RESEARCH ARTICLE

Review of Cataract Types and Its Pathogenesis in Patients Reviewing Al Moujtahd Hospital in Damascus, Syria

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ABSTRACT

This study aimed to determine the prevalence of all types of cataract among different age groups and the effect of different cataract risk factors on it. This is a retrospective study composed of all who were admitted to the ophthalmology department between 1/6/2017 and 31/12/2017 and were diagnosed with cataract at Al Moujtahd Hospital. Statistical analysis was done using Excel and SPSS 23.0. We analyzed the data regarding the age, gender, types of cataract and the risk factors of cataract. We divided the patients in this study according to age into four groups (12-30, 31-50, 51-70 and >70 years old). We reviewed each type of cataract and its prevalence among each age group and among the total of cataract types. We reviewed the previous history of patients to determine the effect of previous history (risk factors) on cataract. This study included 209 patients diagnosed with cataract (172 cases of cataract in the left eye, 176 cases of cataract in the right eye, with a total of 348 cataracts). Most of the patients were between 51-70 years old (65.6% 0f all patients) followed by those older than 70 (23% of all patients). 97 patients (46.4% of all patients) were females. (Table 1). The most common types of cataracts in each age group (12-30, 31-50, 51-70 and >70) were (Posterior sub-capsular, nuclear, nuclear and nuclear, respectively). In this study, regardless of age, nuclear cataract was the most common of all types (66.8% and 68.8% in the left and right eyes, respectively). Cortical cataract was present in 18% and 20% of all cataracts (in the left and right eyes, respectively). Posterior sub-capsular cataract was found in 28.4% and 22.7% of all cataracts (in the left and right eyes, respectively). We had one patient with congenital cataract (0.58% of all cataracts). We found in this study that the most common age of having cataract was >51 years old. In addition, the most common type of cataract was nuclear. Finally, Hypertension, diabetes mellitus, smoking, hypothyroidism and trauma to the eye are the major risk factors of cataract.

INTRODUCTION

Cataract is the leading cause of blindness worldwide and is responsible for half of blindness cases. 20 million people are affected by it yearly. (1) Furthermore, cataract has a major load on economy and public health services due to increased aging population and increased cataract surgery services. (2) People over 50 years old are the most affected group and the risk increases significantly with age. To clarify, cataracts are present in 20% of people between 65-74 years old and over 50% of those older than 74 have cataract. (3) Cataract types are mainly divided to nuclear, cortical, posterior sub-capsular, mature (not a type but the final stage for all cataracts) and congenital. (3) There are many risk factors related to cataract such as African American race, hypertension, smoking, diabetes, trauma, metabolic (hypothyroidism, hypocalcaemia, etc.) and low lipid and cholesterol. (4) Surgery remains the only treatment to cataract and effective surgery can lower the blindness rates. (3) Cataract surgery is composed of the removal cloudy eye lens and then substituting it with a synthetic lens. This surgery is very common worldwide, especially in Germany where about 800000 people annually have it. (4) This study aimed to determine the prevalence of all types of cataract among different age groups and the effect of different cataract risk factors on it. Up to our knowledge, this study is the first of its kind in Syria.

MATERIALS AND METHODS

This is a retrospective study composed of all patients diagnosed with cataract at Al Moujtahd Hospital (Damascus Hospital) between 1/6/2017 and 31/12/2017. This study included 209patientsdiagnosed with cataract. (172 cases of cataract in the left eye, 176 cases of cataract in the right eye, with a total of 348 cataracts). We analyzed the data regarding the age, gender and risk factors of cataract. We divided the patients in this study according to age into four groups (12-30), (31-50), (51-70) and (>70) years old. We reviewed each type of cataract and its prevalence among each age group and among the total of cataract types. We reviewed the previous history of patients to determine the effect of previous history (risk factors) on cataract. Statistical analysis was done using Excel and SPSS 23.0.

RESULTS

Table 1 shows the age and gender of all patients of this study. Table 2 shows the prevalence of each type of cataract in each

age group (12-30), (31-50), (51-70) and (>70) years old and the prevalence of each type from all types of cataract regardless of age (total of each type) in both eyes. It should be noted that mature cataract is the end stage for all cataracts rather than a type, but it was included in the types' table to compare it with other types and to show the percentage of patients who review at delayed stages of the disease. Table 3 shows the diseases patients have simultaneously with cataract. These previous history diseases are considered risk factors for cataract (4). It should be noted that we had 40 cases with missing data from the records and those were included in the statistical analysis.

DISCUSSION

Cataract is an eye condition that causes the lens of the eye to become cloudy. This leads to an impairment of vision, specifically in seeing the details in objects clearly (3). Cataract has many risk factors with some of them discussed below such as old age, female gender, hypertension, diabetes mellitus, hypothyroidism, etc. (4) Cataract is most common in people over 50 years old and the risk rises with age. (3) Furthermore, 20% of people between 65 and 74 years old have cataract. In addition, over 50% of people older than 74 years old have cataract. In this study, most of the patients were between 51-70 years old (65.6% 0f all patients) followed by those older than 70 (23% of all patients). (Table 1) According to different studies, females are more prone to getting most types of cataract than males. This is most likely to hormonal changes after menopause in women. (Lower estrogen levels after menopause). (5). in this study, 97 patients (46.4% of all patients) were females. (Table 1) The main types of cataract are nuclear, cortical, posterior sub-capsular and congenital. In this study, we had 172 cases of cataract in the left eye, 176 cases of cataract in the right eye, with a total of 348 cataracts. The most common types of cataracts in each age group were [(12-30) - Posterior sub-capsular, (31-50) -nuclear, (51-70) - nuclear and (>70) nuclear]. (Table 2) In this study, regardless of age, nuclear cataract was the most common of all types (66.8% and 68.8% in the left and right eyes, respectively). Cortical cataract was present in 18% and 20% of all cataracts (in the left and right eyes, respectively). Posterior sub-capsular cataract was found in 28.4% and 22.7% of all cataracts (in the left and right eyes, respectively). We had one patient with congenital cataract (0.58% of all cataracts). (Table 2) People with hypertension are at

