



Review Article

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An Overview on Clinical Presentation and Diagnostic Approach of Cataract in Primary Healthcare Center

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ABSTRACT

A cataract is caused by the opacification of the lens, which results in the loss of lens transparency due to multiple causes. This condition mainly affects old ages but does not exclusively affect them. In Saudi Arabia, cataracts represent one of the major causes of visual impairment in society. We reviewed the literature looking for types of cataracts, risk factors, clinical presentation, and diagnosis in the primary health care center. PubMed database was used for the selection process of relevant articles, and the following keys used in the mesh ("Cataract"[Mesh]) AND ("Clinical signs"[Mesh] OR "Diagnosis"[Mesh] OR "Management"[Mesh] OR "Risk factors"[Mesh])). Cataract affects patients' quality of life gradually; therefore, early detection and intervention are recommended. Family doctors should be equipped with updated knowledge and skills when it comes to dealing with cataract patients to address their condition, its possible etiology, and patients' expectations before and after treatment. Family physicians are the first line in dealing with and identifying such cases, hence proper knowledge in this field is required with special skills needed in the examination. Treatment of cataract is mainly surgical and involve referral to ophthalmology departments.

Key words: Cataract, Saudi Arabia, Ophthalmology, Glare, Night vision

INTRODUCTION

The lens is a biconvex translucent apparatus that aids in refracting and focusing light onto the retina. Fibers make up the lens, which is supported on both sides by zonules and is encased in a thin capsule. The lens epithelium produces lens fibers, which move from the periphery to the center. As a result, older lens fibers are found in the nucleus of the lens, whereas freshly produced lens fibers are found in the cortex, the lens' outermost layers. The opacification of the lens causes a cataract, which is the loss of lens transparency [1]. Cataract scattered across the world due it is a wide variety of etiologies, in Saudi Arabia the prevalence of cataracts is second to none when it

comes to the causes of visual impairment with a percentage of almost 30 [2]. In this review we are going to explore this condition in the primary health clinic scope, investigating its types, risk factors, clinical presentation, evaluation, and brief management [3, 4].

MATERIALS AND METHODS

PubMed database was used for the selection process of relevant articles, and the following keys used in the mesh ((“Cataract”[Mesh]) AND (“Clinical signs”[Mesh] OR “Diagnosis”[Mesh] OR “Management”[Mesh] OR “Risk factors”[Mesh])). The criteria utilized to choose the articles for inclusion were cataract, cataract risk factors, assessment, treatment, and diagnosis. All other articles that did not fulfill the requirements were removed since their topics did not include any of the inclusion criterion findings.

Review

Types

Initially, cataracts can be divided into congenital and acquired, where the latter has three subcategories including age-related, traumatic, and secondary to other causes.

Pediatric cataract

Congenital cataracts refer to a lens opacity that appears right since birth, whereas infantile cataracts relate to a lens opacity that develops during the first year of life; hence it is acquired. Depending on the etiology, pediatric cataracts can be unilateral or bilateral. A third of pediatric cataracts are hereditary, a third are linked to other ocular abnormalities or are part of multisystem disease, and a third have unknown origins [5, 6].

Age-related cataract

Age-related cataracts start forming around the age of 45 to 50, due to oxidative stress which can be affected by many factors as will be described in the next section. According to the site of the opacification, three types are there: nuclear, cortical, and posterior subcapsular cataracts (PSC). Usually, more than one form of cataract is present in most cases. **Figure 1** illustrates the different types and their anatomic locations. A nuclear cataract is the most prevalent overall cataract. As the lens epithelial cells, which undergo oxidation, insolubilization, and crosslinking, are the most metabolically active cells in the lens, they subsequently move to the lens equator, where they produce lens fibers that are gradually compacted in the center, resulting in nuclear sclerosis and opacity in the lens. Cortical type is commonly observed in diabetic patients, it starts in the outer cortical layers (wedge-shaped) of the peripheral lens and extends to the center of the lens. PSC is characterized by a plaque-like opacity on the axial posterior cortical layer that can progress abruptly. Significant symptoms may not appear until the cataract has advanced. Moreover, this type of cataract is frequently linked to the use of corticosteroids [7, 8].

