Second Laureate
Fundamental Research

Project title: Genetic study on glaucoma and Parkinson's disease in Iran

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Abstract:

The purpose of this research was to perform a genetic study on two diseases, glaucoma and Parkinson's disease, among Iranians. We aimed to perform this study using powerful approaches and cutting edge technologies- linkage analysis and microarrays. Approximately 65 million individuals worldwide are affected with glaucoma, and the disease is a leading cause of blindness. We focused on primary congenital glaucoma (PCG), the prevalence of which is approximately four fold higher in the Middle East as compared to Western countries. Parkinson's disease is the second most prevalent neurological disorder. The disease is of particular social and economic relevance because of increasing life expectancies in recent decades. With respect to public health issues, we showed that mutations in the gene CYP1B1 are the most common cause of PCG among Iranians, and that the West of Iran has the highest prevalence of PCG. Also showed that PCG and adult onset glaucoma share common etiologies; this finding is important with respect to understanding the pathogenesis of glaucoma and also has clinical implications. For Parkinson's disease, we found that compared to other populations, age of onset among Iranians is lower and the male to female ratio of patients is higher. With regards to basic science and findings of international significance, undoubtedly the identification of LTBP2 as a novel glaucoma causing gene and the identification of FBXO7 as the causative gene for Parkinsonian pyramidal syndrome were our most important findings. These genes were identified by linkage analysis using high density SNP miocroarray chips. Our achievements attest to advances in scientific research in Iran and the abilities of our students and the research community at large.