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IMPACT OF COVID19 PANDEMIC ON VISUAL FIELD LOSS IN GLAUCOMA PATIENTS WITH IRREGULAR FOLLOW-UP AND MEDICATION ADHERENCE AT A TERTIARY EYE CARE CENTRE IN EASTERN INDIA

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ABSTRACT

Background: The perpetual treatment in glaucoma patients had been hindered due to interrupted lockdowns due to COVID 19 pandemic. **Purpose**: To analyse difficulties faced by the glaucoma patients for regular follow-up along with medication adherence & the visual field loss thereafter. **Methods**: No. of patients:32 Age:18-75 yrs. Medications: Regular antiglaucoma drugs Examined with: Automated Perimetry, Goldmann Applanation Tonometry, Slit Lamp Bio-microscopy (90D lens) Patients were interviewed with questionnaire. Correlation between VFI, IOP and VCDR before & after irregular visits were also measured with ANOVA Test. **Result:** Mean(±SD) age: 53.218 (±11.95) Male: Female ratio: 3:2 Non-adherent to medications:55 % Significant visual field loss (as per VFI): 78.13%(p=0.28) Raised IOP: 81.25%(p=0.01) Higher VCDR than before: 59.38%(p=0.11) **Conclusion**: Decentralization of Glaucoma Care Units to Primary Health System, free medications and Tele-Ophthalmology may help glaucoma patients at the remotest corner.

KEYWORDS: COVID 19, Glaucoma, Medication adherence, Visual Field loss.

INTRODUCTION

The severe acute respiratory syndrome coronavirus (SARS-COV-2) pandemic since 2020 has put a huge global impact on general life. Healthcare system is no exception. Recurrent lockdown has been imposed in various parts of the world including India for the last two years to curb down the unprecedented spread of the virus and the resultant fatality. Nationwide and state-wise lockdown had been imposed in multiple phases since March 2020. After the control of the first wave of this fatal disease a second wave perpetuated since early 2021. Travel restrictions, social distancing and curbing of non-emergency services in hospitals has become the new normal. This situation has hugely affected the treatment of chronic diseases in healthcare systems resulting in irregular visits to the hospital by the patients and procurement of medicines. The outcome thereafter is deterioration of clinical condition of the patients causing progression of the disease and further magnification of treatment difficulties.

Glaucoma is one of the leading causes of irreversible bilateral blindness all over the globe. About 4% to 10% of incidents of bilateral blindness in India are due to glaucoma only.[1] It is a chronic progressive disease which demands regular periodic follow- up along with strict continuous medication throughout life. Only then can the progression of the disease be delayed thus preventing significant visual field loss. It has always been a challenge for the ophthalmologists to manage this disease properly due to failure of regular follow-up and medication adherence in many of the patients. COVID-19 has escalated the difficulties manyfold due to the implementation of intermittent lockdown in many states of India including West Bengal. Travel restrictions, social distancing and unavailability of non-emergency medical services in many Health facilities devoted to COVID-care posed a problem for patients to follow- up. Psychosocial factors like unemployment, fear of incurring infections during hospital visit, self-isolation due to the disease COVID-19 itself also played a role in non-adherence to medication.

Therefore the need for this study tracing patients suffering from chronic glaucomatous diseases who had not followed strict routines of follow-up visits and medication routine at a tertiary eyecare teaching hospital in Eastern India due to SARS-COV-2 and has thus suffered from significant visual field loss the study-period being February 15 ’21 to June 15 ’21.

This study will help us to plan effective disease management plans and improvise the current healthcare

infrastructure to combat the disease glaucoma ensuring its uninterrupted management.

METHODS

A cross- sectional comparative study was conducted at the tertiary eyecare teaching centre at Kolkata in Eastern India between February 15 2021 to June 15 2021. The state after completion of phased lockdown during the first wave of COVID-19 in 2020 had again imposed a similar lockdown during second wave of the pandemic from May 24 2021. The lockdown was followed with prohibition of inter-district /interstate transportation in both railway and roadways, prohibition in opening of public places and markets, and prohibition of running of non-emergency offices. Though health facilities were attempted to run properly transportation difficulties along with fear of spread of diseases resulted in a much lesser footfall at various outpatient and inpatient departments.

