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Characteristics of Post-Phacoemulsification Cataract Patients at Kertha Usada General Hospital, Singaraja, Bali – Indonesia in June 2018 - June 2019

Intan Cendana Sari[1*], IGN Anom Supradnya[1], I Made Agus Kusumadjadja[1]

[1]Kertha Usada General Hospital, Singaraja, Bali – Indonesia;

*Corresponding to:
Intan Cendana Sari;
Kertha Usada General Hospital, Singaraja, Bali – Indonesia;
intancs280@gmail.com

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ABSTRACT

Based on Bali Province RISKESDAS (Basic Health Research) in 2007, the highest percentage of blindness was in Buleleng Regency (2.4%) and cataract prevalence in Buleleng Regency was 3.32%. This study aims to determine the characteristics of post-phacoemulsification cataract patients at Kertha Usada General Hospital in June 2018 - June 2019. This is a cross-sectional, descriptive study with total sampling and was obtained from medical records. From the 259 cataract cases, there were 117 (45.2%) men and 142 (54.8%) women. Pre-elderly group (<60 years) were 67 (25.9%) and elderly group (> 60 years) were 192 (74.1%). As many as 97 (37.4%) had cataracts in the right eye, 95 (36.7%) in the left eye, and 67 people (25.9%) in both eyes. Before surgery, there were 164 (63.3%) suffered blindness (UCVA ≤ 3/60), 46 (17.8%) had severe visual impairment (6/60 ≥ UCVA ≥ 3/60), 47 (18.1%) had moderate visual impairment (16/18 ≥ UCVA ≥ 6/60), and 2 (0.8%) had mild visual impairment (UCVA ≥ 6/18). On the post-operative D+1 there were 181 (69.9%) with good visual acuity, 55 (21.2%) with moderate visual acuity, 7 (7.27%) with poor visual acuity, and 16 (6,2)% with low vision. On the post-operative D+7 there were 215 (83%) with good visual acuity, 39 (15.1%) with moderate visual acuity, 2 (0.8%) with poor visual acuity, and 3 (1.2%) with low vision. On the post- operative D+30 there were 226 (87.2%) had with good visual acuity, 28 (10.8) with moderate visual acuity, 2 (0.8%) with poor visual acuity, and 3 (1.2%) with low vision.

Keywords: *cataracts, bilaterality, visual acuity*.
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INTRODUCTION

WHO estimates that 18 million people have bilateral blindness due to cataract or equal to 48% of cases of blindness worldwide.[1] Based on the results of RAAB (Rapid Assessment of Avoidable Blindness) in Indonesia during 2014-2016, prevalence of blindness in people over 50 years reached 3% and the blindness rate in Bali Province was 2%.[2] Based on Bali Province RISKESDAS (Basic Health Research) in 2007, the highest percentage of blindness was in Buleleng Regency (2.4%) and cataract prevalence in Buleleng Regency was 3.32%.[3] AAO (American Academy of Ophthalmology) stated that cataract surgery can decrease the risk of mortality by 40% and improve quality of life.[4] The most common type of cataract surgery in the United States is phacoemulsification where ultrasound energy is used to break cataracts into particles that are small enough to be aspirated through a handpiece.[5]

Cataract is the opacification of the lens due to any cause, these conditions will cause symptoms of decreased quality of visual function: decreased contrast sensitivity and visual acuity.[6] A common cause of visual disturbances in older adults is age-related cataracts, with multifactorial pathogenesis. There are 3 main types of age-related cataracts: nuclear, cortical, and posterior subcapsular.[7] Other causes that can lead to cataract are: medicine, trauma, metabolic diseases, nutritional effect, alcohol and smoking, pseudoexfoliation syndrome, uveitis, ischemia, and degenerative ocular disorders.[7]

This study aims to determine the characteristics of patients with refraction disorders in Kertha Usada General Hospital Singaraja, Bali – Indonesia in June 2018 - June 2019

MATERIALS AND METHOD

This is a descriptive study with total sampling and was obtained from patients' medical records who came to Eye Clinic Kertha Usada General Hospital Singaraja, Bali-Indonesia in June 2018-June 2019. In this research, a number of 259 patients diagnosed with cataract and underwent phacoemulsification surgery in June 2018-June 2019 that had a complete medical record were included. Patients who had difficulties during surgery which cause the conversion of surgery to manual cataract extraction or did not come to follow up on day 1, 7 and 30 were excluded.

