Cataracts

Cataracts refer to the clouding of the natural lens in the eye that affects vision. This condition is commonly associated with aging, but it can also result from injury, certain medications, or underlying medical conditions such as diabetes.

Cataracts can cause blurry, hazy, or dim vision, as well as increased sensitivity to glare and difficulty seeing at night. Other symptoms may include double vision, faded colors, and frequent changes in eyeglass prescriptions.

The treatment for cataracts typically involves surgery to remove the clouded lens and replace it with an artificial lens. The surgery is generally safe and effective, and most people experience improved vision afterwards. However, as with any surgery, there are some risks involved, such as infection, bleeding, and increased eye pressure. It's important to discuss the potential benefits and risks with an ophthalmologist or eye surgeon to determine the best course of action for each individual.

Radiation exposure has both a deterministic component (exposure over a certain threshold will cause a specific injury, e.g. cataracts) as well as a stochastic component (any dose increases the chances of an adverse event such as leukemia, and the higher the cumulative dose, the higher the chances).

The relationship between cataracts and Alzheimer's disease (AD) has been reported in recent observational studies. However, it is still unclear whether a causal effect of cataracts on AD or reverse causation exists.

To explore the association between cataracts and AD genetically, Man et al. from West China Hospital performed a bidirectional two-sample Mendelian randomization study.

They obtained genetic instrumental variables related to cataracts and AD from recently published genome-wide association studies (GWASs). SNP-outcome associations for AD were obtained from a GWAS with 111,326 cases and 677,663 controls. SNP-outcome associations for cataracts were drawn from two sources: a GWAS with 67,844 cases and 517,399 controls and the FinnGen consortium (42,843 cases and 262,698 controls). Inverse variance weighted (IVW) was used as the primary method for Mendelian randomization (MR) analyses.

No genetic evidence suggested that cataracts were associated with the risk of AD (IVW odds ratio =1.04, 95% confidence interval: 0.98-1.10, p=0.199). In contrast, an effect of genetically determined AD on a decreased risk of cataract was observed with suggestive evidence (IVW odds ratio =0.96, 95% confidence interval: 0.93-0.99, p=0.004). However, this result might be distorted by survival bias.

Genetically determined cataracts were not related to AD, as demonstrated in this study. In contrast, there was suggestive evidence that AD might prevent cataract development, but there might be potential survival bias. To define the exact association between the two diseases, more prospective research and studies on the pathogenesis are needed [1].

1)

Man S, Chen B, Zhang Y, Xu H, Liu Y, Gao Y, Chen Y, Chen Q, Zhang M. The Associations Between Cataracts and Alzheimer's Disease: A Bidirectional Two-Sample Mendelian Randomization Study. J Alzheimers Dis. 2023 Mar 10. doi: 10.3233/JAD-221137. Epub ahead of print. PMID: 36911941.