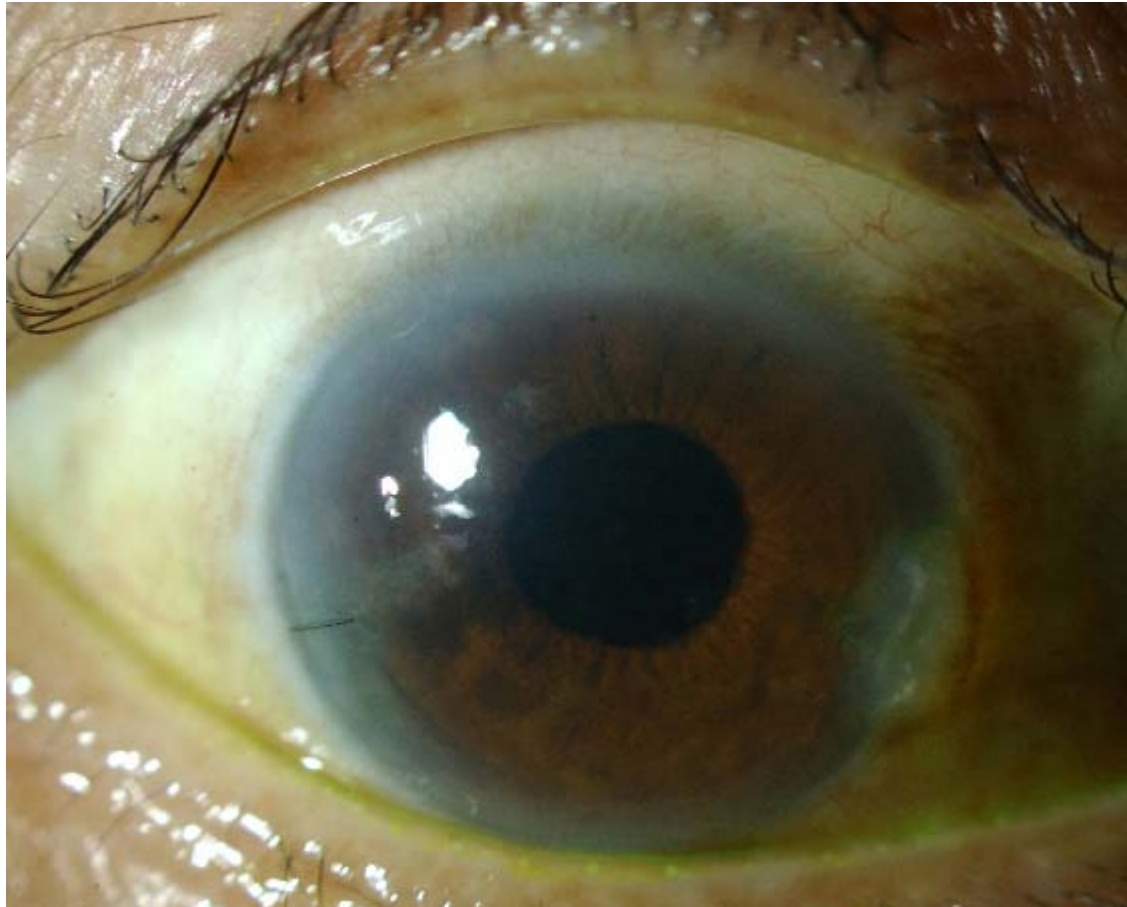
- ✿ IOP rechecked 2 hours later: RE 55 LE 58
- ✿ Added Tab Diamox 125mg tds
- ✿ Decision to review next day,
 - if cornea clear enough, for PRP BE
 - if not pt will need surgical intervention

Treatment

- ✿ IOP following day rechecked RE **69** LE **60**
- ✿ Refractive to acute treatment
- ✿ VA RE CF 2 feet, LE NPL.
- ✿ Cornea still hazy. B scan no RD.
- ✿ Initial decision for **R Ahmed tube/MMC** and **L TCP** on day of review
- ✿ After further discussion, decision to trial of **intra-vitreous avastin**.

