



American Journal of Surgical Research and Reviews (ISSN:2637-5087)



CLINICAL MANIFESTATIONS OF CHOLELITHIASIS IN QUITO, ECUADOR. A COHORT STUDY

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ABSTRACT

Introduction: A prospective study was carried out, with the aim of establishing the clinical manifestations of cholelithiasis in the population of Quito, Ecuador.

Methods: During the period from January 2012 to October 2017, 534 patients were referred from different outpatient clinics of the Ecuadorian Institute of Social Security to the Batán Medical Center with the diagnosis of cholelithiasis after a clinical assessment and abdominal ultrasound, to be treated surgically.

Results: Sixty-nine percent of patients were female with a male-female ratio of 1:2.21. Mean age was 44.9 years. Pain was the most common symptom in our study: 95.7%. Among these patients, pain was located in the epigastrium in 49.8%, in the right hypochondrium in 45.1% and only 0.8% had low back pain. Pain ranged from moderate and even severe. The remaining 4.3% of patients had dyspepsia or were asymptomatic.

Conclusions: This finding highlights the fact that epigastric pain must be always considered as a clinical manifestation on cholelithiasis.

Keywords: Cholelithiasis. Clinical Symptoms. Pain epigastric. Pain hypochondrium right.

The authors declare no disclosures

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How to cite this article:

Montalvo-Burbano Mario, Cabrera-Villa Mayra, Pacheco-Ojeda Luis. CLINICAL MANIFESTATIONS OF CHOLELITHIASIS IN QUITO, ECUADOR. A COHORT STUDY. American Journal of Surgical Research and Reviews, 2021, 4:12.



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Introduction

Cholelithiasis is a metabolic disorder characterized by the formation of stones in the gallbladder. The stones are classified according to their composition into cholesterol, biliary pigment and mixed.

It is a very old disease. This clinical entity was already found in Egyptian and Chinese mummies from around 3000 years BC and in America, in Chilean mummies about 300 years BC [1].

Age, sex, obesity and fertility have been traditionally associated with the development of cholelithiasis, to the point that the four F's: Female, Forty, Fat, Fertile have been coined in the English language to define those patients who could develop cholelithiasis [2,3].

This condition is more frequently found in sedentary people and diabetic patients. It is associated with the consumption of hypercaloric diets, dyslipidemia, hyperinsulinism, obesity, metabolic syndrome, use of oral contraceptives, pregnancy, diets to lose weight, total parenteral nutrition, hypothyroidism and post bariatric surgery [4,5,6]. There is also a family trend and higher incidence in certain ethnic conditions such as the American Indians. Chronic alcoholism, cirrhosis, gallbladder polyps, hepatitis C and nonalcoholic fat liver disease have also been found related to the formation of gallstones [8,9,10]. Some studies have described association of bacteria such as *Helicobacter Pylori* and cholelithiasis [11,12].

Epidemiology

Cholelithiasis is one of the main problems of abdominal pain worldwide.

Gallstones typically form between 20 and 40 years of age, but become symptomatic much later. Gallstones are present in 10% -15% of the population in western world including the United States, the United Kingdom and other European countries. Ten per cent occur in adults and 20% in people over the age of 65 [13].

In the United States, about 20 million people have cholelithiasis. An estimated 6.3 million men

and 14.2 million women, aged 20 to 74, will have cholelithiasis in this country. More than 700,000 cholecystectomies are performed annually [14].

The highest prevalence worldwide is found among the Pima Indians of Arizona with 50% and among the Mapuche population in Chile with 40%.

Chile is the country with the highest prevalence of gallstones in the world with a global incidence of 30%: 45% in women and 25% in men over 20 years of age [8,15]. In Mexico, the prevalence of cholelithiasis in the general population is 14.3% [5] and in Brazil 9.3% [16].

In the Asian population, the prevalence ranges between 5 and 20% [in the Indian population between 10% and 20%]. There is a low frequency in African blacks, less than 5%, and among the Masái and the Bantú cholelithiasis practically does not exist [17].

