Clinical Study of 457 Cholecystectomy Cases in a Private Hospital

SUWIT CHUNHAMANEEWAT, M.D.*,
SOMPONE PUNYAGUPTA, M.D.*

Abstract

This is a retrospective study of 457 cases of cholecystectomized patients, who were admitted to Vichaiyut Hospital from 1970 to 1996. The ratio of male to female was 1 : 1.6 and the most common age range was 51-60 years. 45.3 per cent of patients were older than 60 years. Associated or underlying diseases were highly prevalent (81.6%). Diabetes mellitus, cardiovascular disease and liver disease were the three most common associated diseases. In acute cholecystitis the pathological findings were in accordance with clinical feature in only 46.2 per cent but in chronic or subsided cholecystitis pathology confirmed in 97.5 per cent. Carcinoma of the gallbladder was found in 0.9 per cent. Clinical diagnosis of cholecystitis was incorrect in 1.1 per cent.

Multiple gallstones were found in 67.3 per cent, single stone in 23.5 per cent, sand stones in 2.1 per cent and acalculous cholecystitis in 7.1 per cent. Combined gallstones and CBD stones were found in 9.8 per cent. Enteric bacteria were isolated from the bile in 32.5 per cent and in acute cholecystitis similar organisms were isolated from both bile and blood cultures in 12.8 per cent.

Morbidity rate of cholecystectomy was 7.6 per cent, the most common complication was perioperative infection in 3.5 per cent. It is interesting to find that atelectasis was recognized only in 2 out of 57 laparoscopic cholecystectomy. Mortality rate was low (0.66%).

Key word : Cholecystectomy, Gallstones, Sepsis

The overall incidence of gallstones among the Thais has increased from 2.6 to 3.1 per cent since two decades ago[1,2]. Both acute and chronic inflammation of gallbladders are almost always associated with the presence of gallstones[3]. About 85-95 per cent of inflamed gallbladder had calculi[4]. It is generally accepted that the treatment of choice for gallstones is cholecystectomy, except in deteriorating clinical conditions the operation may be delayed or even postponed. Cholecystectomy

* Vichaiyut Hospital, 114/4 Setsiri Road, Phyathai, Bangkok 10400, Thailand.

may be done as emergency, early, delayed or elective surgery, depending on the patient's condition(5).

This study is a retrospective analysis of 457 cholecystectomy cases in the hospital to determine the overall clinical features and to compare with other reports in Thailand as well as those from other countries.

MATERIAL AND METHOD

This study was performed by analysing medical records of all patients who were subjected to gallbladder operation in Vichaiyut Hospital from January 1985 to March 1996 (421 cases) plus another 36 cases, who were admitted from 1970 to 1984. There were altogether 457 cases.

Various aspects of the clinical data namely: yearly incidence, sex, age, residence, associated diseases, pathological report, methods of cholecystectomy, bacteriological isolations and complications were analysed.

Based on the clinical presentations on admission, we divided the patients into 3 groups :

Group I : Acute cases (175 cases), are those who had symptoms and signs of acute cholecystitis namely : acute onset of fever, abdominal pain as well as tenderness at the right upper quadrant and abnormal laboratory tests. The surgery was performed as urgent, early or delayed cholecystectomy depending upon the surgeon's decision.

Group II : Chronic cases (162 cases), are those who presented with a history of chronic indigestion, gallstones associated with slight abdominal pain at the right upper quadrant on admission and surgery was performed.

Group III : Elective cases (120 cases), are those who had been treated for gallstone cholecystitis and elective surgery was done at a convenient time.

RESULTS

Detailed study from medical records of 457 patients revealed that the prevalence of cholecystectomy during the 9 year period (1980 to 1988) was 19 cases per year in the hospital of 60 beds and later in the 7 year period from 1989 to 1995 the operative prevalence was 39 cases per year in the hospital of 110 beds. There were 176 males and 281 females, male to female ratio was 1 : 1.6 and females predominated in all age groups (Table 1).

The age range of the patients was 21 years to 94 years. The youngest patient was a 21 year old female, the oldest patient was a 94 year old male. 45.3 per cent of patients were older than 60 years, only 1.5 per cent were below 30 years of age. The most common age range (26.3%) was 51-60 years. 336 cases (73.5%) were Bangkok residents and the remainder were from other parts of the country except for 9 foreigners (2%) from Asean countries.

373 cases (81.6%) had underlying or associated diseases, which are shown in Table 2. The five most common diseases were : diabetes mellitus in 166 cases (36.3%), hypertension in 123 cases (26.9%), heart diseases in 86 cases (18.8%), liver diseases in 62 cases (13.6%) and metabolic disorders in 62 cases (13.6%). CBD stones were found as the eighth common underlying disease in 9.8 per cent.

