INCIDENCE OF CENTRAL RETINAL VEIN OCCLUSION

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SUMMARY – Epidemiologic reports on retinal vein occlusion are quite scanty in the ophthalmologic literature. In the present study, the incidence of central retinal vein occlusion (CRVO) was assessed in a defined population of the Split – Dalmatia County, Croatia. The study was designed as a retrospective review of the medical records of inpatients and outpatients with the development of CRVO during a 15-year period (1985 – 1999). Study results revealed CRVO to have occurred in 167 subjects in the population of 465,947 during the study period, yielding an annual incidence of 2.4 *per* 100,000. The highest incidence of CRVO was recorded above the age of 70. The results of the study should improve the disease evaluation and planning of the ophthalmologic service for better management of this serious disease.

Key words: *Retinal vein occlusion, epidemiology; Age distribution; Incidence; Follow-up studies*

Introduction

In the ophthalmologic literature, there are only several epidemiologic reports on the retinal vein obstructive disease[1-3]. Many recent publications have reported case-control studies to examine clinical features and risk factors for retinal vein occlusion in both young and elderly subjects[4-6]. To our knowledge, data on the incidence of central retinal vein occlusion (CRVO) are very few. In their population based study, David *et al.*[1] found an overall incidence of all types of symptomatic retinal vein occlusion (central, hemispheric, branch) during a 4-year period to be 2.14 *per* 1,000 in the 340-year age group.

In the present clinically based study, the incidence of CRVO was assessed in a defined population of the Split – Dalmatia County, Croatia, during a 15-year period (1985 – 1999).

Patients and Methods

All CRVO cases from the Split – Dalmatia County are managed exclusively at the Split University Hospital, Department of Ophthalmology, thus excluding the possibility of considerable patient visiting other, distant medical institutions. The study was designed as a retrospective review of the medical records of inpatient and outpatients who developed CRVO during the 15-year study period. CRVO is characterized by a history of painless acute vision reduction and ophthalmoscopically by retinal edema, optic disk hyperemia or edema, venous dilatation, scattered superficial and deep retinal hemorrhages, or occluded and sheathed retinal veins in all four retinal quadrants. Almost all CRVO patients undergo fluorescein fundus angiography to decide on further management of the disease.

Table 1. Age distribution of the Split – Dalmatia County population (1991)

Age (yrs)	Population (n)
0-9	63.799
10-19	71.009
20-29	69.551
30-39	73.486
40-49	58.210
50-59	55.924
60-69	42.368
>70	31.600
Total	465.947

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Data on the Split – Dalmatia County population were derived from the 1991 Croatia census[7] (Table 1). This report refers to a total of 167 patients. In six (3.6%) patients, CRVO developed bilaterally during the same period of time. The study included only residents of the County. Results are presented as mean ± standard deviation (SD). Statistical analysis was performed by use of χ^2-test.

Results

During the 15-year period (1985 – 1999), 167 patients with CRVO were recorded, yielding an annual incidence of 2.4 (range 0.0-10.8) *per* 100,000 in the Split – Dalmatia County with a population of 465,947. The mean frequency of CRVO was 11.1 *per* year.

The frequency distribution curve according to age of CRVO patients shows a high proportion of elderly subjects, with 95.2% of all CRVO patients in the >40 age group (Fig. 1). The mean ± SD patient age was 62.8±12.2 (range 29-91) years. Men with CRVO were younger than CRVO women (61.3±11.7 *vs*. 64.2±12.4 years).

The highest incidence of CRVO was recorded in the >70 age group (10.8 *per* 100,000). The incidence of CRVO increased with age (Table 2).

There were 86 (5.15%) men and 79 (48.5%) women. The male to female ratio was 1.1, however, the difference was not statistically significant (p=0.30) (Fig. 2). Left eye was affected in 82 (49.1%), right eye in 79 (47.3%), and bilateral involvement was observed in 6 (3.6%) cases. The difference yielded by the left to right eye ratio did not reach statistical significance (p=0.19) (Fig. 3).

