

The Distribution of Posterior Segment Abnormalities in Sufferers of Moderate and Severe Myopia at Sumatera Utara University Hospital and Network Hospital in Medan

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Background: Abnormalities in the posterior segment of the eyeball affect the vision of the patient with myopia. Posterior segmental abnormalities in myopia may affect peripheral (peripheral degeneration) and posterior pole (posterior pole degeneration).

Methods: The observational analytic study was conducted at Eye Clinic of Sumatera Utara University Hospital and network Hospital. The subjects of the study were moderate and severe myopia patients who fulfilled the inclusion criteria with a total of 32 subjects or 64 eyes.

Results: Distribution of posterior segment abnormalities in moderate myopia seen more found Tigroid fundus image on the left eye as much as 16 eyes (51.6%), and the right eye as much as 15 eyes (48.4%), while the image of myopic crescent + tigroid fundus found only 1 eyes in the left eye. Severe myopia found tigroid fundus on the right eye as much as 8 eyes (57.1%) and the left eye of 6 eyes (42.9%), while the image of myopic crescent + tigroid fundus found in the right eye and the left eye respectively as many as nine eyes (50.0%). Posterior segment abnormalities are 31 (68,9%) tigroid fundus, while severe myopia is 14 (31,1%), posterior segment abnormalities are Tigroid fundus + Myopic crescent of moderate myopia 1 (5,3%) while in severe myopia as many as 18 (94.7%).

Conclusion: There is correlation between posterior segment abnormalities distribution with moderate and severe degree of myopia.

Keywords: posterior pole, moderate myopia, severe myopia

I. INTRODUCTION

Myopia is one of the public health problem and the most common eye disorder in the world. Myopia is one of the most common causes of low vision in the world even leading to blindness. Causes of low vision and blindness is one of them because of the posterior eye segment of the eyeball that occurs in the peripheral retina and posterior pole. This problem if not resolved properly will lead to permanent loss of vision. The World Health Organization (WHO) is introducing a global initiative to eliminate blindness by 2020, known as "Vision 2020". Five priority conditions are cataract, trachoma, onchocerciasis, childhood blindness and refractive abnormalities. Refractive disorder is one of the five priority areas for vision 2020 chosen because refractive error are a very common and correction of spectacles are cheap treatment, effective, and provide functional improvement.^{1,2,3}

The prevalence of refractive disorder in Indonesia are in first position eye disease and found amount of people with refractive disorder in Indonesia almost 25% of the population or about 55 million people. The greater prevalence of myopia is found in Asian races, Jews and Arabian. This problem are unknown cause, it is thought to be influenced by genetics and the environment. The

incidence of myopia in the United States is 25% of the population, while 1% of the Japanese population (about 1.25 million are pathological myopia patients). Research conducted in Beijing on 4,409 individuals aged 40 years and older shows that myopia is the second most common cause of low vision and blindness.^{4,5}

Myopia patients should get attention so as not to fall into the stage of low vision or blindness. Abnormalities in the posterior segment of the eyeball have a tremendous impact on the vision of the patient with myopia. Posterior segmental abnormalities in myopia may affect peripheral (peripheral degeneration) and posterior pole (posterior pole degeneration). This peripheral and posterior pole degeneration may cause myopia patients to become low vision or even blind, but this is still poorly understood by patients with myopia and some medical personnel, resulting in many incidents of myopia who come to the hospital with some complications caused by the degeneration process which occurs in the peripheral and in the posterior pole, therefore it is important to check on the posterior segment to determine abnormalities in the posterior segment that includes the peripheral and posterior pole so that immediate precautions can be taken so that complications that will bring the patient fell into low vision and blindness does not happen.

Research on the degree of myopia that includes moderate and high myopia with posterior segment abnormalities in the world this research still rarely done and data on the spread of posterior segment abnormalities in varying degrees of myopia in hospital of USU and networking hospital Medan are still missing. This research is expected to provide data on the spread of the degree of myopia with the posterior eye segment of the eyeball at USU hospital and networking hospital Medan.

II. METHOD

This was an analytic observational study conducted cross-sectionally in patients with moderate and high myopia at Eye Clinic at USU Hospital and networking hospital Medan. from April to May 2018, age of study sample is ≥ 18 years and meeting inclusion criteria (signed an informed consent, the magnitude of refractive abnormalities used in this study were patients with myopia with moderate degree of myopia (> 3.00 Diopters to 6.00 Diopters) and severe (> 6.00 Diopters) and exclusion criteria from this study are Myopia patients with cloudy optical media, with history of cataract surgery, with a history of retinal detachment surgery, with history of LASIK (Laser Assisted Insitu Keratomileusis), with abnormal retinal disorders outside myopia, for example AMD (age related macular degeneration), retinitis pigmentosa, posterior inflammation of the posterior segments of both active and inactive inflammation.

III. RESULT

This research is descriptive observational conducted in eye clinic of outpatient installation of USU hospital and networking hospital Medan from April to May 2018. This research was followed by sufferer of moderate and severe myopia who fulfill inclusion criteria with total of research subject counted 32 people or counted 64 eyes. Based on research subjects can be obtained data shown in tabulation form.