The correlation between clinical diagnosis and pathological finding was analysed. In 175 cases

Table 1. Age and sex incidence of 457 cholecystectomy cases.

Age (year)	Total	Male	Female	Male : Female
21-30	7	3	4	1 : 1.3
31-40	48	14	34	1 : 2.4
41-50	75	28	47	1 : 1.7
51-60	120	55	65	1 : 1.2
61-70	85	36	49	1 : 1.4
71-80	95	29	66	1 : 2.3
81-90	24	9	15	1 : 1.7
91-100	3	2	1	1 : 0.5
Total	457	176	281	1 : 1.6

diagnosed as acute cholecystitis : gallbladder pathology showed acute inflammation in 81 cases (46.2%), chronic inflammation in 87 cases (49.7%), and carcinoma of gallbladder in 3 cases. In 162 chronic cholecystitis cases : pathological report revealed chronic inflammation in 158 cases (97.5%), acute inflammation in 3 cases (1.8%) and carcinoma of the gallbladder in 1 case. In 120 cases who underwent elective surgery : the pathological report revealed chronic inflammation in 117 cases (97.5%), and acute inflammation in 2 cases (1.6%). Carcinoma of the gallbladder was found in 4 cases : adenocarcinoma in 3 cases and squamous cell carcinoma in another case, all were female, aged 78-91 years. Out of 457 cholecystectomy cases, the diagnosis of gallbladder disease was incorrect in 5 cases (1.1%) : by being acute appendicitis in 4 cases and carcinoma of the appendix in another case.

The conventional open cholecystectomy was performed in 400 cases (87.5%) and laparoscopic cholecystectomy which was started in 1992 was done in 57 cases (12.5%). Out of 336 patients of whom the information on gallstones were available : single stone was found in only 79 cases (23.5%), multiple stones in 226 cases (67.3%), sand stones in 7 cases (2.1%), and acalculous cholecystitis in 24 cases (7.1%). (Table 3) Combined gallstones and common bile duct (CBD) stones were found in 33 cases (9.8%) only gallstones in 279 cases (83.1%) and only CBD stones in 5 cases (1.5%). Out of 336 cases CBD stones were found in 38 cases (11.3%). (Table 4)

The results of bile cultures were available in 345 cases and 157 organisms were isolated from 112 cases (32.5%). Thirty-two bile samples (28.6%) had multiple orgainisms. Positive bile culture was found in : 51.1 per cent of acute cholecystitis cases, 19.7 per cent of chronic cholecystitis and 19.5 per cent of elective surgery cases. The five most common bacteria were E. coli 31.8 per cent, Klebsiella species 19.7 per cent, Streptococcus group D 12.7 per cent, Enterobacter species 8.9 per cent and Staphylococcus coagulase negative 7.6 per cent. Blood cultures were performed in only 86 cases who presented with severe cholecystitis and bacteria were isolated in 11 cases (12.8%) with 14 organisms. The most common organism was E. coli (50%). Details of the study will be seperately reported.

Talbe 2. Associated diseases in 457 cholecystectomy patients.

Associated disease	Case	%
Diabetes mellitus	166	36.3
Hypertension	123	26.9
Heart diseases	86	18.8
Liver diseases	62	13.6
Metabolic disorders	62	13.6
Diseases of urinary system	55	12
Gastrointestinal disorders	47	10.2
CBD stones	45	9.8
Chronic lung diseases	40	8.7
Neoplasms	35	7.7
CNS disorders	17	3.7
Hematologic disorders	10	2.2
Diseases of thyroid gland	10	2.2
Autoimmune diseases	6	1.3
Bone and joints diseases	5	1.1
Psychiatric disorders	2	0.4
Miscellaneous	9	2

Table 3. Character of gallstones, compared with other studies in Thailand.

Gallstones	Vichaiyut Hospital		Poshakrishna[7] (1971)		Juttijudata[8] (1984)	
	No. case	%	No. case	%	No. case	%
Single stone	79	23.5	10	10		
Multiple stones	226	67.3	82	82	109	94.8
Sand stones	7	2.1	5	5		
Acalculous (no stone)	24	7.1	-		6	5.2
No report			3	3		
Total	336	100	100	100	115	100

Table 4. Prevalence of gallstones, common bile duct stones and acalculous cholecystitis in 4 studies in Thailand.

