Panel Discussion on Glaucoma Practice Patterns

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Expert Panel

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Glaucoma is a disease which has involved maximum interest in terms of pharmacological developments and technical advancements. Due to the multifactorial nature and ambiguity, it still remains a Pandora box to be explored further. Hence is the need to be guided with the practice patterns of experts and make our own algorithms to have safe and confident glaucoma practice. In this issue, we bring forward a panel discussion on practice patterns in glaucoma involving four eminent glaucoma experts across the country. Hope you all shall gain and incorporate the conclusions in your practice.....

Q.1 What minimum investigations you would like to be done in all your glaucoma patients?

VR: All my glaucoma patients undergo intra ocular pressure checked by an application tonometry. They undergo Indentation gonioscopy, 90 D Slit lamp bio microscopic examination, pachymetry and an automated visual field with Humphrey. In glaucoma suspects or in early glaucoma patients I do optic disc photography and optical coherence tomography of retinal nerve fiber, the GCC and the macula.

MP: For any patient with suspected or confirmed glaucoma, a comprehensive eye examination including applanation tonometry, four mirror indentation gonioscopy and stereoscopic optic disc examination, I would ask for ultrasound pachymetry and visual field testing (24-2, SITA-Standard and/or 10-2 in central involvement). In addition to these, if necessary I may need further imaging modalities like OCT, HRT or GDx. For OCT (which I have access to) I use nerve fibre analysis (RNFL) and ganglion cell complex (GCC) in glaucoma suspects, ocular hypertensives or early glaucoma. I am also vary of the limitations of these imaging modalities especially false positive (red disease) or false negative (green disease). I also document optic disc photographs in both colour and red free for suspect cases.

SP: Tonometry on multiple occasions and at different times of the day with applanation tonometer, CCT, optic nerve and nerve fibre layer (red free) assessment by 90 D, Perimetry:24-2 Sita std.

RN: Careful ocular examination includes SLE, Optic disc and RNFL evaluation with 90D, GAT, CCT, and Gonioscopy (in that order), followed by other detailed evaluation after mydriasis (unless contraindicated) as a routine in all cases when suspected. Minimum Ophthalmological Investigations should include Automated perimetry, Optic disc photographs. However several other investigations are to be advised on suspicion of NTG, or secondary glaucomas.

Q.2 Where do you feel is the need of GDx in current glaucoma practice?

VR: My go-to machine for the retinal nerve fibre layer analysis is the OCT. This is because I would like to do the macula and the Glaucoma evaluation RNFL and the GCC all in one go.

MP: I did use the GDx till around 3 years back but stopped now due to technical issues. All imaging techniques give supplemental information which may vary to some extent. But none of them gives diagnostic accuracy needed in all glaucomas. The current OCT technology has evolved to a point where most information is both comprehensively and rapidly acquired in a reliable manner.

SP: Only if the patient is unable to do perimetry /OCT is unavailable or in glaucoma suspects.

RN: GDx or other imaging techniques should be taken as additives after a careful clinical evaluation. Their role starts in diagnosis if their findings go with clinical Diagnosis. These investigations support the clinical diagnosis and correct it if clinical diagnosis is wrong. Treatment should not be started on basis of these investigations alone. They help in explaining the patients better about their ocular illness. Their important role is in picking up or ruling out subtle progressions during follow up. However, these are expensive, and economic burden on patient must be considered when advising them repeatedly.

Q.3 Where do you feel is the need for SLT in today's glaucoma practice?

VR: Selective Laser Trabeculoplasty (SLT) is a good armamentarium to have in our practice and I do use it now as mainly a third or last line in patients who are at high risk for surgery. There have been studies to show that when used as the first line management and in virgin eyes the outcome is better .. and it reduces intraocular pressure by 20% i.e. approximately 3 -5 mms of Hg and the effect lasts for a duration of 3 to 5 years when the treatment can again be repeated.

MP: I usually start with medications and SLT is an add on if IOP is not under good control. Some advocate SLT as a primary therapy due to compliance with drops and issue of reduced efficacy of medication if given after SLT. SLT has a role to play especially if my aim is to reduce or delay anticipated progression despite antiglaucoma therapy. The efficacy is higher with a greater baseline IOP. I know it may fail with time necessitating further applications. I also understand it is not a modality for all glaucoma subtypes especially pigmentary glaucoma and eyes with inflammation. The IOP reduction would be less for normal tension glaucoma. There are reports of using SLT in angle closure after YAG iridotomy if sufficient angle opens up. The typical situation would be the point where open angle glaucoma patient is on maximum tolerated medicines with inadequate control of IOP or surgery for glaucoma could be deferred/not feasible. A short term IOP control in pregnancy with glaucoma could be achieved where I would like the medications to be reduced or stopped. However the cost and availability of laser are constraints.

