

Appearance of Age Related Maculopathy after Cataract Surgery

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ABSTRACT

The pathogenesis of age-related maculopathy (ARM), the most common cause of visual loss after the age of 60 years, involves a variety of hereditary and environmental factors. When the cataractous lens is removed and replaced by clear intraocular lens, a significant increase in ocular transmittance of optical radiation occurs. The aim of this study was to assess whether cataract surgery in older persons may increase the risk for development of ARM. This is a retrospective study. Medical records of 307 patients, aged 43 to 96 years, (163 male and 144 female) were randomly evaluated. They had undergone cataract extraction (phacoemulsification or extracapsular lens extraction) with clear intraocular lens implantation from January 2001 to December 2005 at the Department of Ophthalmology, University Hospital Rijeka. Patients were examined two weeks after surgery and followed up for at least two years. Based on the exclusion criteria, only patients without any sign of AMD at the first postoperative check up were included. A total of 80 patients (26%) showed development of ARM at the last check up, which was at least 2 years after surgery. Our results indicate that pseudophakia is a risk factor for development of ARM.

Key words: pseudophakia, macular degeneration, lenses, intraocular, radiation, non-ionizing

Introduction

Age-related cataract is the most prevalent eye disease of elderly people and is a major cause of visual impairment and blindness worldwide¹, thus cataract surgery being the most common surgical procedure in the population aged over 65 years. According to WHO (World Health Organization) estimates in 2002, the most common causes of blindness around the world are: cataracts (47.8%), glaucoma (12.3%), uveitis (10.2%), age-related maculopathy (ARM) (8.7%), corneal opacity (5.1%), diabetic retinopathy (4.8%) and trachoma (3.6%) among other causes. In developed countries where parasitic diseases are less common and is more available, ARM, glaucoma, and diabetic retinopathy are usually the leading causes of blindness².

The sunlight was one of the first agents recognized to be carcinogenic^{3,4}. Ultraviolet radiation can play a major role in the development of various ocular disorders including: age-related cataract, pterygium, cancer of the skin around the eye, photokeratitis and corneal degenerative changes, and may contribute to age-related macular degeneration. There are data of large epidemiological

studies suggesting that exposure to sunlight may be associated with age-related maculopathy^{5–8}. After removal of cataractous lens, substantial energy from radiation of wavelengths longer than 310 nm will strike the retina⁹. Association between cataract surgery and ARM is pretty controversial. There are some large studies confirming the association between cataract surgery and ARM^{10,11}. On the other hand there are studies that do not support that hypothesis^{12,13}.

The aim of this study was to assess whether cataract surgery in older persons may increase the risk for development of ARM.

Patients and Methods

This is a retrospective study. Medical records of 307 patients (163 male and 144 female), aged 43 to 96 years, with a median age of 76 years were randomly evaluated. They had undergone cataract extraction (phacoemulsification – 74% or extracapsular lens extraction – 26%).

After removal of cataractous lens, a clear intraocular lens was implanted. Surgeries were performed between January 2001 and December 2005 at the Department of Ophthalmology, University Hospital Rijeka. Patients were examined two weeks after surgery and followed up for at least two years. Based on the exclusion criteria, only patients without any sign of AMD at the first postoperative check up were included.

Results and Discussion

A total of 80 patients (26%) showed development of ARM at the last check up, which was at least 2 years after surgery. Out of these 80 patients, 50 were female and 30 male. There was a significant prevalence of female patients ($p=0.033$).

While some studies have found no association between cataract surgery and ARM^{12,13} there are large population based studies supporting it^{10,11}. Various pathophysiological mechanisms have been evaluated to confirm positive correlation between cataract surgery and ARM, including light toxicity during the surgery¹⁴, surgical

trauma, or inflammatory factors after surgery¹⁵, and increased light exposure upon removal of the crystalline lens^{16,17}.

After the first two decades of life the natural lens becomes yellower and partly blocks the harmful blue light and ultraviolet radiation of the sun^{18,19}. With the development of cataract the transmittance of the lens is much lower, protecting the posterior pole of the eye against possible free radicals formed under the influence of the blue and ultraviolet light¹⁸⁻²¹. At cataract extraction this biological filter is removed.

The prevalence of ARMD is strongly age related. The prevalence increased from 0.2% of the combined population aged 55 to 64 years, rising to 13% of the population older than 85 years²².

In summary, our results indicate that 26% of patients aged 60 to 80 years which developed ARM after cataract surgery is much higher than the prevalence of ARM in the population of similar aged group. Even though this is a retrospective study, with possibly limited quality of collected data, it strongly confirms that pseudophakia is one of the risk factors in the development of ARM.

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POJAVNOST SENILNE MAKULARNE DEGENERACIJE NAKON OPERACIJE KATARAKTE

SAŽETAK

Patogeneza senilne makularne degeneracije (SMD), kao najčešćeg uzroka oštećenja vida nakon 60-te godine, uključuje različite čimbenike rizika od nasljeđa do faktora okoliša. Nakon što se odstrani zamućena leća i zamijeni prozirnom intraokularnom lećom, dolazi do značajnog porasta propuštanja optičkog zračenja kroz optičke medije. Cilj ove studije je bio procijeniti da li operacija mrežne može kod starijih osoba povećati rizik od razvoja SMD. Ovo je retrospektivna studija u kojoj su nasumce analizirane povijesti bolesti 307 pacijenata (muških 163 i ženskih 144), starosti 43 do 96 godina. Učinjena je operacija sive mrežne metodama fakoemulzifikacije ili ekstrakapsularne ekstrakcije leće, te nakon odstranjenja zamućene leće ugrađena je prozirna intraokularna leća u razdoblju od siječnja 2001. do prosinca 2005. na Očnoj Klinici, KBC Rijeka. Pacijenti su pregledani dva tjedna nakon operacije, a zatim praćeni minimalno dvije godine. Prema kriteriju isključivanja u studiju su uključeni samo pacijenti koji nakon dva tjedna postoperativno nisu imali nikakvih znakova SMD. U ukupno 80 pacijenata (26%) došlo je do razvoja SMD na posljednjoj kontroli, dvije godine nakon operacije. Naši rezultati ukazuju da je pseudofakija jedan od čimbenika rizika za razvoj SMD.