In Ecuador, in 2018, cholelithiasis was the first cause of morbidity with 41,355 cases and a rate of 24.29 per 100.000 habitants. It ranked first in women, with 29,478 cases, being more prevalent between the ages of 35 and 54 years, and in men, it ranked third with 11,877 cases. Male/female ratio was 1:2.48 [18].

Diagnosis and treatment

Classically, three clinical presentations appear in cholelithiasis: dyspepsia in 2/3 of the patients, asymptomatic patients that corresponds to around 25%, and the typical painful condition in 10 to 20% of patients [19,20,21]. Most authors consider that abdominal ultrasound is the technique of choice for diagnostic imaging [3,13,19-25].

The American Society of Gastrointestinal and Endoscopic Surgeons [SAGES], the European Association for the study of the Liver [EASL], National Institute for Health and Care Excellence [NICE], World Society of Emergency Surgery [WSES] and most authors recommends cholecystectomy for symptomatic cholelithiasis. In general, laparoscopic cholecystectomy is the treatment of choice for symptomatic gallstone

disease and currently 90% of cholecystectomies are performed by this approach [8,13,21,24-31].

The aim of this study was to establish the clinical manifestations of cholelithiasis in the population of Quito, Ecuador, which could be different from those reported in other countries of Latin America and worldwide.

Materials and Methods

This was a prospective, descriptive and longitudinal study carried out on 534 patients referred from the different clinics of the

Ecuadorian Institute of Social Security in the city of Quito, Ecuador, to the outpatient clinic of the Batan Medical Center. These patients were referred for surgery with a diagnosis of cholelithiasis from January 2012 to October 2017. A previous clinical and sonographic assessment had been done in all the patients. Patients were admitted to the Medical Center to undergo laparoscopic cholecystectomy. The following parameters were analyzed: age, gender and clinical presentation including dyspepsia, location of the pain, etc.

Table 1. Distribution by gender.

Sex	N	Percentage
female	368	69%
male	166	31%
Total	534	100%

Table 2. Age and male-female ratio in several studies worldwide.

Study	Period	Sample number	Average age	Male:Female Radio
Rathod [17]	2000-2002	60	47	1:2.75
Berhane [32]	2009	220	45	1:2.57
Khan [37]	2014-2016	101	49	1:2.18
Almora [36]	2006 -2008	688	49	1:2.11
Bansal [33]	2010-2014	104	43	1:1.88
Venkatachalam [34]	2014-2016	102	49	1:1.61
Shabanzadeh [35]	2000-2010	56	47	1:1.22
Montalvo-Burbano	2012-2017	534	44.9	1:2.21

Table 3. Presenting symptoms according to several studies worldwide.

Study	Period	Sample number	Epigastric pain	Hypochondrium right pain	Upper abdomen pain	Low back pain	Dyspepsia	Asymptomatic
Venkatachalam [34]	2014-2016	102	54%	43%		3%		
Shabanzadeh [35]	2000-2010	56	52%	14%	20%		7%	
Bernahe [32]	2009	220	44%	51%		5%		
Almora [36]	2006-2008	688	19%	30%			51%	
Montalvo-Burbano	2012-2017	534	49.8%	45.1%		0.8%	1.9%	2.4%

Results

Most patients were female: 368 [69%] and sex ratio was 2.2:1. [Table 1]. Mean age was 44.9

years [range 15-87]. In half of the patients [48.1%] age ranged from 31 to 50 years. [Fig 1]

Women were somewhat younger: mean age 43 years for women and 47 years for men.

Interestingly, we had more patients with pain in the epigastrium [49.8%] than in the right hypochondrium [45.1%]. Dyspepsia and low back pain were uncommon [2.7%] [Fig 2].

Epigastric pain was more common in all tranches of age except the decade from 21 to 30 years. Epigastric and right hypochondrium pain were noted with the same frequency in patients between the ages of 31 and 40 years. [Fig 3]. Thirteen asymptomatic patients [2.4%] were referred to surgery for associated comorbidities.