SP: For POAG esp in pregnant/lactating female patients; patients who cannot instil meds especially with neurological diseases, dementia patients.

RN: Selective Laser Trabeculoplasty in POAG is helpful in postponing surgery for cases where surgery cannot be taken up for any reason. These are not very promising nor very safe procedures.

Q.4 Do you use neuroprotective drugs in glaucoma? If Yes, then which one?

VR: I only use gingko biloba in very advanced glaucoma patients, only in patients who do not have a gastric ulcer, bleeding diathesis and those who are not on any anticoagulants.

MP: I do not advocate the use of drugs per se for 'neuroprotection' alone. Neither I am against the concept if pushed to the wall in certain patients. In these, a combination therapy with IOP lowering may be needed. Neuroprotection would mean protection of retinal ganglion cells independent of IOP control. For me, the best 'protection' to the patient with glaucoma is rational and regular use of antiglaucoma medications, close monitoring and surgery for the progressing patient despite therapy. However in certain situations, where I believe mere IOP control is not helping, I may choose to use these agents (most commonly, brimonidine) despite their inconclusive evidence.

SP: Brimonidine, if that can be considered one. I also advise antioxidants containing Resveratrol or Citicoline to patients with advanced glaucoma. Since Tumeric (containing curcumin) is easily available and is cheap, I also advise patients to take it.

RN: Neuroprotective having an established role in glaucoma is not available as yet.

Q.5 Which drug do you use as first line therapy in open angle glaucoma?

VR: My first choice of drug in open angle glaucoma is a

prostaglandin analogue. However in fair skinned individuals and unilateral Glaucomas especially where cosmesis is an issue (due to the skin pigmentation, enophthalmos, the eyelash growth and the mild congestion) I would use a Beta blocker as my first line, if there is no systemic contraindications. If systemic contraindications are present I prefer to use a Topical CAI which has a safer systemic profile.

MP: The first line could be a prostaglandin analogue. Concerns about their cost is partly taken care by generic variants. The advantage being a once daily dosage, greater efficacy and greater effect on nocturnal curve. However, if the situation warrants or there is a contraindication to PG analogues, I freely use any of the available drugs including beta blockers, alpha agonists or CA inhibitors. This is true because not all patients require a maximal reduction of IOP.

SP: Depends on how advanced the glaucoma is/patient' ability to purchase medicines. PGA is my first choice.

RN: The first drug of choice for POAG is prostaglandin analogues unless contraindicated or unaffordable for long term use. Now these topical preparations are widely available in our country also, but cost of treatment may still limit the patient's compliance. Several pharmaceutical companies have cheaper and effective preparations. They also have support programmes to help patients. Poor patients should be advised early Trabeculectomy, because they are more non- compliant with medical treatment.

Q.6 With PI available, where do you find the use of Pilocarpine in Narrow angle Glaucoma?

VR: Yag PI is the mainstay in Angle closure Glaucoma. The use of pilocarpine is mainly in patients with Plateau Iris which is confirmed by a UBM.

MP: Though, being the oldest and still widely available drug, personally, my use is now limited. Pilocarpine eyedrops have been used both in open and angle closure glaucoma. Most common use in angle closure disease would be in plateau iris (post iridotomy) and prior to YAG iridotomy. But I do not use it as a 'substitute' for YAG iridotomy at all in angle closure disease. I am careful and explain side effects to patients who may find it uncomfortable due to induced miosis and/or headaches in patients with anticipated prolonged use.

SP: Before doing the PI; when all other meds are unable to get to target IOP, I add Pilocarpine.

RN: Pilocarpine is to be used for PNAG till a PI has been done. Some cases show a persistent high IOP even after PI. If gonioscopy reveals occludable angles even after PI, pilocarpine shall work best in such eyes, otherwise other drugs can be used.

Q.7 Do you practice measurement of ocular blood flow in glaucoma patients? If yes, then how?

VR: No I do not measure ocular blood flow routinely.

MP: My practical use of measuring routine OBF clinically is very limited due to procedural constraints. Epidemiological studies have linked the role of low ocular perfusion pressure (OPP) to development and progression of glaucoma. Ocular hemodynamic studies as a diagnostic modality have evolved in recent times especially with use of Doppler and OCT among others. With time, we should be doing more testing of OBF in susceptible individuals (having IOP independent component) to establish association of improved ocular hemodynamic parameters to improved patient outcomes.

SP: Blood flow with ambulatory BP is helpful so that BP control can be attempted and measuring blood flow blood flow corroborates findings. OCTA is helpful for aiding diagnosis

RN: Ocular blood flow measurement is done by Doppler ultrasound and is difficult to master clinically. I have no experience clinically.