higher risk of developing cataract. (6). the risk increases with the severity of hypertension. (7, 8). In addition, the risk of cataract increases with long standing hypertension. (9). Furthermore, some studies suggests that anti-hypertensive medications (such as potassium-sparing diuretics and beta-blockers are related to cataract. (10). in this study, 63 patients (30.1% of all patients) have hypertension. (Table 3) Diabetes mellitus (DM), and especially the poor controlled, have been related to many systemic and ocular complications such as, loss of vision. Studies in vivo or in vitro showed evidence that DM is cause of cataract (11, 12). In this study, 33 patients (15.7% of all patients) had DM, either alone or with other diseases. (Table 3) Many studies have shown that smokers have higher risk of getting cataract. (13, 14, 15).In this study, 12 patients (5.7% of all patients) were smokers. (Table 3) Although hypothyroidism is not commonly associated with cataract, a relation between the two has been found (16). In this study, there were two patients one with subclinical hypothyroidism and one with thyroidectomy, both representing 0.96% of all patients. (Table 3) Traumatic injuries to the eyes, either blunt or penetrating, predispose to cataract because the lens is very soft and could be sucked out by such injuries. Young people and those who work in hazardous industries such as glass or wood are at increased risk for these injuries. (4). in this study, we had two patients (0.96%) with eye injuries (trauma).

CONCLUSION

In this study, the most common age of having cataract was over 51 years old. In addition, the most common type of cataract was nuclear, while cortical cataract was the least common. A mean of 6.6% of patients were diagnosed with mature cataract. Finally, Hypertension, diabetes mellitus, smoking, hypothyroidism and trauma to the eye are the major risk factors of cataract.

COMPLIANCE WITH ETHICAL STANDARDS

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EXPERIMENTAL RESULT

Variable		frequency	percent	Total
Age	12-30	3	1.4	
	31-50	21	10	209
	51-70	137	65.6	
	>70	48	23	
Gender	Male	112	53.6	209
	Female	97	46.4	

Table 1: demographic variables of this study

	Left Eye					Right Eye				Total number of patients with each type
	12-30	31-50	51-70	>70	Total of each type	12-30	31-50	51-70	>70	
Nuclear N (%)	1 (33.33%)	9 (50%)	57 (51.35%)	24 (60%)	91 (52.91%)	1 (50%)	8 (42.11%)	62 (53.91%)	20 (50%)	91 (51.7%)
Cortical N (%)			4 (3.6%)		4 (2.33%)			1 (0.87%)	1 (2.5%)	2 (1.14%)
Posterior sub- capsular N (%)	2 (66.67%)	3 (16.67%)	28 (25.23%)	3 (7.5%)	36 (20.93%)	1 (50%)	3 (15.79%)	14 (12.17%)	3 (7.5%)	21 (11.93%)
Mature N (%)	-	1 (5.56%)	6 (5.41%)	3 (7.5%)	10 (5.81%)	-	1 (5.26%)	9 (7.83%)	3 (7.5%)	13 (7.39%)
Congenital N (%)*		1 (5.56%)			1 (0.58%)		1 (5.26%)	-	-	1 (0.57%)
Undetermined N (%)	-		1 (0.9%)	2 (5%)	3 (1.74%)	-	-	3 (2.61%)	1 (2.5%)	4 (2.27%)
Nuclear+ Cortical N (%)	-	1 (5.56%)	9 (8.11%)	4 (10%)	14 (8.14%)	-	1 (5.26%)	10 (8.71%)	4 (10%)	15 (8.52%)
Nuclear+ Posterior sub- capsular+ cortical N (%)	-	2 (11.11%)	4 (3.6%)	4 (10%)	10 (5.81%)	-	2 (10.53%)	10 (8.71%)	3 (7.5%)	15 (8.52%)
Cortical+ Posterior sub- capsular N (%)	-	1 (5.56%)	2 (1.8%)		3 (1.74%)	-	-	3 (2.61%)	1 (2.5%)	4 (2.27%)
Total of each age group	3	18	111	40	172	2	19	115	40	176

Table 2: Distribution of cataracts in each age group and from the total of all cataract types

*Congenital Cataracts do not increase in severity, and the patient in our study with congenital cataract had a small cataract that did not affect his vision. However, at the type of admission he had a secondary type of cataract developing on it. (a)

Previous History	Patients With Cataract With Each Previous History	
	N	%
HTN	35	16.7%
DM	13	5.3%
Smoker	4	1.44%
Thyroid Disease	2	0.96%
Eye Injury	2	0.96%
HTN+ Smoker	8	3.84%
HTN+ DM	20	9.5%
No Diseases	74	38.9%
Other diseases not risk factors of cataract	11	5.79%
Missing Data from the records	40	19.1 %
Total	209	100%

Table 3: The number and percentages of patients who had a previous disease (previous history)