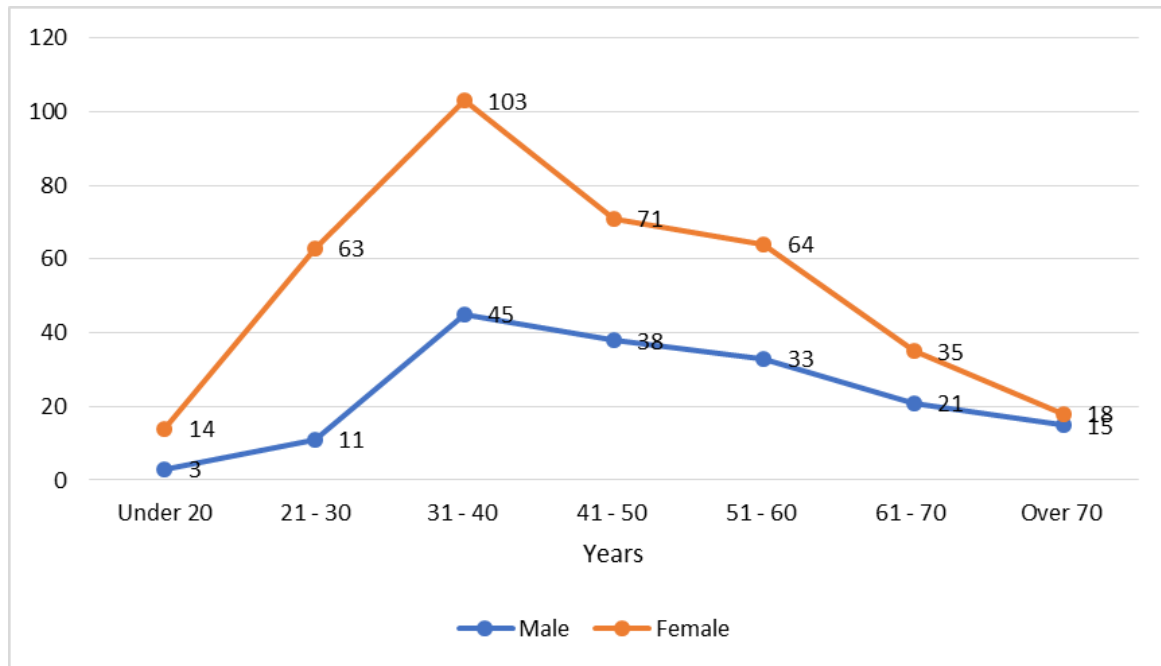


Fig 1. Age and gender of cholelithiasis patients.

