A population-based epidemiological and genetic study of X-linked retinitis pigmentosa.

Abstract:

PURPOSE: To perform a nation-wide elucidation of the prevalence and the mutation spectrum in X-linked retinitis pigmentosa (XLRP), and to make genotype-phenotype comparisons.

METHODS: The study comprised 96 affected males and 149 female carriers from 42 families representing all identified XLRP individuals in the Danish population (5.4 million inhabitants). RPGR and RP2 were screened for mutations in 34 families, the medical files of the patients were scrutinized, and phenotype data were extracted.

RESULTS: The prevalence of affected males was estimated to be 1:26,200 and 1:18,000 of female carriers. A rough estimate, however, indicates that the real prevalence of affected males was approximately 1:15,000. The cumulated life risk of development of XLRP in carriers was strongly age dependent and included one third of the carriers older than 60 years. Molecular analysis of RP2 and RPGR uncovered 28 different mutations in 33 of 34 index cases analyzed. Twelve patients carried a mutation in RP2, 12 in exons 1 to 14, and 9 in open reading frame (ORF) 15 of RPGR. Males with RP2 mutations tended to have higher degrees of myopia, lower visual acuities, and more preserved visual fields than did males with RPGR mutations at the same age. No significant differences in phenotype were found in age of onset and type of mutation in either RP2 or RPGR.

CONCLUSIONS: A very high mutation detection rate in familial cases makes genetic testing a
valuable clinical tool for genetic counseling and prenatal testing. The proportion of RP2-mediated XLRP in the Danish population is higher and the proportion of RPGR-ORF15 is lower than reported in other studies. Thus, strategies for diagnostic procedures should take into account the population-specific mutation spectrum.