Table 1.1. Characteristics of Age with varying degrees of myopia

Characteristics	n	%
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10-20 y.o	10	31.3
21-30 y.o	22	68.8
>30 y.o	2	6.3
Total	32	100.0

In table 1.1. The above shows that the most age distribution of the data of this study is the age group of 21-30 years as many as 22 people (68.8%) and at least in the age group > 30 years as many as 2 people (6.3%).

Table 1.2. Characteristics of Sex with varying degrees of myopia

Characteristics	N	%
Man	10	31.3
Women	22	68.8
Total	32	100.0

From table 1.2. It is shown that the sex characteristics of the respondents' data were mostly 22 women (68.8%) and men (10,3%).

Table 1.3. Characteristics Family history with varying degrees of myopia

Characteristics	n	%
Hereditary	24	75.0
Not hereditary	8	25.0

Total	32	100.0
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From table 1.3. it can be seen that family history characteristic from respondent data of most research have family history of myopia as many as 24 people (75.0%) compared with those without family history of 8 families (25.0%).

Table 1.4. Intraoculi Pressure Characteristics with varying degrees of myopia in the right eye

Degrees of myopia	Intraoculi pressure		<i>p</i>
	N	$\bar{x} \pm SD$	
Moderate myopia	15	15.64 ± 1.778	0.975
Severe myopia	17	16.44 ± 1.738	

*chi-square test, significant < 0.05

From table 1.4. Above seen by using independent t-test found no difference between intraocular moderate pressure of moderate myopia with severe myopia myraloid pressure in the right eye (p = 0.975).

Table 1.5. Intraoculi Pressure Characteristics with varying degrees of myopia in the left eye

Degrees of myopia	N	$\bar{x} \pm SD$	<i>p</i>
Moderate myopia	17	16.84 ± 2.052	0.554
Severe myopia	15	16.45 ± 1.69	

*t-test, significant < 0.05

From table 1.5. Above seen by using independent t-test found no difference between intraoculi pressure moderate myopia with severe myopia pressure in the left eye ($p = 0.554$).

Table 2. DIFFERENT DISTRIBUTION DEGREE OF MODERATE AND SEVERE MYOPIA

Table 2.1. Differences in the degree distribution of myopia between the right eye (OD) and left eye (OS)

Degrees of myopia	Eyes				Total		p.
	OD		OS		n	%	
	N	%	N	%			
- Moderate myopia	15	46.9	17	53.1	32	100.0	0.617
- Severe myopia	17	53.1	15	46.9	32	100.0	

*chi-square test, significant < 0.05

The distribution between the right eye and the left eye is shown in Table 2.1. in which severe myopia is found in the right eye of 17 eyes (53.1%) and in moderate myopia is also seen more frequently in the left eye as much as 17 eyes (53.1%). The results of the statistical test explain that there is no difference of moderate and severe median distribution between right eye and left eye, ($p = 0.617$).

Table 2.2. Posterior segment abnormalities in moderate and severe myopia

Degrees of myopia	Posterior segment abnormalities	Eyes				Total		P
		OD		OS		N	%	
		N	%	n	%			
Moderate myopia ^{a)}								
	- <i>Tigroid fundus</i>	15	48.4	16	51.6	31	100,0	1.000
	- <i>Myopic C. + Tigroid F.</i>	0	0	1	100.0	1	100,0	
Severe myopia ^{b)}								

- <i>Tigroid fundus</i>	8	57,1	6	42,9	14	100,0	
- <i>Myopic C. + Tigroid F.</i>	9	50,0	9	50,0	18	100,0	0.688

- a) Fisher's Exact test
- b) chi-square test

Table 2.2. shows the posterior segment abnormalities based on the degree of dystyopia between the right eye and the left eye, in moderate myopia seen more Tigroid fundus found on the left eye of 16 eyes (51.6%), and in the right eye as many as 15 eyes (48.4%), while the image of myopic crescent + tigroid fundus was found only 1 eye in the left eye.

In severe myopia found tigroid fundus in the right eye as much as 8 eyes (57.1%) and in the left eye as much as 6 eyes (42.9%), while the image of myopic crescent + tigroid fundus found in the right eye and left eye respectively 9 eyes (50.0%).

Table 2.3. The correlation posterior segment abnormalities and degrees of myopia

Posterior segment abnormalities	Degrees of myopia				TOTAL		<i>p.</i>
	Moderate		Severe		N	%	
	n	%	n	%			
- <i>Tigroid fundus</i>	31	68,9	14	31,1	45	100,0	
- <i>Myopic C. + Tigroid F.</i>	1	5,3	18	94,7	19	100,0	0,0001*

From table 2.3. posterior segment abnormalities in the form of tigroid fundus on the degree of moderate myopia as much as 31 (68.9%) whereas in severe myopia as much as 14 (31.1%) then in the posterior segmental abnormalities fundus tigroid + Myopic crescent in moderate myopia as much as 1 (5.3%) while in severe myopia as much as 18 (94.7%). Chi-square test showed the results there was correlation between posterior segment abnormality and degrees of myopia ($p < 0.05$).

IV. CONCLUSION

From the statistical in this study there is a correlation of posterior segment abnormalities with moderate and severe degree of myopia and there is no difference intra-ocular pressure either in the right eye or left eye in the degree of medium and severe myopia.

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