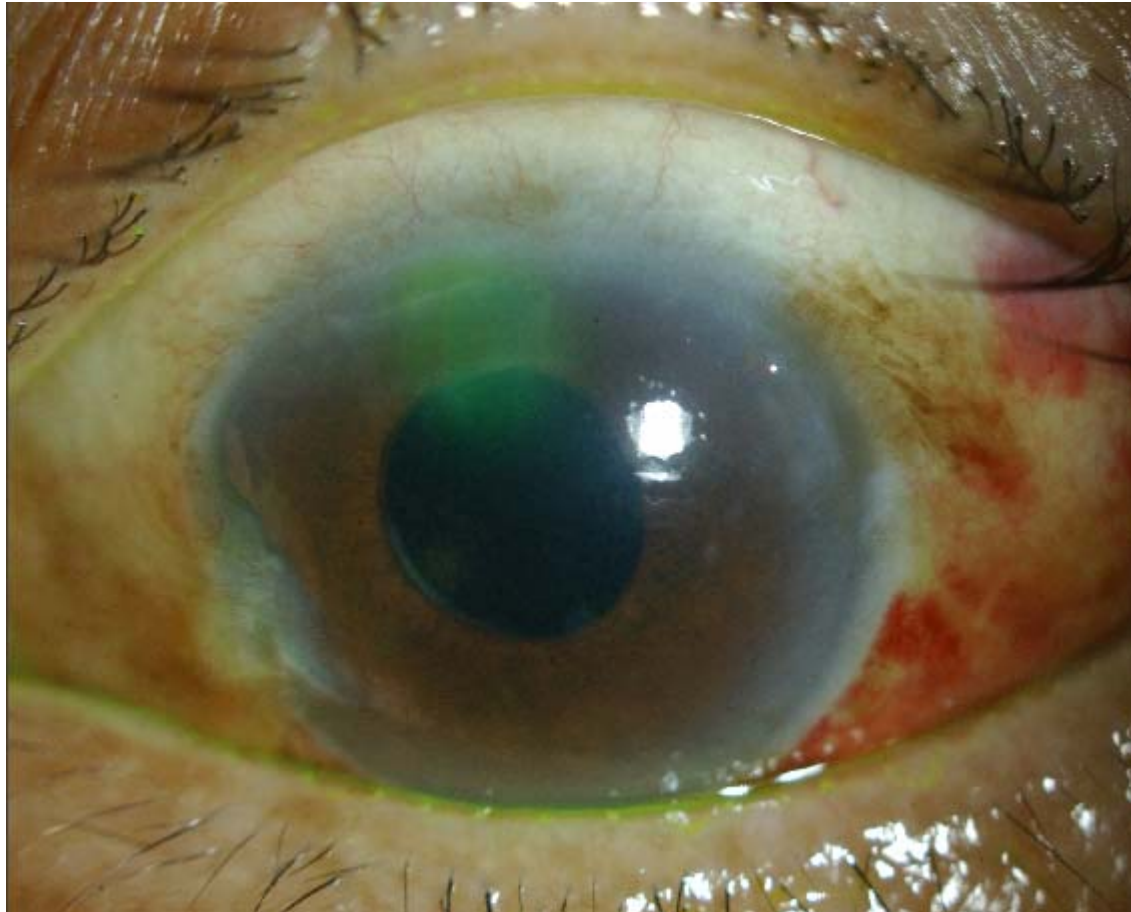
Progress

- ✿ IOP post intravitreal avastin 1 day later: RE
26 LE 34
- ✿ Subsequently BE PRP done on 18/8/08 with
top up PRP BE on 21/8/08.
- ✿ VA improved to RE 6/30 LE NPL
- ✿ IOP improved to RE 18 LE 24



Right Eye post intravitreal
avastin injection

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Left Eye post intravitreal
avastin injection

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Admission

- ✿ Patient was admitted 1/52 later for:
 - i) Sepsis secondary to likely pneumonia
 - ii) Myelodysplastic syndrome
 - iii) New onset of AF
 - iv) ESRF on HD
 - v) DM and hypertension

In ward

- ✿ Patient was reviewed in ward **4 days later**
 - continued on the following medications:
 - i) G Timolol bd BE
 - ii) G Alphagan P bd BE
 - iii) G Travatan on BE
 - iv) G Azopt bd BE
 - v) G Atropine bd BE
 - vi) G Pred Forte 3H BE

- ✿ IOP RE 17 LE 20

Post discharge

- ✿ Patient was reviewed **one month later**
- ✿ IOP RE 20 LE 24
- ✿ No NVIs seen, cornea clear
- ✿ Fundus: PRP adequate
- ✿ Decision to keep patient on current meds and TCU 1 month.

