

Time Lag between the Times of Injury to the Time of Presentation in Patients with Traumatic Optic Neuropathy Due To Road Traffic Accidents

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Abstract: **PURPOSE:** In a case of trauma, loss of vision due to traumatic optic neuropathy is a feature for which patients present late due to initial multisystem injury and serious brain injury. Therefore, the objective of the study is to find the time lag and causes of delayed presentation in patients with traumatic optic neuropathy due to RTA. **OBSERVATION:** It is a hospital based case series in which 37 patients with Traumatic Optic Neuropathy were considered. Diagnosis of Traumatic Optic Neuropathy was based on history of RTA, diminution of vision, impaired colour vision, RAPD and/or disc pallor. A questionnaire with questions to know the time of injury, associated multisystem morbidities, reason for delay in presentation was administered. Delay in presentation was defined as presentation more than 3 days following trauma. **RESULTS:** Traumatic Optic Neuropathy is significantly seen more in men (97%). Median time lag was 13 days. More the time lag worse is the visual acuity at presentation. Median time lag in PL negative group was 24 days, PL + or more was 13 days, no visual complaints was 4.5 days. Most common reason for delay was loss of consciousness (43%). **CONCLUSION:** As seen by our study the time lag is more (24 days) in patients with PL negative vision. Hence a referral to ophthalmologist at earliest is of utmost importance. Also creating awareness that head trauma can lead to loss of vision and motivating head trauma patients to consult ophthalmologist as early as possible for early diagnosis and treatment is also important.

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I. Introduction

The most common etiology of Traumatic optic neuropathy is motor vehicle and bicycle accidents (49.42%) followed by falls (20%) and assault (13%). Lubben, et al : 46.15% due to motor vehicle and bicycle in a study of 63 patients.¹ Usually Traumatic Optic Neuropathy is associated with multisystem injury and serious brain injury resulting in delayed presentation which may cause a delayed initial ophthalmic examination.² In the study IONTS, treatment was initiated in patients who presented within 7 days of injury. 7 days was selected as a compromise between the desire to include as many patients as possible and because after 7 days, treatment is less likely to be beneficial. The steroid regimen did not show any greater improvement in those who presented before 8 hours in comparison with those who presented after 8 hours; whereas, those who underwent optic canal decompression within 24 hours were at an advantage, as 50% of them showed improvement. Earlier the presentation greater percentage showed improvement.³ In the study by Spoor et al, they showed a significant improvement of vision (82%) if early treatment (2hrs – 15 days, median 22hrs) was initiated.⁴ Hence it is important to determine time lag between injury to presentation which would be helpful in deriving a golden hour within which the treatment can be initiated. The objective of this study was to evaluate the median time lag between the injury to the time of presentation and the causes for delayed presentation.

II. Material and Methods

This is a hospital based cross sectional study carried out in patients attending the OPD in a tertiary care hospital as ours from January 2019 to March 2019. A total of 37 subjects across all age groups were considered in this study.

Study design: It is a hospital based cross sectional descriptive study.

Study Location: All patients coming with a diminution of vision following head trauma by RTA to our OPD.

Study Duration: January 2019 to March 2019.

Sample size: 37 patients.

Inclusion criteria:

1. Patients giving informed consent for the study
2. All the patients coming to for ophthalmic examination following head trauma due to RTA
3. Indirect traumatic optic neuropathy.

Exclusion criteria:

1. Patients not giving informed consent.
2. Direct traumatic optic neuropathy
3. Trauma due to other causes like fall, assault, others
4. Other optic neuropathies – glaucoma, optic neuritis, hereditary optic neuropathies

Procedure methodology: Patients either presenting with diminution of vision or being referred for eye examination following a RTA was considered in this study. A total of 37 subjects were considered. Diagnosis of traumatic optic neuropathy was based on history of RTA, diminution of vision, impaired colour vision, RAPD and/or disc pallor. A questionnaire was administered to know time of injury, associated multisystem morbidities and reason for delay in presentation. Delay in presentation is defined as presentation more than 3 days after trauma

Study tools:

1. Well-structured questionnaire.
2. Bright torch light to assess RAPD
3. Ishihara Chart for colour vision
4. Indirect ophthalmoscope for disc pallor