The patients diagnosed with glaucoma who had been given appointments for follow-up in the glaucoma clinic of Regional Institute of Ophthalmology, Kolkata were inspected. Here patients diagnosed with glaucoma are advised for routine follow-up visits at regular intervals based on disease severity with mild glaucoma every 5–6 months, moderate glaucoma every 4–5 months and severe glaucoma every 3–4 months according to American Academy of Ophthalmology preferred practice guidelines.

The study subjects were chosen from patients who were not able to attend the scheduled follow-up appointments and visited the hospital way past their scheduled appointments during the period of February 15- June 15 2021. The patients were selected with eligibility criteria of 1) age 18 years to 75 years 2) diagnosed with glaucoma, both primary and secondary, who are on antiglaucoma medications 3) patients from the state of West Bengal.

The patients were examined in two parts. The first part comprised of questioning them with a multidimensional questionnaire consisting of 1) Demographic and clinical data including age, gender, distance of residence from the hospital, diagnosis, type of glaucoma disease and medication advised as per previous hospital prescriptions 2) Questions pertaining to barriers for hospital visit, and barriers for medication adherence during the pandemic. The second part comprised of clinical examination with 1) Automated Perimetry, 2) Goldmann Applanation Tonometry and 3) Slit Lamp Bio-microscopy with 90D lens. The results thus obtained were compared with the data recorded during previous visit of the patient mostly from our databases and patient's outpatient prescription records.[2]

Statistical analysis was performed over received results of clinical examination using One Way ANOVA test. Age of the participants was expressed as mean ± standard deviation and categorical variables are presented with frequency (percentage). P values < 0.05 were considered as statistically significant.[3]

RESULTS

Patients were examined with questionnaire and then examined clinically. Of the 32 patients reviewed, the mean age was 53.22 ± 11.95 years, 8(25%) participants were ≥60 years of age and male: female ratio was 3:2. Table 1 represents the demographic characteristics of the patients. Most of the patients 23 (71.87%) in our study was in middle socioeconomic status (upper lower and lower class) and 12(37.50%) were unemployed, depending on the family members for their medical expenses. 26 (81.25%) patients had to travel >50 km for the hospital visit, thus making the follow-up visit even more difficult during the lockdown restriction. The most common type of glaucoma in the study group was primary open angle glaucoma in 20 (62.50%) and 25(78.12%) patients were on more than one drug regimen for glaucoma.18 (56.25%) patients were found to be non-adherent to anti glaucoma medication. Table 1 represents the demographic characteristics of the patients.

Out of 64 eyes examined 78.13% of patients were found to have suffered significant visual field loss as per visual field index measurement done by Automated Perimetry (24-2), 81.25% of patients were found to have raised intraocular pressure (measured with Goldmans' Aplanation Tonometry) and 59.38% of patients were found to have higher cup disc ratio than previous measurements.[4]

Table 1: Demographic and clinical parameters of the study participant.[5]

Parameters	*n (%) (n=32)*
Mean (SD) age years	
18-39 yrs	6(18.75%)
40-59 yrs	18(56.25%)
>60 yrs	8(25.00%)
Male: female	19:13
Education:	
Illiterate	8(25.00%)
Primary or middle school	13(40.62%)
High school or more	11(34.37%)
Socioeconomic status	
Upper middle class	15(46.87%)
Lower middle class	7(21.87%)
Upper lower class	5(15.62%)
Lower class	5(15.62%)
Employment status	
Employed	20(62.5%)
Unemployed	12(37.50%)
Distance travelled to the hospital	
<50 kms	6(18.75%)
>50 kms	26(81.25%)
Glaucoma diagnosis	
Open angle glaucoma	20(62.50%)
Closed angle glaucoma	12(37.50%)
No. of anti- glaucoma medicines	
1	7(21.87%)
More than 1	25(78.12%)

Table 2: Visual loss in participants.

parameters	**(%) (n=32)**
No of patients with reduced VFI	78.13%
No of patients with raised IOP	81.25%
No of patients with increased VCDR ratio	59.38%

Obstacles for follow-up visit during lockdown

Most patients mentioned multiple reasons for inhibition for hospital visit and number of patients who reported each barrier was enumerated as depicted in figure 1. The main barriers for regular follow up visits were unavailability of transport due to intermittent lockdown 2 imposed all over the state of West Bengal, lockdown restrictions, financial constraints and fear of contamination with COVID -19 virus due to travel.

