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Incidence of acute angle closure glaucoma in Italy

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Abstract

Purpose: To analyze the incidence of acute glaucoma in Italy.

Methods: Retrospective review of hospital admissions with discharge diagnoses of primary chronic angle closure glaucoma and acute glaucoma that involved patients aged > 45 years in the period 2001-2004.

Results: The mean annual rate of hospital admissions with primary chronic angle closure glaucoma was 6.47 per 100.000 of the entire population, while that for acute attack was 2.67 per 100.000 of total population.

Conclusions: The epidemiology of acute glaucoma has been little studied in Western populations at the national level. Our data cannot be considered indicative of the incidence of primary chronic angle closure glaucoma because they are related to inpatients and cases managed on an outpatient basis are not included. In contrast, acute glaucoma usually requires hospitalization and the figures of admissions for this pathology can be used in our opinion as a proxy indicator of its incidence in the population.

INTRODUCTION

Acute angle closure glaucoma (AACG) is a condition of ophthalmic emergency that requires an urgent necessity to lower intraocular pressure. Population-based studies of this disease are rare and they usually represent surveys of patients from selected hospitals or regional series ([1,2,3]). Until now, attempts to analyze the problem at the national level have been rarely made ([4]) . However, studies of this type could furnish useful indications for elaborating more effective strategies for prevention and treatment.

The aim of our study was to analyze all hospital admissions involving patients older than 45 years and occurring in Italy during the four-year period 2001-2004 with discharge diagnoses of AACG. Moreover, we examined data related to admissions meeting the criteria listed above with a diagnosis of primary chronic angle closure glaucoma (PACG).

MATERIALS AND METHODS

The source of our data was the database maintained by the Italian Ministry of Health and accessible through its website (http://www.ministerosalute.it, database). It currently contains complete data on all admissions to public and private inpatient healthcare facilities from 1999 through 2004. The information is based on hospital discharge diagnoses and all diagnostic and therapeutic procedures performed during the hospitalization, both of which are listed according to ICD-9 -CM codes (International Classification of Diseases, ninth revision – Clinical Modification, 1997). In order to avoid the possible exclusion from the data of some hospital admissions, or possible errors in clinical coding during the first two years after the introduction of database, our retrospective search focused on admissions from January 1, 2001 through December 31, 2004 with discharge diagnoses classified “365.2: primary chronic angle closure glaucoma” and, as subcategory, “365.22 : acute angle closure glaucoma”. The data were analyzed according to patient age group (45-64, 65-74 and > 75 years) and gender.

Demographic data in Italy during the period 2001-2004 were obtained from the website of the National Institute of Statistics (http://www.demo.istat.it , demographic data).

RESULTS

In the four-year period analyzed, resident population

registered in Italy was: 56.960.692 in 2001, 56.993.742 in 2002, 57.321.070 in 2003, and 57.888.245 in 2004. Table 1 shows the data of resident population older than 45 years in the period 2001-2004 on the basis of three age groups (45-64, 65-74, and >75 years).

Figure 1

Table 1: Age groups of the population older than 45 years (2001-2004).

age group	45-64	65-74	>75
year		total number	
2001	14.374.281	5.879.805	4.774.844
2002	14.477.825	5.937.723	4.963.606
2003	14.605.970	6.020.148	5.108.333
2004	14.752.097	6.114.032	5.265.309

During the study period, there were 14.838 hospital admissions for PACG (code 365.2) that involved patients aged > 45 years (5371 males / 9467 females, 36.2% versus 63.8%). The annual number of admissions remained fairly stable in the three age groups over the four years analyzed (mean: 3709 per year, range 3630-3752). However, total figures for the 45-64 year olds were lower (4446) than those of the 65-74 (5237) and >75 year olds (5155). Temporal analysis revealed that the total number (i.e. all age groups of resident population older than 45 years) of these admissions per 100.000 was 6.37 in 2001, 6.57 in 2002, 6.47 in 2003, and 6.48 in 2004 (mean value in four years: 6.47). The yearly hospitalization trends for the different age groups are shown in Table 2.