The observed variable are gender, age,

bilaterality, visual acuity before surgery, visual acuity after surgery on D+1, D+7, and D+30. Data were analyzed using descriptive analysis. The data obtained are categorical data, which use frequency and percentage on the analysis.

RESULTS

Patients with cataract in Kertha Usada Genera Hospital Eye Clinic qualified as research sample for the period June 2018-June 2019 were 259 patients. Data in Table 1 shows that there are 117 (45,2)% male patients and 142 (54,8)% female patients. In Pre elderly group there are 67 (25,9%) and in elderly group there are 142 (54,8%). A total of 97 (37,4%) had cataract in the right eye, 95 (36,7%) in the left eye, and 67 (25,9%) in both eyes.

Cataracts may decrease visual acuity, causing impaired vision in patients. Based on data obtained in RSU Kertha Usada in 2019, 164 patients (63.3%) had low vision, 46 (17,8) % had poor visual acuity, 47 (18,1) % had moderate visual acuity, and 2 (0,8) % had good visual acuity as shown in Table 2.

Table 3 shows the visual acuity of D+1 post cataract phacoemulsification . In D+1 post surgery, 181 (69.9%) patients good visual acuity, 55 (21,2 %) had moderate visual acuity, 7 (7.27%) had poor visual acuity, and 16 (6,2)% had low vision.

Table 4 shows the visual acuity of D+7 post cataract phacoemulsification . In D+7 post surgery, 215(83 %) patients had good visual acuity, 39 (15,1%) had moderate visual acuity, 2 (0,8%) had poor visual acuity, and 3 (1,2%) had low vision.

Table 5 shows the degree of visual impairment and visual acuity of D+30 post cataract phacoemulsification. In D+30 post surgery, 226 (87,2 %) patients had good visual acuity, 28 (10,8%) moderate visual acuity, 2 (0,8%) had poor visual acuity, and 3 (1,2 %) had low vision.

Table 1. Characteristic of Cataract Patients.

Characteristics	n (%)
Gender	
Male	**117 (45,2)**
Female	**142 (54,8)**
Age group	
Pre elderly(< 60 years old)	**67 (25,9)**
Elderly (>60 years old)	**192 (74,1)**
Bilaterality	
Right eye (OD)	**97 (37,4 %)**
Left eye (OS)	**95 (36,7%)**
Both eyes (ODS)	**67 (25,9 %)**

Table 2. Visual Acuity Before Cataract Phacoemulsification.

Visual Acuity	Visual Acuity[8]	n (%)
Good visual acuity	UCVA ≥ 6 / 18	2 (0,8) %
Moderate visual acuity	16/18 ≥ UCVA ≥ 6/60	47 (18,1) %
Poor visual acuity	6/60 ≥ UCVA ≥ 3/60	46 (17,8) %
Low vision	UCVA ≤ 3/60	164 (63,3 %)
Total	259	259 (100 %)

Table 3. Visual Acuity on D+1 After Cataract Phacoemulsification.

Visual Acuity	Visual Acuity	n (%)
Good visual acuity	UCVA ≥ 6/18	181 (69,9 %)
Moderate visual acuity	16/18 ≥ UCVA ≥ 6/60	55 (21,2 %)
Poor visual acuity	6/60 ≥ UCVA ≥ 3/60	7 (2,7%)
Low vision	UCVA ≤ 3/60	16 (6,2)%
Total	259	100 %

Table 4. Visual Acuity on D+7 After Cataract Phacoemulsification.

Visual Acuity	Visual Acuity	n (%)
Good visual acuity	UCVA ≥ 6 / 18	215(83 %)
Moderate visual acuity	16/18 ≥ UCVA ≥ 6/60	39 (15,1%)
Poor visual acuity	6/60 ≥ UCVA ≥ 3/60	2 (0,8%)
Low vision	UCVA ≤ 3/60	3 (1,2%)
Total	259	100 %

DISCUSSION

The results founds that among 259 cataract patients in Kertha Usada General Hospital in June 2018 - June 2019, there are 142 females patients (54.8%), and 117 males (45.2) %). This is similar to Gracella's research in Sanglah Hospital, and Ulandari's research at Community Health Center of West Nusa Tenggara, which also found that there are more female patients.[9,10]

Women have a higher incidence and risk for most types of cataracts than men, possibly due to lack of estrogen in the post-menopausal years. An experimental study demonstrated the protective effect of estradiol or estrone treatment on cataract eye up to 25%, in mice that are ovariectomized and treated with methylnitrosurea.[11] Cataracts are

Table 5. Visual Acuity on D+30 After Cataract Phacoemulsification.