Q.8 Would you like to treat on OCT findings in pre perimetric glaucoma?

VR: It's important to understand that management of glaucoma is not treating an IOP, an OCT or a field. No my treatment of pre-perimetric glaucoma is not based just on OCT... it is based on all the above and the risk factors. Glaucoma is a disease of change so it's only if I see a progression in an OCT or visual field would I want to treat... if there is no change I would still prefer to watch.

MP: I never treat on a positive finding on OCT parameters. I am wary and aware of the pitfalls of imaging. The machine may give false flagging of disease if none exist such as in lack of acquired data in normative database of imaging ex high myopics (red disease), or give normal outputs in glaucoma patients (green disease). Single measurements on these devices should not be considered as diagnostic. A more pragmatic approach is to look for changes over time from baseline which may be suggestive of glaucoma and to correlate it to other clinical and investigational parameters (optic disc evaluation, Visual fields etc) to reach a final conclusion on treating.

SP: No, not as of now.

RN: OCT findings alone should not be used to start treatment.

Clinical or investigational documented progression in glaucomatous damage can be a flag to start treatment in absence of other signs.

Q.9 What has been your experience with micropulse laser?

VR: I have not personally used the micro pulse laser.

MP: The micropulse laser could be used either for micropulse laser trabeculoplasty (MDLT) or micropulse trans-scleral cyclophotocoagulation (MP-TSCPC). Micropulse has been reported a fairly comparable efficacy and better intraoperative and postoperative safety profile as compared to conventional treatment options. Again the cost and availability are major issues.

SP: I have still to use it.

RN: I have no experience with micro-pulse laser though many Ophthalmologists have found it to be very promising.

Q.10 Trabeculectomy with Phacoemulsification. Do you like to combine the two procedures or do them separately?

VR: In a patient with advanced open angle Glaucoma who also has a cataract, I would prefer to combine both Phacoemulsification with a trabeculectomy. In a patient with Angle closure I would discuss with the patient and prefer to do a cataract surgery alone with a sequential trabeculectomy if the IOP is not within the target even with maximum medical therapy.

MP: If there is "visually significant" cataract and I decide for a possible need for glaucoma surgery (high IOP, inadequate control, advanced glaucoma, compliance issues, progression), I combine the two procedures in most of my patients. This may be a single site or twin site surgery. I do staged surgery only if patient does not immediately or in near future require the other. In early cataract, with inadequate control of IOP, I may choose to do glaucoma surgery alone first and explain patient that cataract may progress faster and require surgery later. Similarly in patients with good control of IOP, on one or two antiglaucoma medications and early field defects with no progression, I may choose to do a clear corneal cataract surgery alone and follow up. This is underlined by the fact that I understand there may be some reduction of IOP by cataract surgery alone, especially in angle closure disease.

SP: I do the combination when indicated as it becomes a single surgery and the results are good otherwise doing a single procedure of Trabeculectomy gives better results and inflammation is lesser.

RN: Trabeculectomy and Phaco emulsification surgery should be combined if glaucoma is not controlled by MMT, and cataract is visually disabling. Otherwise it is generally more suitable to do them one after another. Combined surgery has its merits, but possibility of complications must be kept in mind.

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COVID-19 Diagnostics, Tools, and Prevention

Mayar Allam, Shuangyi Cai, Shambavi Ganesh, Mythreye Venkatesan, Saurabh Doodhwala, Zexing Song, Thomas Hu, Aditi Kumar, Jeremy Heit, COVID-19 Study Group and Ahmet F. Coskun

The Coronavirus Disease 2019 (COVID-19), caused by the severe acute respiratory syndrome coronavirus-2 (SARS-CoV-2), outbreak from Wuhan City, Hubei province, China in 2019 has become an ongoing global health emergency. The emerging virus, SARS-CoV-2, causes coughing, fever, muscle ache, and shortness of breath or dyspnea in symptomatic patients. The pathogenic particles that are generated by coughing and sneezing remain suspended in the air or attach to a surface to facilitate transmission in an aerosol form. This review focuses on the recent trends in pandemic biology, diagnostics methods, prevention tools, and policies for COVID-19 management. To meet the growing demand for medical supplies during the COVID-19 era, a variety of personal protective equipment (PPE) and ventilators have been developed using do-it-yourself (DIY) manufacturing. COVID-19 diagnosis and the prediction of virus transmission are analyzed by machine learning algorithms, simulations, and digital monitoring. Until the discovery of a clinically approved vaccine for COVID-19, pandemics remain a public concern. Therefore, technological developments, biomedical research, and policy development are needed to decipher the coronavirus mechanism and epidemiological characteristics, prevent transmission, and develop therapeutic drugs.