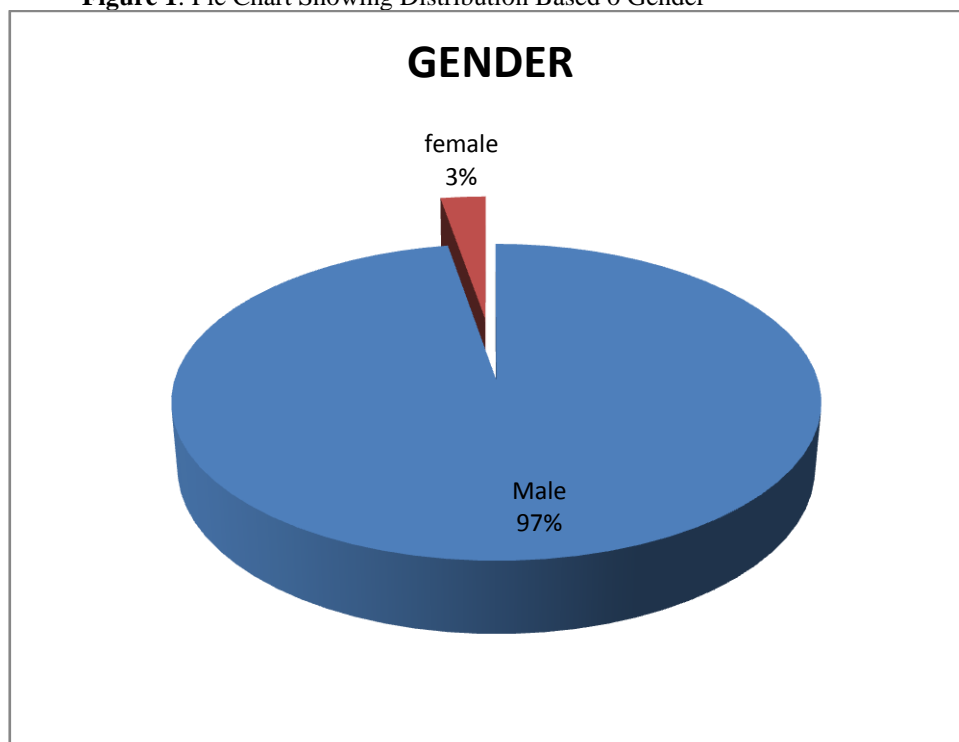
Statistical analysis:

The descriptive data is analyzed using mean, median, frequency and percentage.

III. Results

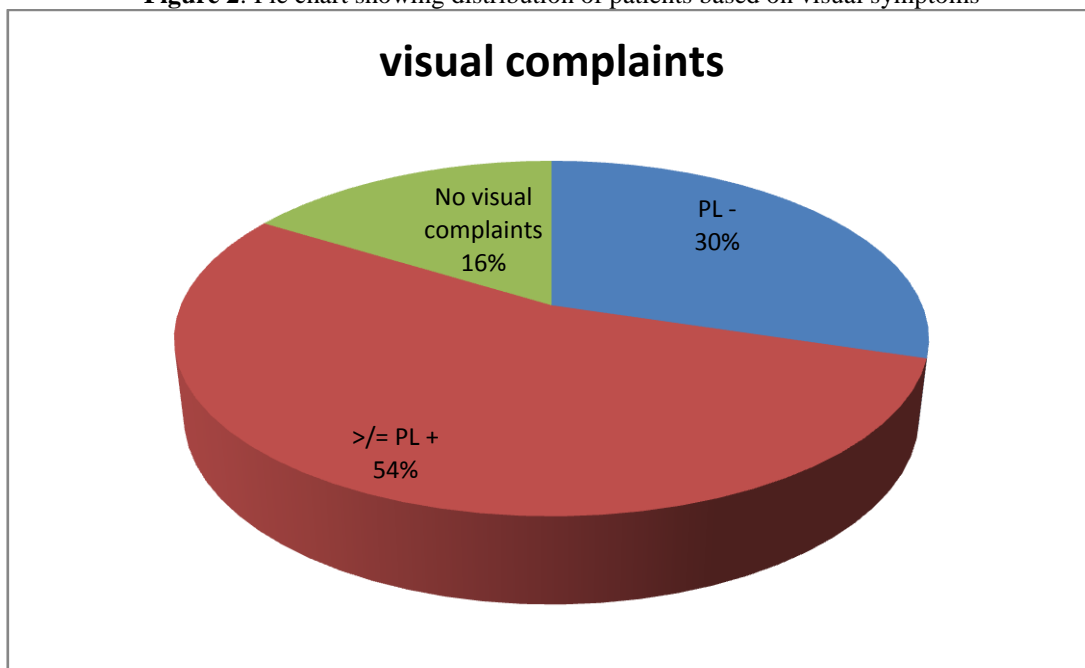
In this study, Traumatic Optic Neuropathy was significantly seen more in men (97%, n=37) and the rest 3% was females (Figure 1).

