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Factors Associated with the Development of Cataracts

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Abstract: Cataract is the most common cause of reversible blindness worldwide, which has been associated with various causative risk factors. Hence, we aim to study the factors that might play a role in cataractogenesis.

Materials and methods. A total of 240 eyes of 240 subjects were included for the study, which consisted of 120 cases with a cataract and 120 matched controls, and in them various factors like blood pressure, body mass index (BMI), smoking, sun exposure, and serum cholesterol were studied.

Results: A statistically significant difference between the two groups. Subjects who were smokers, had a longer exposure to sun, and had higher serum cholesterol level were found to be positively associated with development of cataract. No significant association between BMI and blood pressure was observed.

Conclusion: Higher cholesterol levels, increased sun exposure, and smoking habit play a role in the development of cataract, and these are modifiable risk factors. Hence, control of these might help in delaying formation and progression of cataract.

Keywords: cataract, blindness, body mass index (BMI)

Introduction

Cataracts are opacification or clouding in the lens of your eye. There are different types of cataracts, depending on what produces them.

The lens should be clear, although the cataract may impair that clearness and affect your vision. And the cause will define the type of cataract you have.

Cataracts are a common cause of cloudy vision. In fact, age-related cataracts are the number one cause of blindness in the world. They affect around 51% of the total world population. Also, cataracts represent a cause of moderate and severe disability in almost 51 million people worldwide. Fortunately, most of them can be treated.

In the following article, you'll find a doctor's answers to the most frequently asked questions about this disease. We'll review in simple terms what is it, the types that exist, and much more. So keep on reading, by the end of this article, you'll have a richer understanding of this condition.

What is a cataract?
A cataract is a condition of the eye where the lens, that should be clear, opacifies. This opacification can result in a decrease in vision. It can be present in one or both eyes. In the early stages, it may not be noticed at all. But they can grow, slowly and gradually, affecting vision more and more.

Cataracts' symptoms include faded or blurred vision, difficulty seeing at night, and seeing halos around lights. Double vision in a single eye, fading of colors, and frequent changes in your glasses prescription may also be present.

These symptoms may be mild, but in the long run, they can be a problem. Patients with cataracts can have difficulties at daily activities like reading and driving, especially at night.

The severity of vision loss is variable. This usually depends on the type of cataracts that the patient has.

What are the different types of cataracts?
There are mainly three types of cataracts. They are classified depending on where it is growing within the eye. According to this, we have Nuclear cataracts, Cortical cataracts, and Posterior subcapsular cataracts.

The nuclear cataract is the most common type. It has this name because the cloudiness involves the central part of the lens, called the nucleus. This situation may result in a temporary improvement in your near vision. But this doesn't last long.

In this case, the cataract may also become "sclerotic" or hard. It can also become yellow or even brown. This prompts the colors to become faded, and small details may be hard to see.

Cortical cataracts occur in the outer layer of the lens, called the cortex. They can start like little triangles or wedges that point to the center of your eye. They occur when there are changes in the fluid around the lens, causing fissuring.

The main symptom of this latter type is glare. You can also have a hazy vision. Especially at night, you may have trouble looking at lights. Also, you may have difficulties driving, since you may find it hard to tell how far an object is.

Posterior subcapsular cataracts are the ones that form in the back of the lens, close to the lens capsule. The lens capsule is the structure in which the lens rests. Subcapsular cataracts are right in the way in which lights enter your eye, so it causes symptoms earlier than other cataracts. Also, it'll affect you close up vision and looking at bright light.

What causes cataracts?
There are several causes for it. The most common causes include age, trauma, radiation, and genetics. There are also less common causes like medications, post-operative, and congenital, which can increase this disease's development.

The most common cause of cataracts is age. This happens because proteins in the lens are degraded over time. These degraded proteins accumulate and creating the opacities, which are the cornerstone of this disease.

This latter aging process can be accelerated by some diseases that are more common as we age, too. Also, as we age, we can accumulate damage caused by environmental factors like radiation. Radiation, especially the one from ultra-violet rays, contributes to the formation of this disease.

Trauma is also a common cause of cataracts. In this case, the disease is like a scar of eye injury. Blunt trauma in your eye causes swelling and thickening of the lens fibers.

This thickening can be permanent, causing whitening in these fibers. This whitening results in a cataract.

Genetics is also a strong reason for a person to develop this disease. But they are usually linked to overt genetic syndromes such as Down's syndrome and Patau's syndrome.

In the less common causes, we find medications such as corticosteroids that seem to increase the risk of this disease. Post-operative cataracts occur when the patient undergoes a surgery called a vitrectomy. In a vitrectomy, the vitreous humor inside the eye (the transparent liquid that fills up your eye) is replaced with other substances. These patients could develop nuclear cataracts after the surgery.

Finally, there are congenital cataracts. This typically occurs when a child is born with this disease. Infectious diseases usually cause this during pregnancy, like syphilis and rubella.

What makes cataracts grow fast?
As we mentioned before, some factors can help cataracts grow faster. It also depends on the type of cataracts, because some grow more quickly than others. Usually, traumatic cataracts are the ones that grow faster because of the swelling and posterior thickening of the lens.

