Prevalence of Gallstone Disease in Mexico
A Necropsy Study

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The prevalence of gallstone disease in Mexico was investigated by studying a sample of 21,446 necropsies performed at the Department of Pathology of the General Hospital of Mexico City during a 35-year period (1953-1988). For each decade, 1000 necropsy cases were randomly selected. The crude prevalence of gallstone disease was 14.3%, 8.5% for males and 20.4% for females. The age groups ranged from 20 to more than 80 years old; the age-standardized prevalence for males was 5.6% and for females 16.2%. These rates are intermediate between those found in Chile and some African countries, comparable to some European studies, and less than those found in Mexican-Americans. No significant trend in the prevalence of gallstone disease was found when the different decades were compared.

KEY WORDS: epidemiology; cholelithiasis; autopsy; Mexico.

Since the prevalence of gallstone disease (GD) varies widely throughout the world, it is unwise to assume that the frequency of gallstones is similar among racially homogeneous populations that live in nearby geographic areas. Moreover, prevalence rates for GD differ even between populations that live in the same country and that are similar in their racial and cultural backgrounds (1). In the American continent, cholelithiasis is one of the leading causes of disease among North American Indians (2), in Chile (3), and in Bolivia (4). In the United States, a higher prevalence of GD has been reported for Mexican-Americans (5); in this population, the prevalence is higher than that found in other Hispanic groups (6). In Mexico, a high frequency of GD has been previously recognized (7). However, since statistical data has not been reported, we decided to perform an autopsy study to determine the prevalence of GD among the low-income population that seeks medical care in a large general hospital located in Mexico City. In addition, the study was designed to explore whether prevalence rates of GD have changed during the last decades.

MATERIALS AND METHODS

This study was carried out at the Department of Pathology of the General Hospital of Mexico City. This hospital is a 1200-bed medical facility that provides care mainly for low-income individuals from Mexico City and rural areas who lack all types of medical insurance. The number of necropsies performed between 1953 and 1988 was 21,446, representing 40–60% of the hospital deaths. A sample of 1000 cases was selected for each decade using a random numbers table. From the necropsy records, sex, age, and associated diseases were recorded. GD was defined as the presence of gallstones in the...
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gallbladder and/or biliary ducts, or as the absence of a
gallbladder as a result of prior cholecystectomy. Choles-
terolosis was not included in this analysis. The prevale-
cnces for each decade were also compared. These results
and those obtained in other series were standardized for
age with the direct method (8) using a standard population
for Mexico (9). For statistical comparisons, age-specific
groups were analyzed by the chi-square method.

RESULTS

Of the total cases with GD, only six (1.04%) had
undergone prior cholecystectomy. The overall fe-
male to male ratio in the sample was 0.9:1 (1941/
2059). GD was present in 14.3% (572/4000) of all
subjects over 20 years of age. For women, the crude
prevalence of GD was 20.4% (397/1941), and 8.5%
(175/2059) for men, with an overall sex ratio of
1.6:1. GD was greater in women than in men in each
age group, being highest among individuals over 60
years of age (Table 1). For women, the age group
most affected was those older than 80 years
(45.07%), and for men of those between 70 and 80
years (15.38%) (Table 1).

The crude prevalence of GD showed an increase
in the last decade (15.8%) when compared with the
1950s (12.2%) but is similar to that obtained for the
1960s (Table 2). The age-standardized prevalence of
GD in men was 5.6% versus 16.2% in women. A
comparative analysis of the rates with those derived
from similar necropsy studies performed in other
countries is shown in Figure 1.

