

# Sunlight and Incidence of Pterygium on Croatian Island Rab – Epidemiological Study

Božidar Vojniković<sup>1</sup>, Sanja Njirić<sup>2</sup>, Miran Čoklo<sup>3</sup>, Ivan Toth<sup>4</sup>, Josip Španjol<sup>5</sup> and Marin Marinović<sup>6</sup>

<sup>1</sup> Eye Polyclinic »Dr. B. Vojniković«, Rijeka, Croatia

<sup>2</sup> Eye Polyclinic »Dr. L. Pavičević«, Rijeka, Croatia

<sup>3</sup> Department of Forensic Medicine, Rijeka University School of Medicine, Rijeka, Croatia

<sup>4</sup> Polytechnic College »Velika Gorica«, Velika Gorica, Croatia

<sup>5</sup> Department of Urology, Rijeka University Hospital, Rijeka, Croatia

<sup>6</sup> Department of Surgery, Rijeka University Hospital, Rijeka, Croatia

## ABSTRACT

*The aim of this epidemiologic study, on small island Rab, in North Adriatic Sea, is to estimate correlation between climatic factors, specially chronic exposure to strong visible and UV light, and appearance of pterygium and exfoliation syndrome. In the first group of population which live in a village and who are agriculturists and fishermen (480 persons) appearance of pterygium is in 23% (16% in males and 7% in females), but 0.0% in urban people (61 people). The appearance of exfoliation syndrome was in the first group of agriculturists and fishermen population in 21%, of which 19% of males and 2% of females, and in urban people 0.0%. The higher intraocular pressure in exfoliation syndrome was 92%. All population in this examination were in the highest age (mean age is 65–80 years). Chronic exposure to sunlight caused the high percentage appearance of pterygium and exfoliation syndrome.*

**Key words:** pterygium, exfoliation syndrome, exposure to sunlight

## Introduction

It is known and well estimated that chronic, excessive exposure to sunlight greatly increases the risk of appearance of pterygium and exfoliation syndrome<sup>1–6</sup>. The biologic effect of ultraviolet radiation today is very good recognized<sup>7–10</sup> as a potent mutagenic agents with production of photoproduct dimmers. The values of solar radiation greatly depend on the geographical latitude<sup>11–13</sup>. This proof in clinical trial is rarely good represented by Forsius<sup>14</sup>, who analyzed the appearance of pterygium, pronounced pinguecula and exfoliation syndrome dependent on geographical altitude and on age distribution.

## Patients and Methods

Our research is located on small island Rab, geographical latitude 44°40' N. This examination included 480 patients in agriculturist and fishermen population, and in second group 61 patients in urban population. All population was in the highest age (mean age 65–80

years). All patients are examined with slit lamp, biomicroscopy, measured eye pressure with non contact tonometer, and fundus analysis.

The first group of agriculturists and fishermen population were approximately exposed 10 hours daily, without any protection of sunlight. The second group, urban population, lives in the town with very narrow streets with shadows, and during exposure of sunlight they take protection dresses and sunglasses.

## Results

In Table 1 it is visible that the appearance of pterygium exists in 23% (16% in males and 7% in females). Frequency of the appearance of the exfoliation syndrome is 21% (19% in males and 2% in females). Elevation of the eye pressure, higher than 21 mmHg, in patients with exfoliation syndrome exists in very high of 92%. It is very interesting, that

**TABLE 1**  
FREQUENCY OF THE PTERYGIUM AND EXFOLIATION SYNDROME ON ISLAND RAB

Finding	Agriculturists and fishermen (n=480)				Urban population (n=61)			
	Males		Females		Males		Females	
	n	%	n	%	n	%	n	%
Exfoliation syndrome	91	19	9	2	0.0	–	0.0	–
Increasing of IOP (>21 mmHg) in exfoliation syndrome		92% (n=442)			0.0	–	0.0	–
Pterygium	77	16	34	7	0.0	–	0.0	–

IOP – Intraocular pressure

in the second group of urban population is registered not one patient with pterygium and with exfoliation syndrome.

### Discussion and Conclusion

This research, beside earlier studies<sup>2, 15</sup> shows that the climate factor is one of the most important risk factors in the appearance of exfoliation syndrome and pterygium. It is very significant the incidence of 21% cases of exfoliation syndrome in population of fishermen and agriculturists, and in another side in urban population

where is not one case of this manifestation. Similar situation is also by pterygium incidence, 23% by agriculturists and fishermen, but not one in urban population.

Elevation of intraocular pressure (IOP) in exfoliation syndrome depends of climate factors, especially the increase of erythemal UV radiation, that the incidence of this manifestation is much higher in male than in female population. And for the end, we conclude that is necessary to protect the eyes with sunglass filters, especially in the region with an increase of erythemal UV radiation, in year period of May to September.

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B. Vojniković

Eye Polyclinic »Dr. B. Vojniković«, Antuna Barca 3B, 51000 Rijeka, Croatia  
e-mail: decv@decv.com

### SUNČEVA SVJETLOST I UČESTALOST POJAVE PTERIGIJA NA OTOKU RABU – EPIDEMIOLOŠKA STUDIJA

#### SAŽETAK

Cilj ove epidemiološke studije je da dokaže kako je pojava pterigija ovisna o klimatskom faktoru, osobito dužini vremena izloženosti pučanstva sunčevoj svjetlosti. U ribara i poljoprivrednika učestalost pterigija je 23% (480 pregledanih), dok se u urbanoj sredini nije našao niti jedan slučaj pterigija (61 pregledanih). U muškaraca je pojava učestalija, 16%, dok je u žena u 7%, što je uzrokovano različitim stilom života i zanimanja. Ova epidemiološka studija posebno je zanimljiva, s obzirom da je ova analiza rađena na vrlo malom otoku Rabu, dužine samo 23 km, te je stoga ova epidemiološka studija to interesantnija s obzirom na veliku razliku incidencije pterigija u pojedinim skupinama ljudi. Također je razmatrana i učestalost pojave pseudoeksfolijacije i povišenja očnog tlaka.