INCIDENCE OF GLAUCOMA IN VARIOUS ETHNIC GROUPS IN THE POPULATION OF ISRAEL*

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THE Jewish population of Israel is notable for its heterogeneous composition. Being an outcome of a mass immigration of Jews from all parts of the world, mainly since the establishment of the State on May 15, 1948, it represents very different anthropological and genetical groups of the Jewish people. In this study the Jewish population of Israel is divided into two groups (European and oriental), the second including all those originating in the Middle East and North Africa, like Yemenites, Iraqis, Moroccans, Persians, etc.

Material

Our material consists of all patients hospitalized for glaucoma and discharged during the years 1956 and 1957 from four ophthalmological departments in the Hadassah University Hospital in Jerusalem, Rambam Government Hospital in Haifa, Government Hospital Tel-Hashomer, and the General Government Hospital in Jaffa. They comprise over 90 per cent. of all hospitalized ophthalmological cases in the country. Patients hospitalized several times during the period of observation were counted only once.

Four hundred cases of glaucoma were discharged during the 2 years, excluding all secondary glaucomas. The distribution of these patients by age, sex, and ethnic group is given in Table I.

TABLE I
CASES OF GLAUCOMA BY AGE, SEX, AND ETHNIC GROUP

Age Group (yrs)	Males			Females			Both Sexes
	European	Oriental	Total	European	Oriental	Total	
Up to 20	3	4	7	1	3	4	11
20-39	4	11	15	2	4	6	21
40-49	9	10	19	21	11	32	51
50-59	34	28	62	43	18	61	123
60-69	35	17	52	37	16	53	105
70+	26	12	38	33	16	49	87
Unknown	—	—	—	2	—	2	2
All Ages	111	82	193	139	68	207	400

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Results

The cases were related to the respective population groups for the calculation of incidence rates. Unfortunately, the Israel-born population is not divided in the official statistics by origin or community. We tried therefore three hypothetical possibilities:

- (a) The whole native population belongs to the European group;
- (b) The native population belongs to the oriental group;
- (c) The native population is divided between the two groups in the same proportion as the foreign-born;

A careful analysis showed that the general trend is not influenced by either possibility. The third one is the most acceptable. The figures may be biased in the lower age groups, owing to the differential birth rates in the two groups, but whereas glaucoma affects few persons before the age of 40, the above-mentioned supposition seems right. For this reason the rates were calculated only for ages above 40 (Table II).

TABLE II
AGE-SPECIFIC MORBIDITY RATES (PER 10,000) FOR GLAUCOMA,
BY SEX AND ETHNIC GROUP

Age Group (yrs)	Males		Females	
	European	Oriental	European	Oriental
40-49	0.53	1.71	1.24	1.72
50-59	2.59	6.21	3.87	4.00
60-69	5.78	7.25	6.15	6.48
70 +	9.90	9.38	9.44	11.84
All Ages	2.68	4.79	3.62	4.14

As expected, the incidence of glaucoma increases with age. Between the ages 60 and 70 there are yearly more than six hospitalized cases per 10,000 of population and the rate is 9.9 for those over 70 years of age.

Among Europeans, glaucoma occurs more often in women than in men in the age groups 40-59, the difference is small in the 60s, and in the 70s and after males have a very slight preponderance. Among orientals the rates are equal in the forties for both sexes, between 50-69 the males (unlike the Europeans) have higher rates, and after 70 the rate in females is considerably higher than that in males. No constant trend was found as regards sex.

Differences between the two ethnic groups are pronounced. In almost all age-sex groups, the rates for orientals exceed those for Europeans. The only exception to this rule was among males aged over 70; in this group the

rate for Europeans is very slightly higher. The significance test* of the differences did not show any significance in the particular groups. But when the total rates for glaucoma among the two groups were calculated, it was found that the incidence of hospitalized glaucoma was 6.3 per 10,000 persons aged over 40 among Europeans and 8.8 among orientals. This difference (2.5) is highly significant, being almost three times greater than the standard error (± 0.87).

Discussion

It should be stressed that our material includes only hospitalized cases, and does not present, therefore, a comprehensive picture of the prevalence of glaucoma in the Jewish population of Israel. Our results thus differ considerably from those of the screenings for case-finding performed in the United States by clinical examinations (Carpenter, Brav, and Seidel, 1950; U.S. Dept. of Health, Education, and Welfare, 1959). A considerable proportion of the cases discovered in these screenings had been previously unknown. It may be accepted that even among the known cases many were not hospitalized. This explains the difference between the rates in the United States screenings and in our investigation.

Blondheim and Kallner (1956) found also a significantly higher rate of hospitalization for glaucoma among orientals than among Ashkenazi (European) Jews for all ages over 50.

In this connexion reference should be made to the work on the differential incidence of cardiovascular diseases in the various ethnic groups in Israel. Dreyfuss (1953) pointed out that "the analysis of 412 cases of myocardial infarction showed that the incidence in Ashkenazi Jews was disproportionately high". In another survey (Dreyfuss, Toor, Agmon, and Zlotnik, 1957), he states that "our previous observation of the prevalence of myocardial infarctions in Ashkenazi Jews and of their rarity in oriental Jews was confirmed". Also Kallner (1958) found that "for arteriosclerotic heart disease—there was a distinct preponderance of people of occidental over those of oriental origin". Alkalay (1954) found, in a sample of 635 healthy persons, that the diastolic blood pressure was higher among European than among oriental Jews.

Summary

Patients hospitalized for glaucoma during 2 years were reviewed. Only a few cases were found in those less than 40 years of age. For patients

* The test was performed by the Standard Error formula:

$$\text{S.E.} = \sqrt{\frac{p(10,000-p)}{n} + \frac{p_1(10,000-p_1)}{n_1}}$$

where p denotes the rates per 10,000 and n —the population in the group. The difference was considered significant if it was at least twice the value of S.E., which would arise by chance roughly once in 20 times.

over 40 years of age, crude and age- and sex-specific incidence rates were calculated and analysed by the two main ethnic groups, and the following conclusions were reached:

- (a) There is no pronounced difference in regard to sex in either ethnic group;
- (b) Oriental Jews have a higher incidence of glaucoma. This is significant for the total rates, although not for the age- and sex-specific rates.

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