Some systemic (that affects the whole body) diseases can speed up a growing cataract. Hypertension and diabetes mellitus are the most common to affect the timing of this disease (Increasing it). Also, unhealthy habits like smoking and drinking too much alcohol may help your disease grow faster.

There are other factors, like radiation. If you already have a cataract, being exposed to radiation can accelerate its growth. This includes radiation from X-rays and ultra-violet light than comes from sun rays.

What types of specialists treat cataracts?
The doctors in charge of diagnosing and treating cataracts are the ophthalmologists. These are doctors specialized in the eye, as well as eye diseases like cataracts.

They perform the eye exam and may prescribe corrective lenses. But not all ophthalmologists can perform eye surgery. Some ophthalmologists have another sub-specialty and are, also, eye surgeons. These are the ones that can definitely treat cataracts.

How do health care professionals diagnose cataracts?

The ophthalmologist or eye doctor can diagnose cataracts with a short review of your medical history and a simple examination.

Since cataracts can affect your distance vision, your doctor will probably perform a visual acuity test. They'll make you read some letters from a chart, which will be progressively smaller. You'll do this with one eye first, then the other. This way, your doctor will know if you have vision problems.

Then your doctor can conduct another test, a slit-lamp examination. In this exam, your doctor will look at your eye's structures with a lamp that has a magnifying glass. This lamp uses a line of light to illuminate parts of the eye, like the cornea, the iris, and the lens, in which cataracts appear.

Finally, your doctor will perform a retinal exam. First, they'll put some drops in your eye to make your pupil wider. The retina is the back of your eye. By making your pupils wider, it'll be easier for your doctor to examine it. Then, with a slit lamp, or another tool called an ophthalmoscope, your doctor will check for cataracts.

If there actually is a cataract formation, your doctor will decide if you need surgery. For cataract surgery patients, the doctor will examine that your eye conditions are suitable for surgery.

Can prescription glasses help with this disease?
This is a tricky question. Yes, you may benefit from wearing prescription glasses or even contact lenses if you have cataracts. But prescription glasses are not actually a cure or a treatment for cataracts. However, the right prescription glasses can help you with symptoms like blurry and foggy vision or nearsightedness.

This can be a temporary relief. In the meantime, you can do some things to prevent your cataract from growing fast. Also, you may feel more comfortable and perform your daily activities while you wait for surgery.

Keep in mind that, if you already were nearsighted before the cataract, it can get worse. In fact, you may need to change your glasses prescription much more often than before. This situation may also happen if you already had astigmatism too. Some patients will need multifocal lenses to have clear vision both near and far.

Can you get rid of cataracts without surgery?
Unfortunately, no. The only definite treatment and cure for cataracts is eye surgery. But don't worry, it is a very simple procedure with very minimal complications.

This surgery is performed using local anesthesia. This procedure includes the placement of an intraocular lens in your eye. During surgery, the doctor will make some small cuts in your cornea. Then, they'll remove your natural lens and will put an artificial lens instead.

This intraocular lens will stay permanently in your eye. With this surgery, you'll change your clouded lens for a clear lens that cannot become opaque again. Even if you have cataracts in only one of your eyes, your doctor may perform surgery in both eyes.

By replacing both of your lenses with intraocular lenses, you prevent the formation of cataracts with time.

What are the possible complications of this disease?
Cataracts, as they are, don't cause any complications, actually. The only complication of an uncorrected cataract is blindness. Other complications may appear in cataract-removal surgery. This surgery is pretty safe and has low risks of complications. But as in every surgical procedure, there is a risk.

The more serious complications of this eye surgery are the endophthalmitis and retinal detachment. Endophthalmitis is an intraocular infection (within the inner layers of the eye) caused by the surgery. The patients can have a sudden decrease in vision and intense pain.

Retinal detachment occurs when the back portion of your eye drops literally. The retina is like an extension of the optic nerve, which sends signals of what you see to your brain. When the retina detaches, you may experience sudden vision loss, often just from one side. You may also have patches of visual defects, floating spots of general blurry vision.

Other complications include macular and corneal edema. These are much more common and less serious. In fact, 1 out of 100 cases will develop either corneal or macular edema.

This latter situation occurs when there is more swelling than expected after the cataract surgery. It usually gets better with time. Both types of edema may cause the patient to have a foggy vision. Your doctor may prescribe anti-inflammatory drops to treat these complications.

Cloudy sight after cataract surgery — what is posterior capsule opacification?
There is another complication of cataract surgery. This may be present even after successful eye surgery. Sometimes, there may be some cells of your natural lens that remain after the procedure.

These cells may keep growing in your capsule (the layer of tissue in which the lens rests). It causes a thickening behind the implanted lens. The thickening may cause blurry vision, glare, and other cataract symptoms.

This is what we know as posterior capsule opacification. It is also known as after-cataract or secondary cataract.

Posterior capsule opacification is a widespread phenomenon. It is more frequent in young patients who undergo cataracts surgery. You may notice you are suffering from it if your cataracts symptoms recur after several months or years.

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