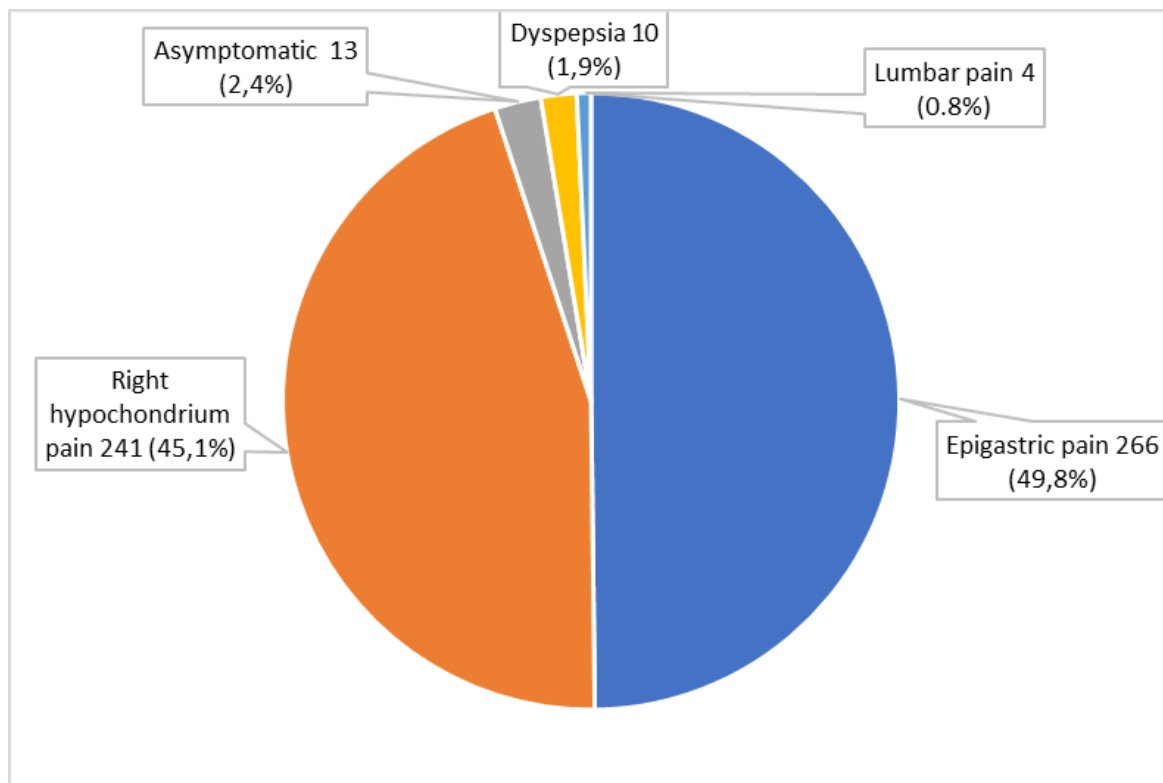


Fig 2. Cholelithiasis clinical presentation.

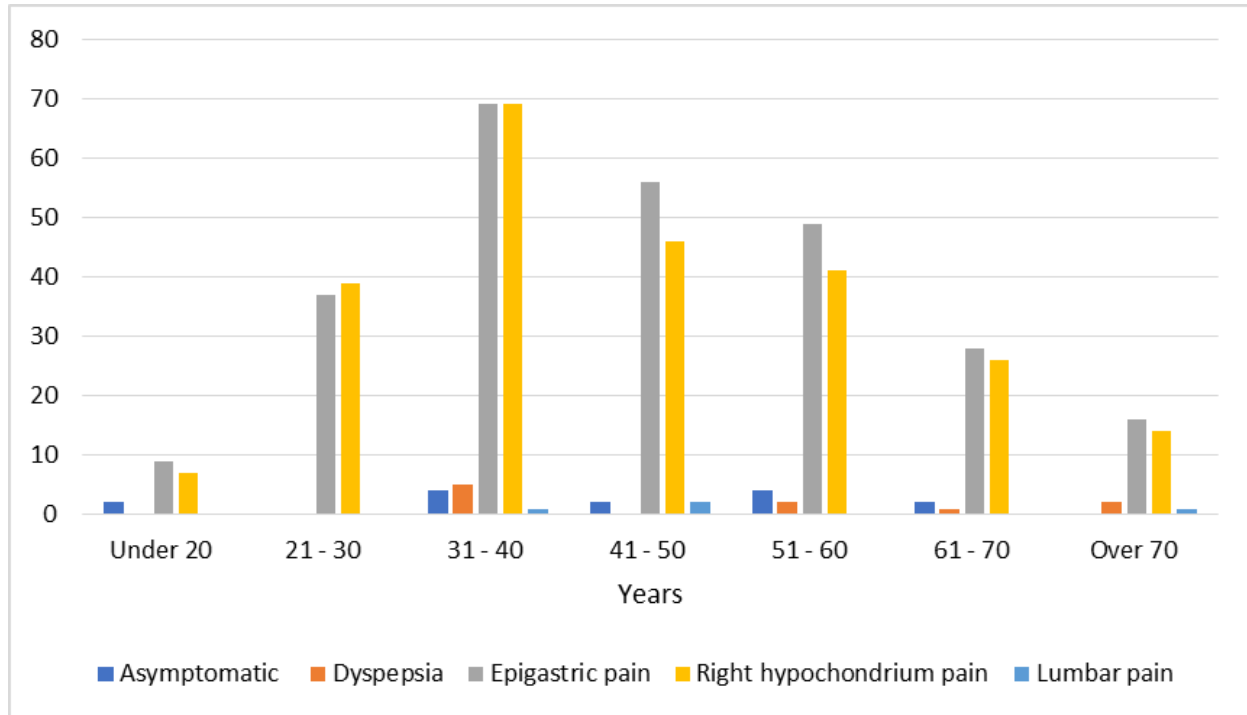


Fig 3. Clinical presentation of cholelithiasis according to age ranges.