Figure 1: Pie Chart Showing Distribution Based o Gender



The patients age group ranged from 10 – 50 years. A majority of patients (54%, n=37) presented with PL positive or more, 30% presented with PL negative vision and 16% had no visual complaints. (Figure 2)

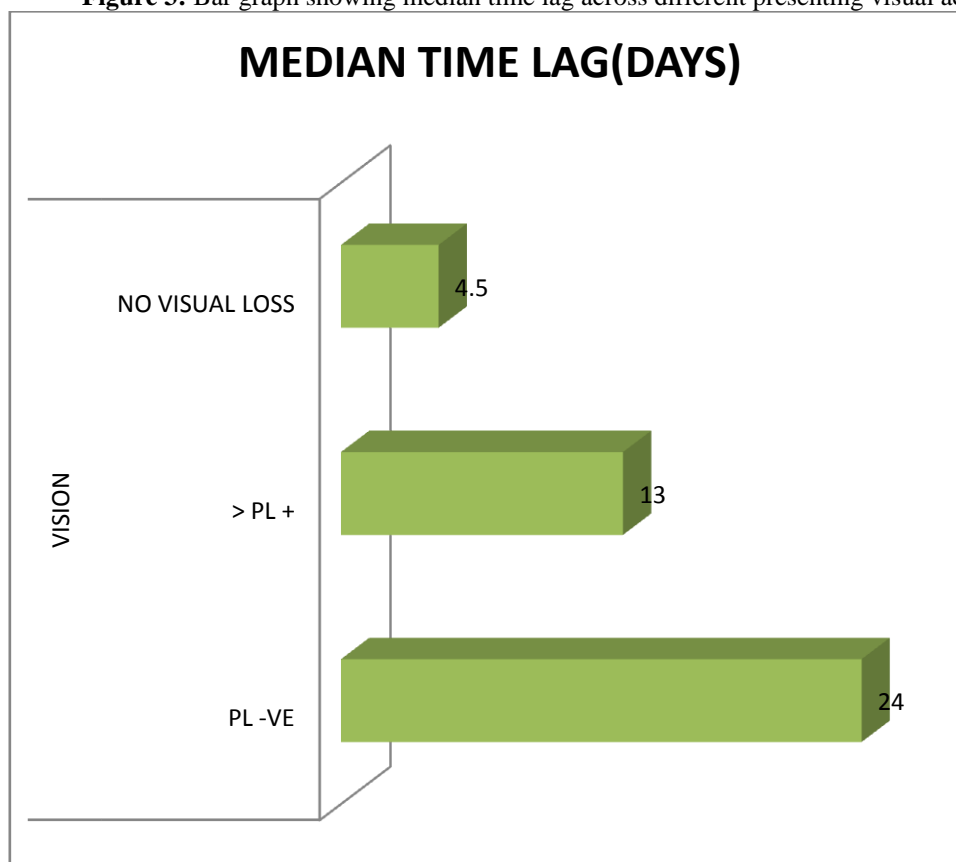
Figure 2: Pie chart showing distribution of patients based on visual symptoms



The Median time lag in this study was 13 days.