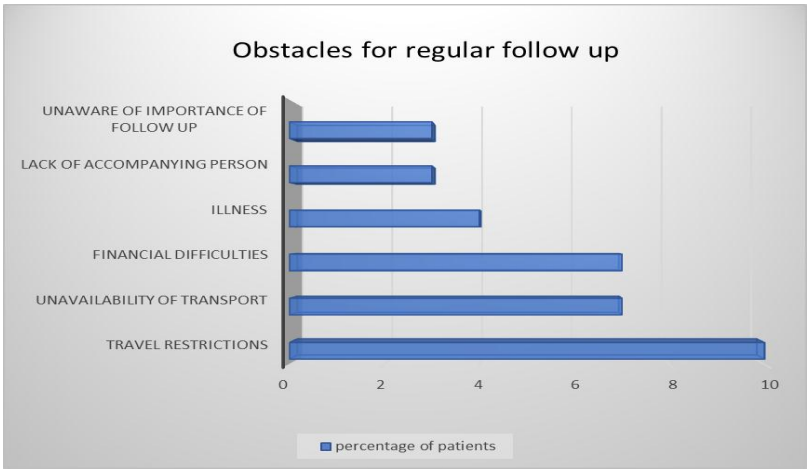

Figure 1: Obstacles for regular follow up.

Obstacles for adherence to medication

The obstacles for regular medications were non availability of medicines due to less hospital visits, inability to buy medicines due to financial difficulties, unawareness of importance of regularity of anti-glaucoma medications, no significant improvement of vision on medication, COVID -19 disease contamination and unavailability of accompanying caregiver due to illness and forget fullness. Further analysis showed that longer distance from hospital, low socio- economic status, unawareness of outcome of irregular medication in glaucoma, more than one anti glaucoma medication, age >60 years, previous habit of non- compliance to medication are some of the key factors behind non adherence to medication. The various reasons for nonadherence to medication had been depicted in figure 2.

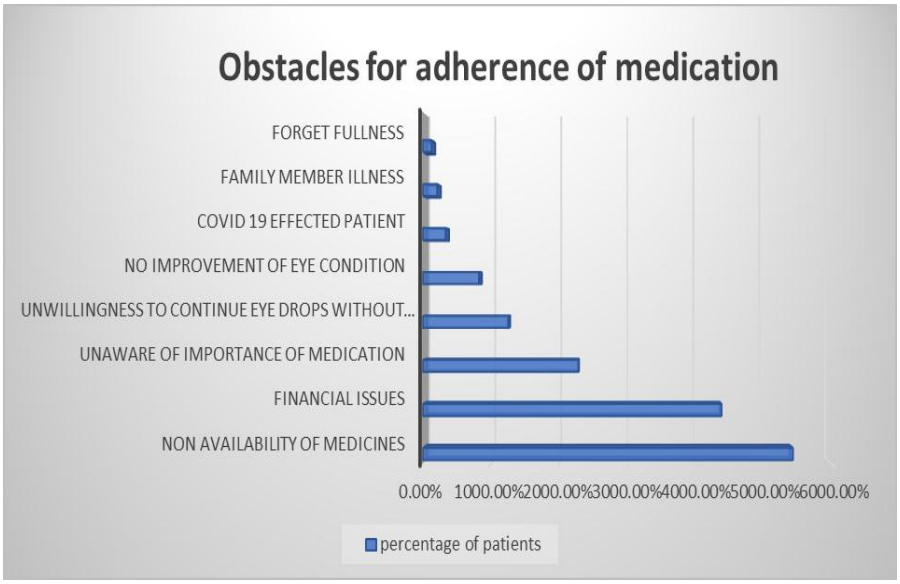

Figure 2: bar graph for obstacles for medication adherence during COVID-19 pandemic

DISCUSSIONS

The main hypothesis of the study was to determine challenges faced by glaucoma patients during lockdown due to COVID-19 pandemic and the resultant visual effect in the said patients. The patients had missed their follow up visit in the tertiary care centre due to lockdown restrictions, lack of transport facilities and financial difficulties. Regular follow-up is crucial in glaucoma management as relation between worsening of glaucoma condition and poor follow-up had been well documented in many studies.[6] With the pre-existing poor follow-up and medication adherence for glaucoma in a developing country like India the pandemic has undoubtedly magnified the problem and imposed huge strain for continuity of glaucoma care.