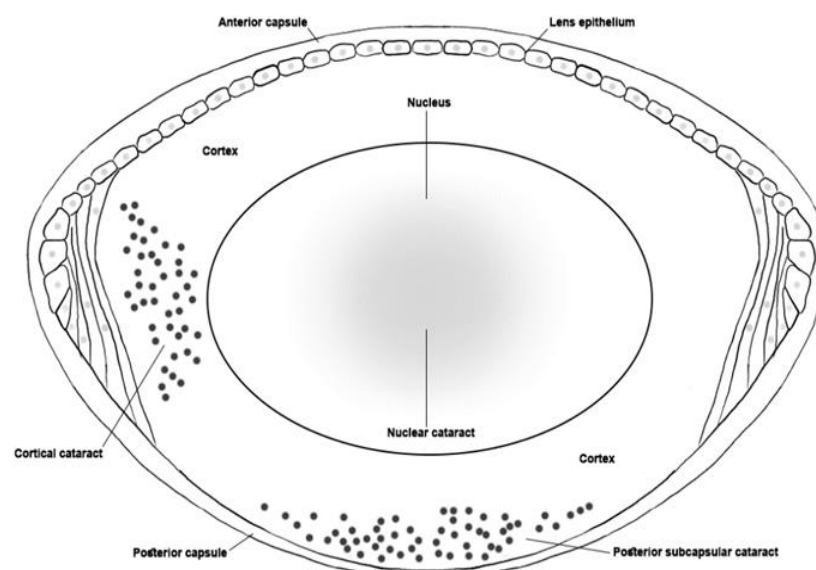


Figure 1. A diagram showing lens anatomy and the different types of cataracts according to location.

Secondary cataract

Cataracts can be caused by several systemic or ocular illnesses. Diabetic individuals are 2 to 5 times more likely than non-diabetic patients to acquire cataracts, with the risk increasing to 15 to 25 times in diabetic patients under the age of 40 [9, 10]. Secondary cataracts can be also associated with many other metabolic diseases such as hypocalcemia, galactosemia, hypothyroidism. Moreover, some ocular disease has direct and/or indirect effects, resulting from its treatment, in cataract development. Both glaucoma and uveitis treatment actively resulting in cataract formation. Other compounds also participate in forming cataracts, such as alcohol, exogenous hormonal replacement therapy, thiazolidinediones, and non-pharmacological chemicals like acetone, dinitrophenol, cresol, and paradichlorobenzol [11].

Traumatic cataract

Both blunt and penetrating trauma are common causes of cataracts. Common causes of traumatic cataracts include, but are not limited to, wood sticks, firecrackers, balls, nails, pens, etc. These types can develop immediately following the traumatic event or insidiously over time. Because of the potential for injury to the zonules and other parts of the eye with blunt trauma, surgical repair of these cataracts can be more difficult and complications are more common [12].

Risk factors

Table 1 enlists the most significant risk factors to develop a cataract [13].

Table 1. Risk factors for cataract formation

Category	Risk factors
Individual factors	Increasing age
	Low educational or socioeconomic status
	Female sex
	Racial or ethnic groups: Asian > White > Afro- -Caribbean
Lifestyle factors	Ultraviolet-B exposure
	Cigarette smoking
	Alcohol consumption
Diet	Consumption of carbohydrates with a high-glycemic index
	Malnutrition

Clinical presentation and diagnosis

A combination of the history items is needed in assessing a patient with cataract, the well-known: history, clinical signs and symptoms, and clinical evaluation. History should be starting with exploring any relevant medical history that may result in forming cataracts or any previous ocular conditions, surgeries, or injuries. Furthermore, the physician should explore all the medications that the patient takes regularly or recently and document them for further management plan tailoring. The patient's lifestyle should also be explored and documented as smoking and drinking alcohol, for example, are strongly associated with cataracts and can influence the response to the treatment and post-surgical recovery. As cataract is slowly developing the disease, specific questions to target symptoms are preferred rather than open-question ones. Asking about the patient's ability to drive at night, the ability to easily read the newspaper or their phones' texts, or if they have a problem in reading far away from signs and billboards. Each of the previous questions indicates a different type of cataract. For the first question, cortical cataracts, which are formed by the opacification of the peripheral lens, are particularly troublesome in low light settings because the pupil naturally dilates to let more light in, involving the opacified peripheral lens in concentrating light. Glare is a typical complaint with this cataract, especially while driving at night. PSC cataracts are most painful in bright light or when the pupil is constricted, reading for example, as all focused light goes via the tiny pupillary aperture and subsequently the opacity immediately behind it. Nuclear sclerotic cataracts, which are resulted from central lens discoloration and stiffness, cause a myopic shift, poor distance vision but minimal issues with close acuity. Patients may have trouble seeing traffic signs, yet no trouble reading in close distance. To sum, symptoms of cataract include: blurred vision, reduce visual acuity, Increasing nearsightedness among other symptoms [14, 15].

In a primary health care setting, the physician is expected to do a brief ocular examination starting with assessing the visual acuity for distance and near. Using an ophthalmoscope under pupil dilation, if available, is a very useful modality in making an initial diagnosis or ruling out of cataract. By assessing the normality of red-light reflex, as it should be uniformed in color and reflectiveness, changes like dark spotting can be suggestive of cataracts. Subsequently, the ophthalmoscope can be used to examine the optic nerve and fundus, to explore the retina, and to include or rule out any retinal problems [16].

CONCLUSION

A cataract is a condition that hinders visual abilities and causes distress to its patient. The quality of patients' lives is drastically changing after the treatment. Unlike the common perception of this disease, it is not solely related to the old population, it can be present in the pediatric group and other age groups due to metabolic conditions or medications. Family physicians are the first line in dealing with and identifying such cases, hence proper knowledge in this field is required with special skills needed in the examination. Treatment of cataract is mainly surgical and involve referral to ophthalmology departments.

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