	Vichaiyut Hospital		Poshakrishna[7] (1971)		Pausawasdi[9] (1979)		Juttijudata[10] (1985)	
	No. case	%	No. case	%	No. case	%	No.case	%
Total cases	336	100	100	100	328	100	109	100
Gallstone only	279	83.1	90	90	247	75.3	30	27.5
Gallstone with CBD stone	33	9.8	10	10	54	16.5	30	27.5
CBD stone only	5	1.5	-	-	22	6.7	36	33
Acalculous cholecystitis	24	7.1	-	-	-	-	-	-

Table 5. Morbidity and mortality of 457 cholecystectomy.

Total cholecystectomy 457 cases			Laparoscopic cholecystectomy 57 cases	Conventional cholecystectomy 400 cases
Complication	case	%	Complication (case)	Complication (case)
Infections	16	3.5	2	14
Cardiovascular complications	6	1.3	-	6
Respiratory complications	4	0.9	2	2
GI complications	2	0.4	-	2
Urinary complications	2	0.4	-	2
Others	5	1.1	-	5
Morbidity rate	35	7.6	4 (7%)	31 (7.8%)
Mortality rate	3	0.66	0	3 (0.75%)

Mortality and morbidity of 457 cholecystectomy cases were analysed as shown in Table 5. Complications occurred in 35 cases (7.6%). Infection was most common in 16 cases (3.5%) namely : lung infection in 6 cases, wound infection in 6 cases, phlebitis in 3 cases and urinary tract infection in one case. Cardiovascular complication was found in 5 cases namely : congestive heart failure in 3 cases, myocardial infarction in 2 cases and bradycardia in one case. Respiratory complication was noted in 4 cases namely : atelectasis in 2 laparoscopic cholecystectomized patients, acute respiratory failure in one case and laryngeal edema in one case. Gastrointestinal complication was recognised in 2 cases due to : gastrointestinal bleeding and diarrhea. Urinary complication was seen in 2 cases namely : acute tubular necrosis and urinary retention. Other complications were anemia in 2 cases, psychosis in 2 cases and depression in one case.

There were 3 fatalities (mortality rate 0.66%). All of them were old (65, 69 and 84 years) who had diabetes mellitus and cirrhosis of the liver. One case underwent incidental cholecystectomy during the gastrectomy for pyloric obstruction and developed sepsis. Another patient died of uncontrolled bleeding from coagulation defect following fulguration for bleeding radiation cystitis. The third patient who had decompensated liver cirrhosis died of uncontrolled bleeding following cholecystectomy.

DISCUSSION

This study was done from 1970 to 1996, a span of 26 years and investigation using imaging ultrasonography has been available since 1982. The imaging is much more sensitive and specific for the diagnosis of gallbladder diseases than the conventional cholecystogram (95% to 65%). False positive

and false negative were found in 5 per cent[6] and therefore the diagnosis of gallstone cholecystitis has significantly increased compared to the past. However, in this study the diagnosis of gallstone cholecystitis was incorrect in only 5 cases (1.1%), all of whom had their diagnosis made with imaging devices.

In this study the male to female ratio was 1 : 1.6 which is similar to other studies in the country[7,9]. With regard to the age incidence, the most common age group was 51-60 years, which is also similar to other reports among the Thais[7,9]. Gallstones among those aged under 30 years was found only in 1.5 per cent (7 cases), which is lower than the study of Pausawasdi et al[9] (8.3%). This may be explained by the difference in the demography of the patients who attended private and government hospitals. In this study gallstones in the elderly over 60 years of age was double that of a report from a university hospital[9] (45.3% to 21.5%).

Diabetes mellitus was the most common associated disease in this study (36.3%), compared to 6.6 per cent of Pausawasdi et al[9] which may reflect the difference in the socioeconomic, nutritional status and the higher life span among our patients. It is generally known that gallstones in diabetic patients is double that of non-diabetic patients[5]. Cardiovascular diseases are quite common probably related to the aged and economic status. Chronic liver diseases such as cirrhosis, chronic hepatitis, fatty liver were noted in 13.6 per cent of cases, similar to the metabolic disorders particulary hyperlipidemia which is a well known etiologic factor of gallstones. Common bile duct stones were found in 9.8 per cent of gallstone cholecystectomized cases, which is similar to 10 per cent reported by Poshakrishna et al[7]. Hemolytic disorders were not significant in this study as they were found in only 8 cases. It should be mentioned that patients in this study had many complicated multiple health problems. On the contrary liver flukes and malaria infections which were detected in other studies[7,9] were not found in this study, probably representing the difference in health standards, the living localities and culture between the 2 groups.