Discussion

- Role of anti-VEGF in neovascular glaucoma
- Several case reports and case series have demonstrated intravitreal bevacizumab-induced regression of NVI and NVA.

Discussion

Outcomes of treatment of Neovascular Glaucoma with Intravitreal Bevacizumab

*Moraczeewski AL, Lee RK, Palmberg PF, Rosenfeld PJ, Feuer WJ
Br J Ophthalmol. 2008 Dec 15*

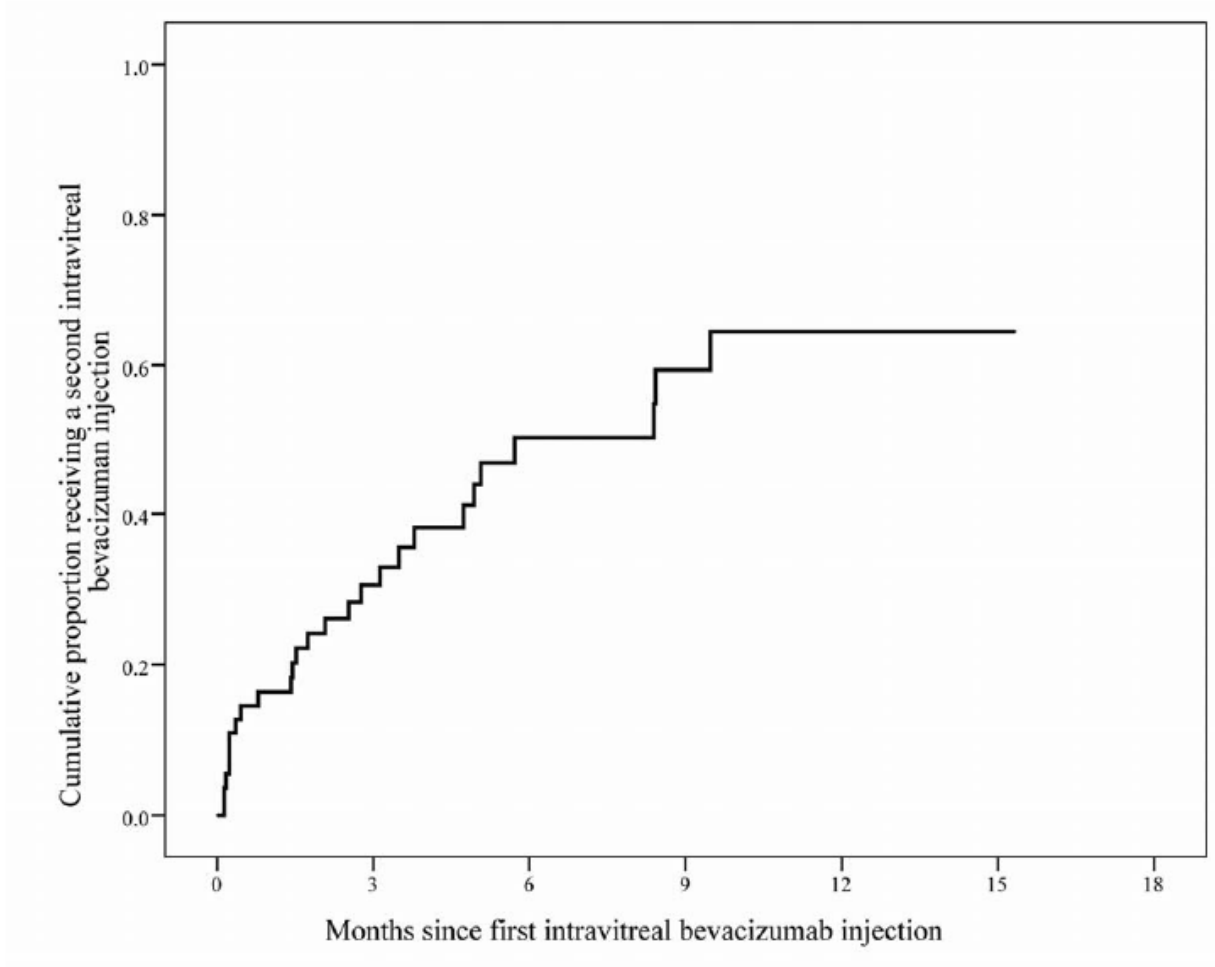
- ✿ Aim: To evaluate the course of treatment and outcomes of neovascular glaucoma (NVG) with intravitreal avastin.
- ✿ Methods: Retrospective case series 52 of 56 eyes.

