Gallstone disease in the Himalayas (Sikkim and North Bengal): causation and stone analysis

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Objectives: To know the extent of gallstone disease in Sikkim and North Bengal. Methods: 487 (14.4%) patients with gallstones were diagnosed among 3375 patients with dyspepsia in 3 years. All patients with gallstone were evaluated based on a predefined questionnaire. Abdominal sonography was performed and obesity index was calculated. Gallstones retrieved at surgery from 29 patients were subjected to infra-red spectroscopic analysis. Results: The patients with gallstones included 375 women with average age of 40 years and 112 men with average age of 48.7 years. 15.7% of the women were nulliparous, 12% had one child and 23% had two children each. 73% of patients were of normal weight and 97% were non-vegetarians. Only cholesterol gallstones were found in these patients. Conclusions: Gallstones are common in Sikkim and North Bengal among dyspeptics. A majority of patients are of normal weight. The disease occurs a decade earlier in women, most of whom have only up to two children. [Indian J Gastroenterol 1998; 17: 87-89]

Key words: Gallbladder disease, cholesterol stones

Gallstones affect 10-20 percent of the world’s population and cholecystectomy is the commonest major abdominal operation performed in Western countries.1-2 A few autopsy studies and clinical reports in the 1960s indicated that gallstones were prevalent in Northern India, the estimated prevalence rate being 3%-5% of the general population.3,4,5 An epidemiological study in 1966 demonstrated in railroad workers that gallstones occurred seven times more frequently in North Indians than in South Indians.6

There is an impression in Western literature that most gallstones in South-East Asia including India are pigment stones.7,8 The early reports of gallstone disease in India are mostly from urban tertiary hospitals.9,10 The description of gallstones obtained at operation and the results of their crude analysis suggest that the majority are rich in cholesterol.11,12

We studied the prevalence of gallstone disease and associated etiopathogenic factors in patients from a rural population in Sikkim and North Bengal.

Methods

Clinical parameters were recorded in all the patients on the basis of a predefined proforma. The questionnaire defined personal particulars, habits, parity (women) and medical history including previous surgery. Patients who had undergone cholecystectomy were excluded. All available previous medical records were assessed. A search for inpatient records was made in those with previous hospitalization. Detailed history of dietary calories was taken. Weight in kilograms and height in centimeters were recorded. The obesity index was calculated using a modification of Brocas index as 100 X weight/standard weight, where standard weight is 0.9 X (height-100). Obesity was defined as index value more than 120 percent of standard weight.13

Real-time ultrasonography was performed with a linear array probe of 3.5 MHz (Sonoline SL2, Siemens); all patients were studied in the supine, left lateral decubitus and erect positions. Gallstones were obtained at cholecystectomy and infra-red spectroscopic analysis was carried out at the Laboratory of Clinical Chemistry, Ludwig-Maximilians University, Germany.

Results

From June 1993 to June 1996, 487 patients (14.4%) with gallstones were detected among 3375 patients with dyspepsia seen in our departments. These included 375 women with mean age 40 years and 112 men with mean age 48.7 years (Table). The dyspeptic patients without gallstone included 2325 (80.5%) women with a mean age of 31 years and 563 men with mean age of 39 years.

Fifty nine (15.7%) women with gallstones were nulliparous; 17(28.8%) of them were aged between 10-19 years in comparison to 744 (32%) nulliparous women without gallstones (Fig).

Three hundred and fifty seven (73.3%) gallstone patients had normal body mass index, in comparison to 2455 (85%) without gallstones. Four hundred and seventy two (96.9%) patients with gallstones were non-vegetarians in comparison to 2725 (94.4%) without gallstones. One hundred and twelve (23%) consumed alcohol, including home-made millet brew, in comparison to 194 (6.7%) without gallstones.