Pathological study of the removed gallbladders did not show a good correlation to the clinical diagnosis of acute cholecystitis because the pathology confirmed acute inflammation of the gallbladder in only 46.2 per cent. However, the pathology of the clinically diagnosed chronic cholecystitis and elective cholecystectomy revealed chronic inflammation in almost all (97.5%). In this study carcinoma of the gallbladder was found in 4 cases (0.9%) which is similar to other reports[4,5,7].

Out of 336 cholecystectomies, multiple gallstones were found in 226 cases (67.3%), and single stone in 79 cases (23.5%). Acalculous cholecystitis as confirmed by pathological finding was found in 24 cases (7.1%) which is slightly higher than 5.2 per cent reported by Juttijudata et al[8]. Combined gallstones and CBD stones were found in 9.8 per cent similar to 10 per cent by Poshakrishna et al[7] but Pausawasdi et al[9] and Juttijudata et al [10] found 16.5 per cent and 27.5 per cent respectively. The difference may be explained by the demographic data of the studied population of the latter because many patients came from endemic areas of opisthorchiasis which is known to be a risk factor of CBD stones.

This study revealed positive cultures of the bile in 32.5 per cent, which is similar to the study of Poshakrishna et al (34.2%). The positive bile cultures were found to be more common in acute cholecystitis (51.1%), and acalculous cholecystitis (50%) which is similar to the surgical textbooks[3,5]. In chronic cholecystitis as well as subsided cholecystitis the bile culture was positive in 19.7 per cent and 19.5 per cent respectively, which is lower than 28.6 per cent in a study of elective cholecystectomy by Wongpaitoon et al[11]. The common organisms were enteric bacteria namely E. coli (31.8%), Klebsiella (19.7%), Streptococcus gr D (12.7%) and Enterobacter (8.9%). Associated bacteremia was found in 12.8 per cent of acute cholecystitis cases (11/86) and the most common organism was also E. coli (50%). In 7 cases, the organisms were isolated from both blood and bile cultures, all of them were associated with either diabetes mellitus or common bile duct stones or both.

This study revealed a morbidity rate of 7.6 per cent and a low mortality rate of 0.66 per cent. Conventional cholecystectomy had a morbidity rate of 7.8 per cent and a mortality rate of 0.75 per cent, compared to the laparoscopic cholecystectomy which had a slightly lower morbidity rate of 7.0 per cent and without mortality, this probably reflects the patients selection in laparoscopic cholecystectomy. It is interesting to find that atelectasis was

recognized as the respiratory complication in 2 cases of laparoscopic cholecystectomy, and none to the conventional surgery. It may be explained by the intraabdominal air inflation during laparoscopic procedure.

There were 3 fatalities (mortality rate 0.66%), which is acceptable according to the universal census[3-5,12]. It is generally known that the most common cause of death is sepsis, however, in this study infection was found as a cause of death in only one case in a cirrhotic and diabetic patient who had leakage of gastrojejunostomy for pyloric obstruction which was done at the same setting as cholecystectomy. The main cause of death in our series was due to coagulation defect with uncontrolled bleeding in cirrhotic and diabetic patients.

(Received for publication on February 10, 1998)

REFERENCES

1. Stitnimarnkarn T. Gallstones in autopsy. Siriraj Hosp Gazette 1966; 18: 7-12.
2. Prathnadi P, Miki M, Suprasert S. Incidence of cholelithiasis in the Northern part of Thailand. J Med Assoc Thai 1992; 7: 462-70.
3. Schwartz SI. Principles of surgery. 6th ed. New York: Mc.Graw-Hill Inc., 1994: 1367-99.
4. Schwartz SI. Principles of surgery. 2nd ed. New York: Mc.Graw-Hill Inc., 1974: 1233-44.
5. Isselbacher KJ, Braunwald E, Wilson JD, et al. Harrison's principles of internal medicine. 13th ed. New York: Mc.Graw-Hill Inc., 1994: 1504-12.
6. Middleton WD. Right upper quadrant pain. RSNA Special Course in Ultrasound 1996: 49-58.
7. Poshakrishna U, Tonmukayakul A. A clinical study of 100 cholecystectomy cases. Siriraj Hosp Gazette 1971; 23: 120-35.
8. Juttijudata P, Chiemchaisri C, Palavatana C, Churnratana S. The study of acute non-calculous cholecystitis. J Med Assoc Thai 1984; 67: 268-70.
9. Pausawasdi A, Pausawasdi S, Mahaweero W. Clinical study of gallstones in Thai patients. J Med Assoc Thai 1979; 62: 227-34.
10. Juttijudata P, Palavatana C, Chiemchaisri C, Churnratanakul S. Intrahepatic stones in Thailand. J of Abdominal Surgery 1985; 27: 7-9.
11. Wongpaitoon V, Thuvasethakul P, Kanjanapitak A, et al. The clinical aspects and the composition of gallbladder bile in Thai patients with cholesterol, black and brown pigment stones. The Thai J of Gastroenterology 1995; 1: 48-60.
12. Weatherall DJ, Ledingham JGG, Warrell DA, et al. Oxford Textbook of Medicine. 3rd ed. New York: Oxford Medical Publications, 1996; 1: 2045-9.