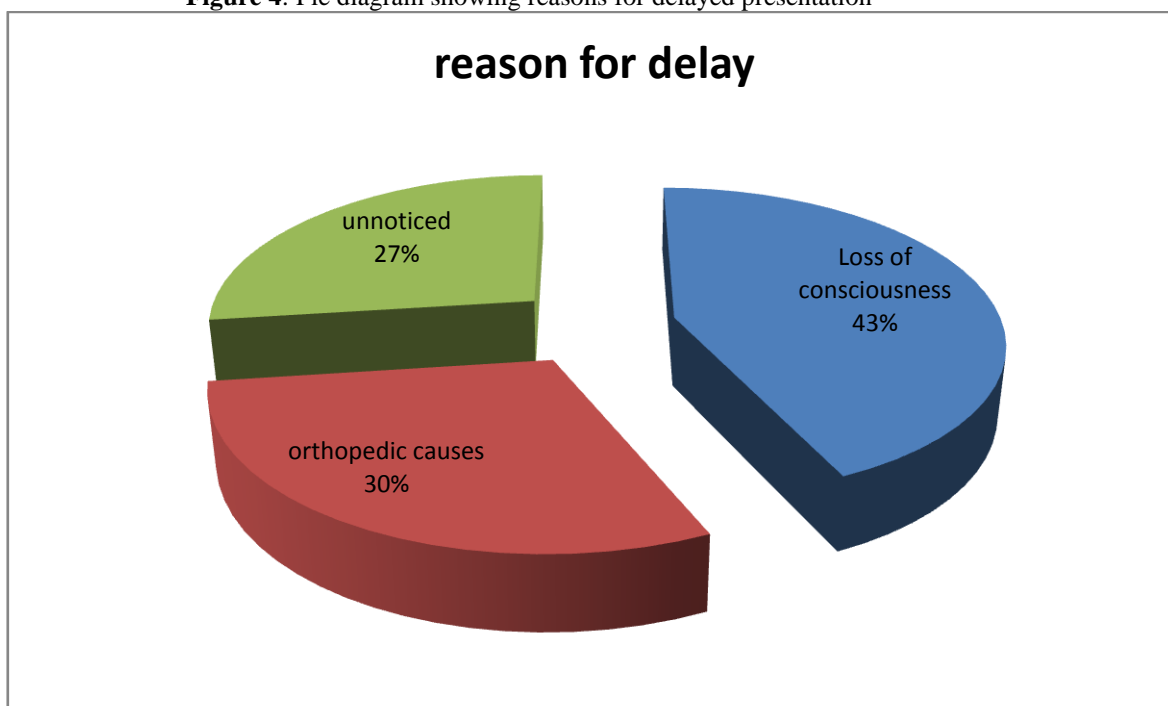
More the time lag worse is the visual acuity at presentation. Median time lag in PL –ve group was 24 days , PL + or more was 13 days, no visual complaints was 4.5 days (Figure 3).

Figure 3: Bar graph showing median time lag across different presenting visual acuity



The most common reason for delay was loss of consciousness (43%), followed by orthopedic causes (30%). 20% of them had not noticed the visual loss. (Figure 4)

Figure 4: Pie diagram showing reasons for delayed presentation



IV. Discussion

This study evaluates the time lag from the time of injury to the time of presentation which causes increased visual morbidity. As seen by our study a significant number of affected patients were male patients indicating more RTA in males. The condition was distributed across the age groups of ten to 50 years. Most of the patients (54%) of the study group showed PL positive or better vision indicating some but very low vision. 30% of the patients had a visual acuity of PL negative i.e., absolutely no vision and severe optic nerve damage and nil recovery potential. The rest of the patients (16%) did not have any visual symptoms as they did not seem to notice the loss of vision in one eye due to another good eye and they were the patients referred from other specialities. The median time lag was 13 days. Patients with absolutely nil vision i.e., PL negative vision were the ones who had a more time lag of 24days (median) and those with no visual loss presented the earliest (median lag = 4.5 days). The most common reason for delay was loss of consciousness (43%), followed by orthopedic causes (30%). 20% of them had not noticed the visual loss.

V. Conclusion

As seen by our study the time lag is more (24 days) in patients with PL negative vision. Hence a referral to ophthalmologist at earliest is of utmost importance. Also creating awareness that head trauma can lead to loss of vision and motivating head trauma patients to consult ophthalmologist as early as possible for early diagnosis and treatment is also important.

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