Visual Acuity	Visual Acuity	n (%)
Good visual acuity	UCVA ≥ 6 / 18	226 (87,2 %)
Moderate visual acuity	16/18 ≥ UCVA ≥ 6/60	28 (10,8%)
Poor visual acuity	6/60 ≥ UCVA ≥ 3/60	2 (0,8%)
Low vision	UCVA ≤ 3/60	3 (1,2 %)
Total	259	100 %

more common in postmenopausal women than in men of the same age; this implies that hormonal differences are involved and shows the possible role of estrogen. Estrogen receptors have been detected in the cataract lens. natural (endogenous) estrogen appears to protect the eyes from cataracts, along with the cardiovascular system and other bodies before menopause. A prospective study of postmenopausal Swedish women find that HRT (hormone replacement therapy) may also increase risk.[11]

In the characteristics of the age group it was found that in Kertha Usadha General Hospital the majority of patients are elderly (> 60 years) by 74.1% and the pre-elderly group (<60 years) by 25.9%. Similar to the data obtained in Sanglah Hospital in 2014, researchers found that most patients were in the age group of 60-69 years, as many as 39.7%, the age group 70-79 years 24.7%, and 80-96 years 4, 1%.[9] It relates to senile cataracts, which are defined as cataracts that occur in people aged> 50 years, who are not associated with known mechanical, chemical or radiation trauma. This disease becomes more severe and often occurs in older people and is responsible for 48% of world blindness. Protein damage and aggregation, fiber cell membrane damage, glutathione deficiency, oxidative damage, increased calcium, abnormal lens epithelial cell migration, etc. are some of the specific mechanisms responsible for senile cataracts.[11]

On the characteristics of bilaterality, it was found that in Kertha Usadha Cataract Hospital cataracts on both eyes are 67 (25.9%), those with right eyes are 97 (37.4%) and those on the left eye are 95 (36.7%). A study in Shanghai in 2012-2013 by Lei Zuo et al. found that there were 153 unilateral senile cataract patients and 145 bilateral senile cataract patients.

Data in Sanglah Hospital in 2014 showed that of the total of senile cataract patients in that year, there were 23 patients (31.5%) who had a cataract senile cataract unilateral. Patients who had bilateral cataracts were 50 patients (68.5%).[9]

Data that obtained at Kertha Usada General Hospital shows that patients with low vision before cataract phacoemulsification are 164 people (63.3%). After cataract phacoemulsification, patients in the category of low vision on D+1 after surgery decreased to 16 (6.2)%, on D+7 3 (1.2%), and on D+30 3 (1, 2%). While patients with good visual acuity before cataract phacoemulsification as many as 2 (0.8%). After cataracts phacoemulsification, there are 181(69.9%) patients on the D+1 post surgery had good visual acuity, 215 (83%) on D+7, and 226 (87.2%)on D+30.

The presence of low vision in post cataract phacoemulsification patients can be caused by ocular comorbidity. A study in Malaysia in 2007-2010 found that there are 1,233 patients (70.6%) showing visual improvement after surgery. Patients without ocular comorbidities have better results.[12] A study in Pakistan in 2011 concluded that the main reasons for poor visual outcome were diabetic retinopathy, glaucoma and age-related macular degeneration.[13]

CONCLUSION

There are 259 cataract cases in Kertha Usada General Hospital during June 2018 - June 2019 that met the inclusion criteria. Most cataract patients are female as many as 142 (54.8%). Most patients are elderly (> 60 years) as many as 192 people (74.1%). 67 (25.9%) patients have cataracts on both eyes, 97 (37,4%) on the right eye and 95 36.7% on the left eye.

After cataracts phacoemulsification, patients with good visual acuity on D+1 surgery are 181 (69.9%), 215 on D+7 (83%), and on D+30 as many as 226 (87.2%).

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