Table 2. Outcomes from time of initial intravitreal bevacizumab injection (56 eyes).

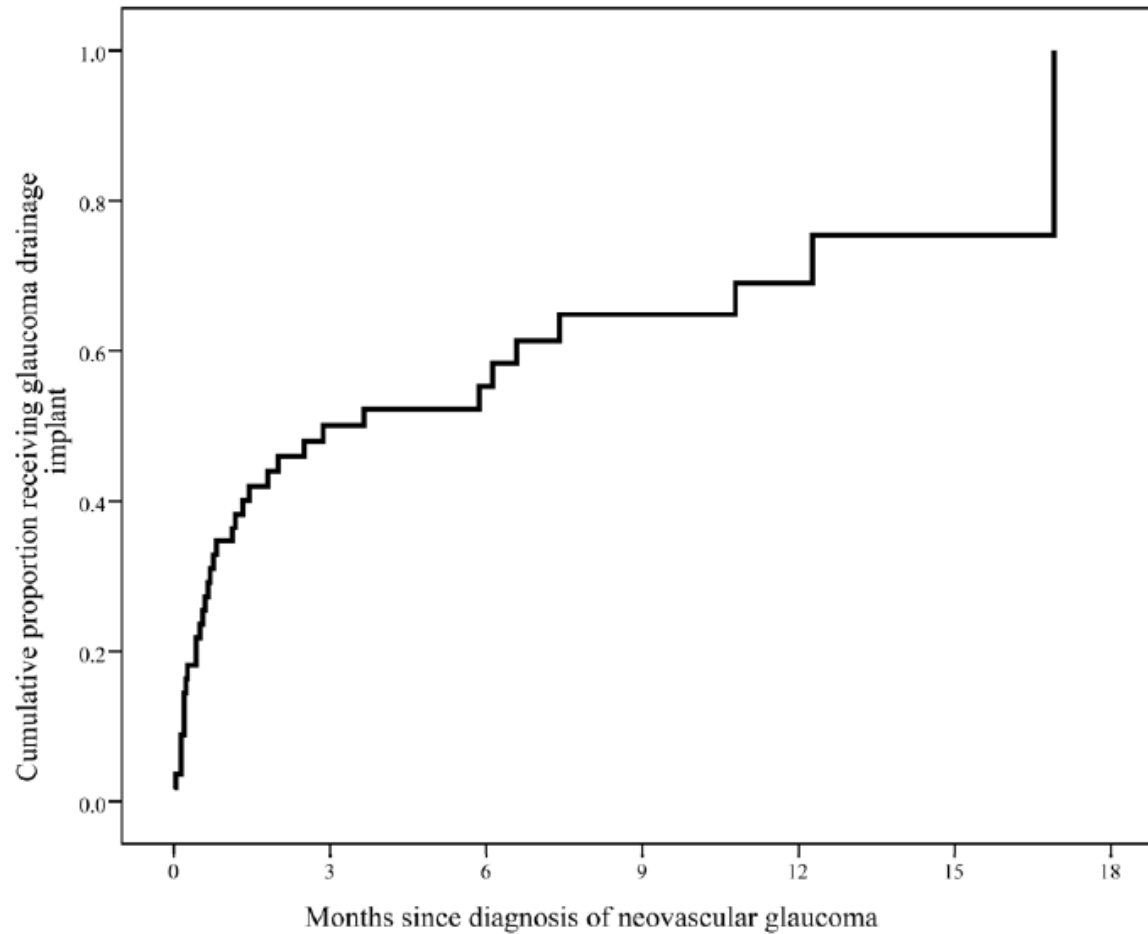
Follow-up (months)	N	Mean IOP ± SD, mm Hg	Mean # IOP meds ± SD	Median VA (range)
Time of injection	56	37 ± 12	1.7 ± 1.6	CF (20/30 – NLP)
1	38	22 ± 10	2.2 ± 1.7	1/200 (20/30 – LP)
3	25	20 ± 10	2.7 ± 1.7	2/200 (20/20 – NLP)
6	24	18 ± 15	2.4 ± 1.6	1/200 (20/50 – NLP)
12	12	12 ± 12	1.7 ± 1.6	1/200 (20/50 – NLP)

IOP = intraocular pressure; SD = standard deviation; IOP meds = intraocular pressure-lowering medications; VA = visual acuity; CF = count fingers; LP = light perception; NLP = no light perception