Figure 2

Table 2: Yearly hospitalization trends in the different age groups for PACG (2001-2004).

age group	45-64	65-74	>75
year		total number	
2001	1013	1266	1351
2002	1137	1337	1272
2003	1126	1271	1313
2004	1170	1363	1219

The records of PACG included 6142 hospital admissions for AACG that involved patients aged > 45 years (1874 males / 4268 females, 30.5% versus 69.5%).

On the whole, 1363 admissions occurred in 2001, 1611 in 2002, 1599 in 2003, and 1569 in 2004. Total figures for the 45-64 year olds were lower (1802) than those of the 65-74 (2118) and >75 year olds (2222). The hospitalization trends for the different age groups are shown in Table 3.

Figure 3

Table 3: Yearly hospitalization trends in the different age groups for AACG (2001-2004).

age group	45-64	65-74	>75
year		total number	
2001	372	466	525
2002	484	551	576
2003	466	533	600
2004	480	568	521

Temporal analysis revealed that the rate of these admissions per 100.000 of total resident population in Italy was 2.39 in 2001, 2.82 in 2002, 2.78 in 2003, and 2.71 in 2004 (mean value in four years: 2.67). The rate of admissions for total resident population older than 45 years was 5.44 in 2001, 6.34 in 2002, 6.21 in 2003, and 6.0 per 100.000 in 2004 (mean rate in four years: 5.99). The age adjusted mean rate of admissions (four years) for each of the three group of patients - 45-64, 65-74 and >75 year olds- was respectively 3.09, 8.83, and 11.04 per 100.000.

DISCUSSION

The prevalence of angle closure glaucoma has been studied in Italy only in a defined population 40 years of age or older in the South Tyrol Region: in the 0.6% of the entire population examined was detected a PACG ([5]).

In our study the mean annual rate of hospital admissions involving patients older than 45 years with diagnosis of PACG was 6.47 per 100.000 of the entire population over the four years analyzed. These data are lower than those described in a population-based retrospective incidence study in Olmsted County (Minnesota) ([6]), in which the mean annual incidence of PACG per 100.000 people aged > 40 years was 8.3. However, our data are related exclusively to inpatients. Cases managed on an outpatient basis are not included. Consequently, the values reported above cannot be considered indicative of the incidence of PACG in Italy. In contrast, the records for acute glaucoma can be used, in our opinion, as a proxy indicator of the incidence of this pathology because management of this acute pathology usually requires hospitalization and only a minority of patients are managed outside hospital.

Based on the ratio of hospital admissions, the mean incidence of AACG in Italy during the 2001-2004 period can be estimated to be 2.67 per 100.000 of total population and 5.99 per 100.000 of people older than 45 years.

The epidemiology of AACG has been little studied to date in Western populations at the national level ([4]) and only surveys of patients from selected hospitals or regional series have been carried out ([1,2,3]). Epidemiological data regarding acute attacks of glaucoma are also lacking in Oriental populations in which PACG appears to be more common than in the West ([7,8,9]). In epidemiological studies conducted in Singapore ([8]) and in the Hong Kong Chinese population ([9]) the annual incidence of AACG was reported to be 12.2 and 10.4 per 100.000, respectively. In contrast, the incidence of AACG reported in a regional study in Croatia ([2]) was estimated to be 2.9 per 100.000 and this value is in line with our data. In a previous study, Teikari et al (4) described the incidence of AACG in Finland in 1796 patients derived from the hospital discharge registry in the period 1973-1982. Their reported annual incidence of 3.8 per 100.000 is higher than our data as well as that reported by David et al ([3]) which showed an incidence of AACG in the Israel Negev region of 4.2 / 100.000 / year. In our study, an acute glaucoma occurred more frequently both in females (69.5%) and in older patients (>75 years). In fact, the age adjusted mean rate of admissions for AACG (four years) for each of the three group of patients - 45-64, 65-74 and >75 year olds- was respectively 3.09, 8.83, and 11.04 per 100.000. These findings agree with those from earlier studies ([2,3,4]), in which age and sex were found to be major risk factors for an acute attack.

In conclusion, on the basis of hospital discharge diagnoses the incidence of AACG in Italy is enough small in our opinion. Certainly, the prophylactic laser iridotomy nowadays results to be beneficial for the fellow eye in patients that have presented a monocular acute glaucoma as well as in those people who have gonioscopically occludable angles.

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