

Genetic and environmental factors in different types of age-related cataract among Egyptians

Abstract

Background: Cataract is the most common vision related handicap in the world. Advanced age has been shown to be the most reliable independent risk factor for the occurrence of lens opacities. The prevalence of lens opacities has been evaluated in many populations in many different countries with widely varying results

Patients and Methods: The present study seeks clues to the etiology of each type of age related cataract so that strategies to prevent or delay cataract formation in each specific group could be instituted. The present study included 280 patients with age related cataract (153 males and 127 females) and 296 controls with similar age and sex distribution. All cases and controls were subjected to thorough personal and family history taking including consanguinity, occupation, residency, diabetes mellitus, hypertension, smoking, family history of age related cataract and family pedigree analysis. Full clinical examination also included complete ophthalmological evaluation to determine the type of cataract using slit-lamp examination and visual acuity measurement. Seventy five patients and 25 controls were subjected to the following investigations; estimation of serum total protein, serum albumin and globulin levels, albumin/globulin (A/G) ratio, hemoglobin (HB) level, and red blood cells (RBCs) count. Statistical analysis was conducted using SPSS program for calculating t test, χ^2 test and multiple logistic regression analysis.

Results: the present study revealed that mixed cataract (i.e. presence of more than one type of cataract) was the commonest type of age-related cataract in Egypt (48.9% of cases). Positive family history, consanguinity and exposure to ultraviolet irradiation were universal risk factors for all types of cataract

among Egyptians. Diabetes mellitus was associated with nuclear and posterior sub-capsular types of cataract, while hypertension had its effect on both cortical and posterior sub-capsular types. Biochemical analysis revealed that the risk of age-related cataract increases with decreased level of serum total protein, decreased serum albumin and globulin levels, decreased RBCs count and hemoglobin level.

Conclusion: the present study concludes that genetic factors and ultraviolet exposure are important risk factors for development of all types of age-related cataract. Age-related cataract is rarely associated with a simple pattern of inheritance and is likely determined by a number of different genes and environmental factors

Key words: genetics - cataract