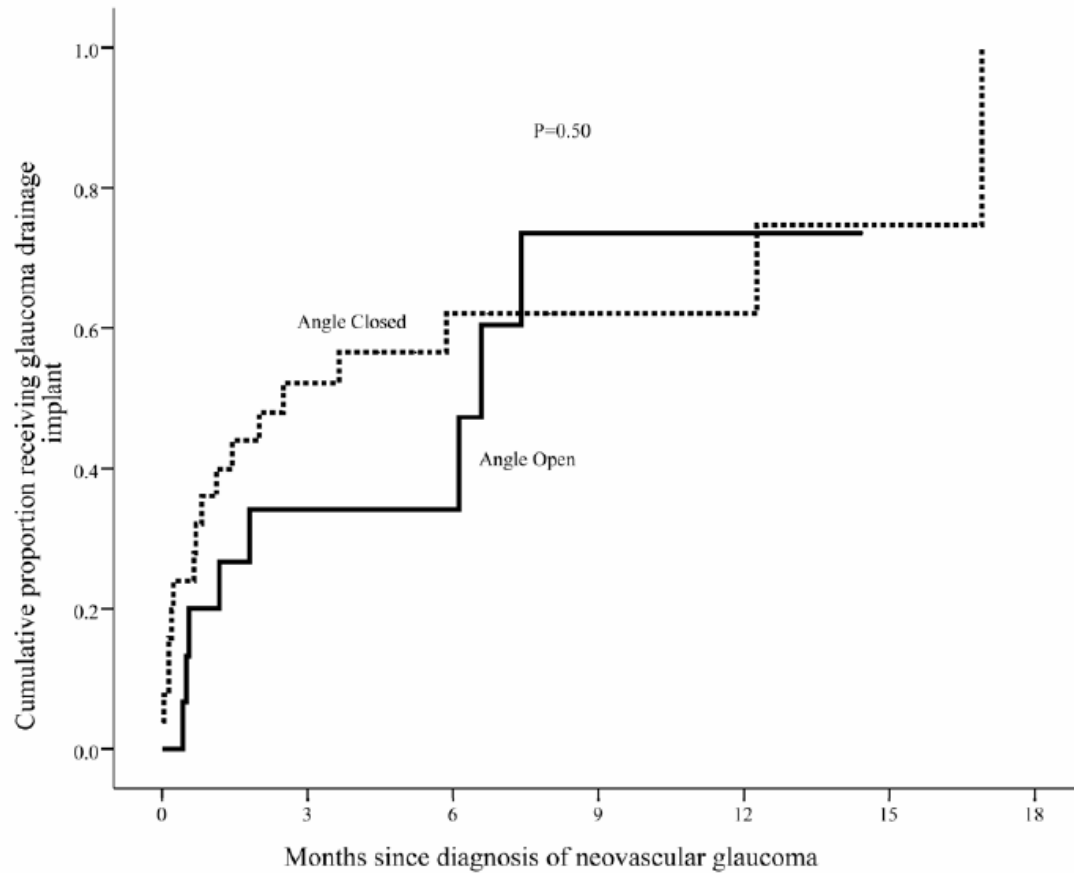
Cumulative proportion receiving a second intravitreal bevacizumab



Cumulative proportion receiving glaucoma drainage implant from time of diagnosis



Cumulative proportion receiving glaucoma drainage implant from time of diagnosis in open and closed angles



Discussion

★ Results:

- Initial median IOP 40 +/- 11 mmHg.
IOP at 6 months 18 +/- 15 mmHg.
- 71% of eyes underwent PRP
- 46% require repeat intravitreal avastin
- 61% received glaucoma drainage implant.

Summary

- ✿ Intravitreal bevacizumab is a frequently used adjunct for treatment of NVG
- ✿ Eye treated with Intravitreal bevacizumab should be closely monitored because surgery for IOP control and repeat bevacizumab injections are often necessary, regardless of initial angle status.

References

- Outcomes of treatment of Neovascular Glaucoma with Intravitreal Bevacizumab
Moraczeewski AL, Lee RK, Palmberg PF, Rosenfeld PJ, Feuer WJ Br J Ophthalmol. 2008 Dec 15
- *Mason JO III, Albert MA Jr, Mays A et al.*
Regression of neovascular iris vessels by intravitreal injection of bevacizumab. Retina 2006; 26:839-41

Thank You!