Discussion

No previous large studies about clinical presentation of cholelithiasis have been reported in Ecuador despite the high frequency of this condition in this country.

Gender distribution is one of the most important clinical characteristics of cholelithiasis as this condition is more frequent in women. In our series, 69% patients were women and male/female ratio was 1:2.21. Similar gender ratios have ranged between 1:1.22 to 1:2.75 have been reported in several studies from Europe, Asia and Latin America [2,17, 28,31-37] [Table 2].

Mean age in our study was 44.9 years. In European, Asian and Latin American series, age has ranged from 43 to 49 years, similarly to our study [2,17,28,31,34-38]. In all series, the most frequent decade of presentation was between 40 and 50 years.

Pain, the main symptom in patients with cholelithiasis usually occurs in the right hypochondrium or in the epigastrium [dermatomes 8 and 9] radiating to the lumbar region, shoulder or scapula and is due to temporary obstruction of the cystic duct by a

stone. This symptomatology is usually associated with nausea and vomiting, as well as general symptoms such as diaphoresis, poor general condition and dizziness. This clinical presentation appears abruptly, after a fat intake, has a maximum duration of 4 hours and gradually disappears with or without medication, once the gallbladder stops maintaining contraction and the stone that produced the temporary obstruction returns to the gallbladder lumen, although occasionally if the cystic duct is wide, a small stone can pass into the main bile duct. Usually moderate to severe constant pain without fluctuations not relieved by intestinal movements reaches a peak in one hour [9,14,39]. Many times, pain in the epigastrium is considered by the surgeon and the patient as a clinical manifestation of peptic acid disease rather than cholelithiasis.

According to the Rome criteria, biliary colic is defined as a severe constant pain, lasting 15-30 minutes or more, generally located in the epigastrium and / or right upper quadrant. Biliary colic defined according to the Rome criteria has been shown to be insufficiently accurate for the diagnosis of symptomatic cholelithiasis [27].

The location of pain in the abdomen as a symptom of cholelithiasis has been controversial. We found four studies in which the exact location of pain was analyzed, either in the epigastrium or the right hypochondrium [31,34,35,36]. In two of these studies [34,35] epigastrium was the most frequent location of pain in cholelithiasis. Our results agree with them. In other papers, the location of pain in cholelithiasis has been described as pain in the right upper quadrant [17,22,40], the upper abdomen [33,37] or merely as abdominal pain [19,37] [Table 3].

Dyspepsia is the term used to describe difficult digestion. It is a vague symptom in which bloating, feeling of early fullness, lack of appetite, diarrhea, heartburn, nausea and vomiting, generally after a fatty meal, can be associated. Dyspepsia was infrequent in our patients as only 2.4% of them presented with symptom. Most series have reported an incidence of 12 to 69% of dyspepsia [33,36,37].

Most authors agree in expectant management of asymptomatic patients with incidental findings of cholelithiasis. Close surveillance is recommended for them. Asymptomatic patients should be operated only if they become symptomatic. According to Heuman [25], cholecystectomy for asymptomatic gallstones may be indicated in the following patients: those who have a nonfunctional or calcified [porcelain] gallbladder on imaging studies and are at high risk of gallbladder carcinoma, those with spinal cord injuries or sensory neuropathies affecting the abdomen and those with sickle cell anemia in whom the distinction between painful crisis and cholecystitis may be difficult. Included in the study were patients with the following risk factors: cirrhosis, portal hypertension, children, transplant candidates and diabetes with minor symptoms. As well as patients who live in geographical areas far from medical care. We had 13 asymptomatic patients representing 2.4%. They were referred for surgery for presenting comorbidities.

Conclusions

Pain was the most common symptom in our study: 95.7%. Among these patients, pain was located in the epigastrium in 49.8%, in the right hypochondrium in 45.1% and only 0.8% had low back pain. Pain ranged from moderate to severe. The remaining 4.3% of patients had dyspepsia or were asymptomatic. This finding highlights the fact that epigastric pain must be always considered as a clinical manifestation on cholelithiasis. Our results differ markedly from those studies in which dyspepsia has been the main symptom of cholelithiasis and pain attributed only to 10% to 20% of patients.

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