

Visual Field Following Acute Primary Angle Closure

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Acute primary angle closure (APAC) is an ophthalmic emergency with the potential to cause irreversible blindness. However, prompt recognition and treatment of the condition may prevent the occurrence of glaucomatous optic nerve damage. The incidence and type of visual field damage after an episode of APAC is not well established. For this reason, a study was performed to determine the type and frequency of visual field loss 6 months after an episode of APAC and to identify risk factors in an Asian population.

Patients and Methods

All patients who experienced APAC at 2 hospitals in Singapore during a 1-year period were included in this cross-sectional observational study. Patients underwent static automated white-on-white threshold perimetry approximately 6 months after APAC. Prior to the visual field test, all patients underwent slit lamp and fundus examination to exclude abnormalities that could potentially affect the visual field. Patients were further evaluated for factors that may have contributed to the visual field loss.

Results

Forty five patients presented with APAC, of whom 29 (29 eyes) underwent visual field analysis. Twenty one patients were female and 8 were male, with a mean age of 62.1

years (range, 50 to 85 years).

Eleven patients (38%) were found to have reproducible visual field defects, as follows:

- 3 eyes had severe generalised visual field loss with constricted fields
- 4 eyes had superior hemifield defects, consistent with nerve fibre bundle pattern loss
- 4 eyes had both superior and inferior hemifield defects.

The remaining 18 patients had normal visual fields 6 months after APAC.

Duration of symptoms showed a statistically significant odds ratio as a risk factor for visual field loss (Table 1). The odds ratio for increased intraocular pressure was also significant. Other potential risk factors

Table 1. Odds ratios for association of visual field outcome with risk factors.

| | Visual field outcome | | Odds ratio |
|--|----------------------|--------|------------|
| | Abnormal | Normal | |
| <i>Sex</i> | | | |
| Female | 6 | 15 | 1.0 |
| Male | 5 | 3 | 4.2 |
| <i>Age</i> | | | |
| <60 years | 3 | 12 | 1.0 |
| ≥60 years | 8 | 6 | 5.3 |
| <i>Duration of symptoms</i> | | | |
| <7 days | 6 | 17 | 1.0 |
| ≥7 days | 5 | 1 | 14.2 |
| <i>Presenting intraocular pressure (mm Hg)</i> | | | |
| <40 | 2 | 2 | 1.0 |
| 40-49 | 4 | 4 | 1.0 |
| ≥50 | 5 | 12 | 0.4 |
| <i>Method of treatment</i> | | | |
| Laser peripheral iridoplasty | 10 | 14 | 1.0 |
| Trabeculectomy | 1 | 4 | 0.45 |
| <i>Increased intraocular pressure at follow up</i> | | | |
| No | 4 | 16 | 1.0 |
| Yes | 7 | 2 | 14.0 |

included pre-existing disc cupping at presentation and previous intermittent angle closure glaucoma, although these could not be clarified as risk factors due to the small number of patients in the trial. Level of IOP at presentation and method of treatment were not associated with visual field outcome.

Conclusion

The rate of significant visual field defects in this study was low (38%), with the majority of eyes having normal visual fields (62%). Thus, there was no evidence of detectable functional damage developing as a sequel of APAC for most patients, suggesting that APAC is not necessarily a blinding condition. This result impacts on the term 'acute primary angle closure glaucoma' since 'glaucoma' signifies a disease that irreversibly affects visual function — 'acute primary angle closure' or 'symptomatic primary angle closure' may be more appropriate terms, with only those eyes with detectable visual field loss being diagnosed as having 'acute primary angle closure glaucoma'.

Among the 11 patients with significant visual field loss after the acute episode, it is possible that the development of these defects occurred as a result of pre-existing chronic glaucoma, previous intermittent angle closure glaucoma, chronic rise in IOP after the acute episode, or the acute episode itself. While, the small sample size limited further evaluation, this study showed that the majority of eyes have no detectable functional damage after an acute episode of primary angle closure if prompt and adequate treatment is given.

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