The study showed that irregular medication and follow up had resulted in considerable visual loss in the patients. A statistical study with One Way Anova Test was done measure the significance of the results derived. The results are given here (Table 3). According to the statistical tests the study results were 33.33% significant.

Table 2: Results of single factor ANOVA test.

One Way ANOVA Test	P value
Visual Field Index comparison	0.25
IOP comparison	0.01
VCDR comparison	0.10

Effect of the study and future recommendations

With the unknown future of the pandemic, we need to focus on solutions that could involve both health technologies and primary eye care centres for continuity of healthcare services like:

1. We can improve the primary healthcare system decentralising the specialist eyecare services and utilize the manpower at the grassroot level to provide quality eyecare services to the remotest part of the state.
2. We can also utilize the primary healthcare pharmacy system to provide free medications to patients to avoid non adherence to medications.
3. Increasing awareness among mass about glaucoma and counselling of the Glaucoma patients regarding importance of the regularity of follow up and medications can prevent visual field defects in many patients.
4. Lastly the futuristic tool of telemedicine can be utilized to provide consultations and advice to the patients who are unable to come to the hospitals for any reasons.

Limitations

- The number of test subjects were very few in this particular study. A larger no of test subjects may have rendered a more significant test result.
- Due to lack of proper follow up even after the study the proper clinical evaluation could not be made.

The patients need to be followed up more frequently and regularly to comment on a more precise amount of visual field loss.

CONCLUSION

This study had revealed that decentralization of Glaucoma Care Units is need of the hour and Primary Health Care System must be utilized to reach the glaucoma patients at the remotest corner of the State. Accessibility to free ophthalmological medicines via the Primary Health Pharmacies may reduce the incidence of non-adherence to medication. Patients must be well informed about the course of the disease glaucoma and motivated for regular follow up. Tele- Ophthalmology though not very popular here may be used as a futuristic tool to combat glaucoma.

REFERENCES

1. Pujari R, Chan G, Tapply I; Addenbrookes Glaucoma COVID response consortium, Bourne RR. The impacts of COVID-19 on glaucoma patient outcomes as assessed by POEM. Eye (Lond), 2021 Feb 9; 1–3. doi: 10.1038/s41433-021-01425-0. Epub ahead of print. PMID: 33564139; PMCID: PMC7871516.
2. Subathra GN, Rajendrababu SR, Senthilkumar VA, Mani I, Udayakumar B. Impact of COVID-19 on follow-up and medication adherence in patients with glaucoma in a tertiary eye care centre in south India. Indian J Ophthalmol, 2021; 69: 1264-70.
3. Boulle A, Davies M-A, Hussey H, Ismail M, Morden E, Vundle Z, et al. Risk factors for COVID-19 death in a population cohort study from the Western Cape Province, South Africa. Clin Infect Dis., 2020. ciaa1198. doi: 10.1093/cid/ciaa1198.
4. Liu W, Yue X-G, Tchounwou PB. Response to the COVID-19 epidemic: The Chinese experience and implications for other countries. Int J Environ Res Public Health, 2020; 17: 2304.
5. Kiage D, Kherani IN, Gichuhi S, Damji KF, Nyenze M. The muranga tele-ophthalmology study: Comparison of virtual (teleglaucoma) with in-person clinical assessment to diagnose glaucoma. *Middle East Afr J Ophthalmol*, 2013; 20: 150–7. [PMC free article] [PubMed] [Google Scholar].
6. Thulasiraj RD, Nirmalan PK, Ramakrishnan R, Krishnadas R, Manimekalai TK, Baburajan NP, et al. Blindness and vision impairment in a rural south Indian population: The Aravind Comprehensive Eye Survey. Ophthalmology, 2003; 110: 1491-8.