Table: Age- and sex-distribution of gallstone patients

<table>
<thead>
<tr>
<th>Age (years)</th>
<th>Male (n=112)</th>
<th>Female (n=375)</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-19</td>
<td>6 (5.4)</td>
<td>17 (4.5)</td>
</tr>
<tr>
<td>20-29</td>
<td>29 (25.9)</td>
<td>94 (25.1)</td>
</tr>
<tr>
<td>30-39</td>
<td>26 (23.2)</td>
<td>102 (27.2)</td>
</tr>
<tr>
<td>40-49</td>
<td>20 (17.9)</td>
<td>71 (18.9)</td>
</tr>
<tr>
<td>50-59</td>
<td>11 (9.8)</td>
<td>39 (10.4)</td>
</tr>
<tr>
<td>60-69</td>
<td>13 (11.6)</td>
<td>34 (9.1)</td>
</tr>
<tr>
<td>Above 69</td>
<td>7 (6.3)</td>
<td>18 (4.8)</td>
</tr>
</tbody>
</table>

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Gallstone composition

Infrared spectroscopic analysis of gallstones from 29 patients showed that cholesterol was the main component (70%-100%). Calcium bilirubinate was detected in 22 patients with contents of 1% to 15%. Three stones showed some protein (mucin), in amounts varying from 2% to 15%. Calcium carbonate was seen in four stones (10% to 21%) and calcium palmitate in a single stone (10% to 20%).

Discussion

Our data suggest that approximately 15% of subjects with dyspepsia in Sikkim and North Bengal area have gallstones. Earlier studies mentioned high prevalence of gallstone disease in Northern India. Most gallstone prevalence studies have been surgical or autopsy-based. The present ultrasonographic study is the first of its kind from rural Sikkim and North Bengal. Our study was hospital-based and all individuals above 10 years were included. The prevalence of gallstone disease in our study was three times greater in women than in men and increased with age in both sexes, reaching a maximum in the third decade in men and fourth decade in women. Gallstones were present in 29.7% of patients with dyspepsia in a study conducted at New Delhi. They observed a preponderance of women in their third and fourth decades of life. Multiple stones were more frequent than solitary.

Fifty nine (16%) women with gallstones were nulliparous including 17 aged 10 to 19 years. A positive relation with parity was noted in most previous studies. Non-vegetarian diet and obesity did not appear to be important risk factors for gallstones in our study. This observation is similar to data from Pima Indians, middle-aged women in Sweden, and the adult population in Kashmir, but in contrast with many other studies.

Only cholesterol stones were seen, as in an earlier study from Northern India where 94% were cholesterol stones. This frequency distribution is similar to that observed in the West and contrary to the long-held belief that pigment stones were the dominant type of gallstones in South-East Asia.

In conclusion, gallstones are common in Sikkim and North Bengal among dyspeptics. The stones are cholesterol stones. A majority of patients are of normal weight, and the disease occurs a decade earlier in women. Gallstones were also present in the age group of 10-19 years.

References

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BOOK REVIEW

Hepatitis 'E' Virus: Epidemiology to Candidate Vaccine. B N Tandon, S K Acharya, Editors. New Delhi: Dr S K Acharya, Tropical Gastroenterology, 152 pages, Rs 300 ($20)

The discovery of the infectious agent responsible for most major water-borne epidemics of hepatitis especially in the developing world and its identification as an RNA virus, christened hepatitis E virus, have all occurred within the last decade. In fact, the amount of information that has so quickly accumulated made a book on this topic a necessity. That the book should be edited and published by two eminent scientists from the developing world, particularly the Indian subcontinent which has been the site of the largest epidemics, is befitting.

With its attractive and handy appearance, the book looks approachable. The introduction by Prof B N Tandon brings home the message of misplaced health priorities in economically weaker nations and outlines the major developments in our understanding of the hepatitis E virus.

Sifting through the husk pile of 22 chapters, around five are immensely educative for medical students; they deal with the biological aspects of the virus, the host responses, diagnosis, and clinical features of this infection, and an outline of the possible leads to a vaccine. The chapter on histology deserves praise — apart from being well written, the color photomicrographs are extremely illustrative and should be useful to readers. The remaining chunk comprises papers from individual centers describing how prevalent and important this infection is in their territories. In fact, due to this compilation of papers, the introduction of each seems to be a wasteful repetition, and they do not fit smoothly as chapters of a well-edited text-book.

The book is a praiseworthy attempt to compile up-to-date information on the hepatitis E virus and is based on the proceedings of an international thematic conference held in Delhi October 14-15, 1995. As the subject is a rapidly changing one, frequent updating of the book will be imperative to maintain its shelf-worthiness. It should serve as a handy tool to all medical workers who deal with this ubiquitous virus or its effects on the human host, and also to health workers who are critically placed to prevent this infection in the community.

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