Discussion and Conclusion

According to the available data, the literature contains surprisingly few information on the incidence of CRVO in the general population. Our epidemiologic study in a relatively confined group revealed the annual incidence of about one CRVO in the Split – Dalmatia County general population of 41,972. Calculations in the study of David *et al.*[1] show an incidence of 2.8 *per* 100,000 *per* year. We found a somewhat lower incidence of 2.4 *per* 100,000, which could be due to different methods of data collection, lower number of patients, and shorter evaluation

Table 2. Incidence of central retinal vein occlusion according to age per 100,000 population

Age (yrs)	Incidence
9-9	0.0
19-19	0.0
29-29	0.1
39-39	0.6
49-49	1.6
59-59	4.5
69-69	8.8
370	10.8

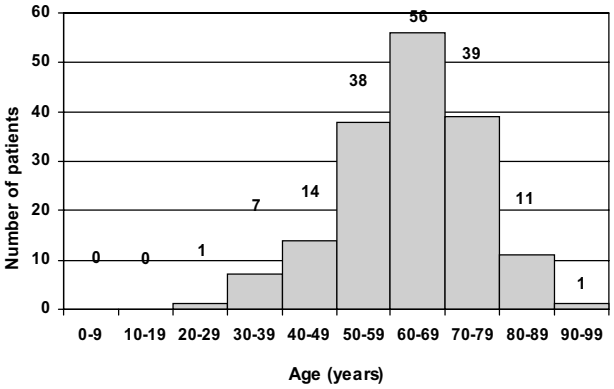

Fig 1. Age distribution of CRVO

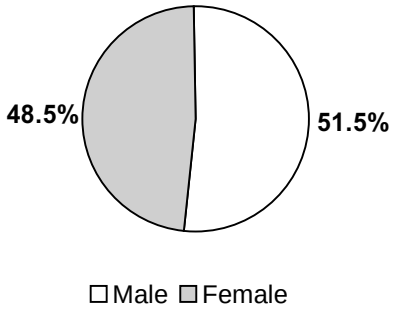

Fig 2. Sex distribution of CRVO

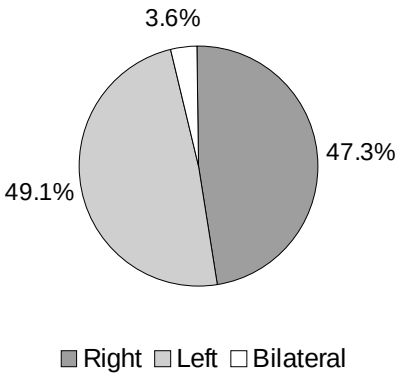

Fig 3. Laterality of CRVO

period in the study of David *et al.* In their study, there were nearly one third of glaucoma patients, and glaucoma is known to increase the risk of CRVO[1,8]. The population risk factors such as arterial hypertension, diabetes, smoking habits and dietary habits may also influence the occurrence of CRVO. CRVO is most commonly seen in elderly and relatively rarely in young individuals[9,10]. In our study, there were only eight cases of CRVO in subjects under the age of 40. The mean age at onset of CRVO were early sixties in the study of Hayreh *et al.*[2]. In our study, men were slightly more commonly affected than women, which is consistent with other reports[1,2,11]. In the Blue Mountain Eye Study, there was no sex difference in the prevalence of CRVO[3]. There is some, inadequate though, evidence suggesting the preponderance of one eye over the other for the occurrence of CRVO[2]. The incidence of CRVO was found to be more than 3-fold that of central retinal artery occlusion (0.7 *per* 100,000) in the district of Split during the comparable period of time[12].

Retinal vascular occlusive diseases are a relatively uncommon cause of blindness (2.8% of new cases in Croatia)[13-15]. Assuming that an incidence similar to that found in the present study (2.4 *per* 100,000) is representative of the population of Croatia, there should be approximately 110 cases of CRVO in the country *per* year.

The present study pointed to CRVO as an important cause of unilateral visual loss in the elderly. The results of the study should allow for better disease evaluation and improve planning of the ophthalmologic service to manage this serious eye disease in a more efficient way in the Split – Dalmatia County. The expected favorable experience could then be applied elsewhere in the country.

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Sažetak

INCIDENCIJA OKLUZIJE SREDIŠNJE MREŽNIČNE VENE

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U oftalmološkoj literaturi su rijetke epidemiološke studije o okluziji središnje mrežnične vene. U ovoj je studiji ispitana incidencija okluzije središnje mrežnične vene u definiranoj populaciji Splitsko-dalmatinske županije. Studija je bila retrospektivna, a zasnovana je na kartoteci hospitaliziranih i ambulantno pregledanih bolesnika s okluzijom središnje mrežnične vene u razdoblju od 15 godina, od 1985. do 1999. godine. U ovoj studiji je 167 od 465.947 stanovnika dobilo okluziju središnje mrežnične vene za vrijeme ispitivanog razdoblja. Godišnja incidencija bila je 2,4 na 100.000 stanovnika. Najviša incidencija okluzije središnje mrežnične vene zabilježena je iznad 70. godine života. Rezultati ovoga ispitivanja omogućiti će bolju procjenu bolesti i planiranje oftalmološke službe za rješavanje ove ozbiljne bolesti.

Ključne riječi: *Okluzija mrežnične vene, epidemiologija; Dobna distribucija; Incidencija; Studije praćenja*