

Six-year incidence and risk factors for primary angle closure disease: The Singapore Epidemiology of Eye Diseases Study

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OBJECTIVE: To determine the incidence and risk factors of primary angle closure disease (PACD) over six years in a multi-ethnic Asian population.

DESIGN: Population-based, longitudinal study.

SUBJECTS: The Singapore Epidemiology of Eye Diseases study is a population-based cohort study conducted amongst adults aged 40 years or more. The baseline examination was conducted between 2004 to 2010; and the six-year follow up visit between 2011 to 2017. Out of 6,762 participants who attended the follow up examination, 5,298 participants at risk for primary angle closure glaucoma (PACG) and 5,060 participants at risk for PACD were included for analyses.

METHODS: Standardized examinations including slit lamp biomicroscopy, indentation gonioscopy, intraocular pressure (IOP) measurement and static automated perimetry, were performed. In this study, PACD includes primary angle closure suspect (PACS) , primary angle closure (PAC) and PACG.

MAIN OUTCOME MEASURES: Six-year PACD incidence was evaluated amongst an at-risk population excluding adults with baseline glaucoma, PACS, PAC, pseudophakia at baseline or follow-up, or laser peripheral iridotomy or iridectomy at baseline visit. Logistic regression analysis adjusting for age, gender and ethnicity was performed to evaluate associations between the development of PACD and demographic or ocular characteristics. Forward selection based on the Quasi-likelihood Information Criterion (QIC) was used in multi-variable analysis to reduce potential multicollinearity.

RESULTS: The six-year age-adjusted PACD incidence was 3.50% (95% confidence interval <http://CI>

2.94%-4.16%) . In multivariable analysis, increasing age per decade (Odds ratio OR 1.35; 95% CI, 1.15-1.59) , higher intraocular pressure (IOP) (OR1.04; 95%CI 1.00-1.08) and shallower anterior chamber depth (OR1.11; 95% CI 1.08-1.14) at baseline were associated with higher odds of PACD, while late posterior subcapsular cataract (OR0.60, 95% CI 0.48-0.76) was associated with lower odds of PACD. The six-year age-adjusted incidence of PACG, PAC & PACS were 0.29% (95% CI 0.14- 0.55%) , 0.46% (0.29-0.75%) and 2.54% (2.07-3.12%) respectively.

CONCLUSIONS: Our study showed that the six-year incidence of PACD was 3.50%. Increasing age, higher IOP and shallower anterior chamber were associated with higher risk of incident PACD while late posterior subcapsular cataract was associated with lower odds of PACD. These findings can aid in future projections and formulation of healthcare policies for screening of at-risk individuals for timely intervention.

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Ophthalmology. 2022 Mar 16;S0161-6420(22) 00204-4. doi: 10.1016/j.ophtha.2022.03.009.

PMID: 35306094 DOI: 10.1016/j.ophtha.2022.03.009