การศึกษาทางคลินิกของผู้ป่วย 457 ราย ที่ได้รับการผ่าตัดถุงน้ำดีในโรงพยาบาลเอกชน

สุวิทย์ ชุณหะมณีวัฒน์, พ.บ.,*
*สมพนธ์ บุณยคุปต์, พ.บ.**

รายงานนี้เป็นการศึกษาย้อนหลังของผู้ป่วยที่ได้รับการผ่าตัดถุงน้ำดีที่โรงพยาบาลวิชัยยุทธตั้งแต่ปี พ.ศ. 2513 ถึงปี พ.ศ. 2539 จำนวน 457 ราย

ผลการศึกษา : เป็นชาย 176 คน หญิง 281 คน สัดส่วน ชาย : หญิง 1 : 1.6 อายุที่พบบ่อยที่สุดอยู่ในช่วงอายุ 51-60 ปี ผู้ป่วยอายุน้อยกว่า 30 ปี มีจำนวน 7 คน (1.5%) อายุมากกว่า 60 ปี มีจำนวน 207 คน (45.3%) ผู้ป่วยมีโรคประจำตัวร่วมด้วย ได้แก่ เบาหวาน 36.3%, โรคความดันโลหิตสูง 26.9%, โรคหัวใจ 18.8% โรคตับและโรคทางเมตาบอลิสม์ อย่างละ 13.6%

การผ่าตัดพบเป็นนิ่วก้อนเล็ก ๆ หลายก้อน 67.3%, นิ่วก้อนเดียว 23.5%, เป็นเหมือนเม็ดทราย 2.1% และถุงน้ำดีอักเสบโดยไม่มีนิ่ว 7.1% พบนิ่วในท่อน้ำดีร่วม 11.3% โดยเป็นนิ่วในท่อน้ำดีร่วมอย่างเดียว 1.5% และนิ่วในท่อน้ำดีร่วมกับนิ่วในถุงน้ำดี 9.8%

การศึกษาทางพยาธิวิทยาพบว่า ในผู้ป่วยที่ได้รับการวินิจฉัยทางคลินิกว่าเป็นถุงน้ำดีอักเสบเฉียบพลันพบว่าเป็นการอักเสบเฉียบพลันตรงกันเพียง 46.2% เป็นถุงน้ำดีอักเสบเรื้อรัง 49.7% แต่ในผู้ป่วยที่ได้รับการวินิจฉัยว่าเป็นถุงน้ำดีอักเสบเรื้อรัง และผู้ป่วยที่นัดมาผ่าตัดถุงน้ำดีพบว่าเป็นถุงน้ำดีอักเสบเรื้อรังตรงกันถึง 97.5% พบมะเร็งของถุงน้ำดี 4 ราย (0.9%) มีการวินิจฉัยโรคผิดเป็นโรคของไส้ติ่งโดยไม่มีนิ่วถุงน้ำดี 5 ราย (1.1%)

การเพาะเชื้อจากน้ำดีพบว่า มีแบคทีเรียขึ้น 32.5% ส่วนใหญ่เป็นเชื้อในลำไส้ เช่น E.coli (31.8%), Klebsiella (19.7%), Strep. gr. D (12.7%) และ Enterobacter (8.9%) ในผู้ป่วยถุงน้ำดีอักเสบเฉียบพลันพบเชื้อแบคทีเรียในเลือดร่วมด้วย 12.8%

การผ่าตัดพบโรคแทรกซ้อนเล็กน้อย 35 ราย (7.6%) ส่วนใหญ่เกิดจากการติดเชื้อที่ต่าง ๆ 16 ราย (3.5%) และมีผู้ป่วยถึงแก่กรรม 3 ราย (อัตราการตาย 0.66%) เป็นผู้ป่วยสูงอายุที่เป็นโรคเบาหวานและโรคตับแข็งร่วมด้วย

คำสำคัญ : นิ่วของถุงน้ำดี, การผ่าตัดถุงน้ำดี, ภาวะติดเชื้อ

* โรงพยาบาลวิชัยยุทธ, 114/4 ถ.เศรษฐศิริ, เขตพญาไท, กรุงเทพฯ 10400