DISCUSSION

The main limitations of necropsy studies are the
low autopsy rates in many hospitals, and the fact
that deaths followed by necropsy represent only a
select group of all deaths occurring among hospital-
ized persons. However, such studies provide valu-
able data for detecting changes in GD prevalence
over periods of time, or for comparative studies
between populations, since they satisfy the two
conditions that must be met to estimate the preva-
ience rate of a disease from autopsy material: (1) the
disease in question should not be a major contribu-
tor to the death of the patients, and (2) the selection
of patients for autopsy should be independent of the
presence of the disease. GD fulfills both require-
ments since gallstones rarely lead directly to death
and the majority are asymptomatic. The prevalence
of GD found in this study is intermediate between
the high rates reported in Chile and the low rates
found in some African countries, and resembles
those derived from autopsy studies performed in
some European countries (Figure 1). At variance
with what has been demonstrated in other countries
(10–13), a trend in the prevalence of GD was not
found. However, for men and women, the preva-
ience reported in this study is lower than the ultra-
sound-determined prevalence of 23.2% and 7.2%
found in Mexican-American women and men, re-
spectively (6). Although these differences may be
due to variations in the survey method and the
selection of the population, two recent reports have
shown the validity and, thus, comparability of epi-
demiological necropsy studies by demonstrating
reasonable similar rates of GD to those obtained by
ultrasonagraphic screening of large general popula-
tions (14, 15). A genetic predisposition to GD has
been suggested by other studies performed in Mex-
ican-American individuals (16); even after control-
ling for other risk factors, the probability of devel-
oping GD is greater in this population (17).

Compared to non-Hispanic whites in the United
States, increased levels of triglycerides and de-
creased concentration of high density lipoproteins
have been found in Mexican-Americans (18). Inter-
estingly, the prevalence of coronary heart disease
has been persistently low in the autopsied popula-
tion used in this study. It is possible that the higher
prevalence of GD in Mexican-Americans than in
Mexicans results from changes in life patterns of the

<table>
<thead>
<tr>
<th>Age group</th>
<th>Male</th>
<th>%</th>
<th>Female</th>
<th>%</th>
<th>Total</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>20–29</td>
<td>4310</td>
<td>1.29</td>
<td>31/279</td>
<td>11.11</td>
<td>35/589</td>
<td>5.94</td>
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<tr>
<td>30–39</td>
<td>21/390</td>
<td>5.38</td>
<td>44/350</td>
<td>12.57</td>
<td>65/740</td>
<td>8.78</td>
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<tr>
<td>40–49</td>
<td>33/453</td>
<td>7.28</td>
<td>79/395</td>
<td>20.00</td>
<td>112/648</td>
<td>13.20</td>
</tr>
<tr>
<td>50–59</td>
<td>36/353</td>
<td>10.19</td>
<td>76/352</td>
<td>21.59</td>
<td>112/705</td>
<td>15.88</td>
</tr>
<tr>
<td>60–69</td>
<td>48/334</td>
<td>14.37</td>
<td>83/311</td>
<td>26.68</td>
<td>131/645</td>
<td>20.31</td>
</tr>
<tr>
<td>70–79</td>
<td>26/170</td>
<td>15.38</td>
<td>52/183</td>
<td>28.41</td>
<td>78/353</td>
<td>22.09</td>
</tr>
<tr>
<td>&gt;80</td>
<td>7/43</td>
<td>14.28</td>
<td>32/71</td>
<td>45.07</td>
<td>39/120</td>
<td>32.50</td>
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<tr>
<td>Total</td>
<td>175/2059</td>
<td>8.49</td>
<td>397/1941</td>
<td>20.45</td>
<td>572/4000</td>
<td>14.30</td>
</tr>
</tbody>
</table>

*GD = gallstone disease; M/F = male/female.

Table 2. Prevalence of Gallstone Disease in Mexico (1953–1988)*

<table>
<thead>
<tr>
<th>Years</th>
<th>Necropsies</th>
<th>With GD</th>
<th>M/F Ratio</th>
<th>Prevalence (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1953–59</td>
<td>1000</td>
<td>122</td>
<td>43/79</td>
<td>1:1.8</td>
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<tr>
<td>1960–69</td>
<td>1000</td>
<td>155</td>
<td>49/106</td>
<td>1:2</td>
</tr>
<tr>
<td>1970–79</td>
<td>1000</td>
<td>137</td>
<td>45/92</td>
<td>1:2</td>
</tr>
<tr>
<td>1980–88</td>
<td>1000</td>
<td>158</td>
<td>38/120</td>
<td>1:3</td>
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<tr>
<td>Total</td>
<td>4000</td>
<td>572</td>
<td>175/397</td>
<td>1:2</td>
</tr>
</tbody>
</table>

*GD = gallstone disease; M/F = male/female.