

Prevalence and Risk Factors Associated with Cholecystitis in Patients from the Eastern Zone of the State of Mexico

Pastor I Díaz-Hernández^{1*}, Luis Cruz-Benítez¹, Moisés Ramírez-Ramírez¹, Sonia R Cortés-Vázquez¹, Maldonado Cisneros Araceli², Carlos Vargas-Bravo¹, García Covarrubias Luís⁴, Rebeca Martínez Quezada³ and Omar E Valencia-Ledezma³

¹General Surgery Department, Hospital Regional de Alta Especialidad de Ixtapaluca, Carretera Federal México-Puebla Km. 34.5, Pueblo de Zoquiapan, Ixtapaluca 56530, México

²Intensive Care Unit, Hospital Regional de Alta Especialidad de Ixtapaluca, Carretera Federal México-Puebla Km. 34.5, Pueblo de Zoquiapan, Ixtapaluca 56530, México

³Research Unit, Hospital Regional de Alta Especialidad de Ixtapaluca, Carretera Federal México-Puebla Km. 34.5, Pueblo de Zoquiapan, Ixtapaluca 56530, México

⁴Hospital General de México Dr. Eduardo Liceaga. Dr. Balmis 148, Doctores, Cuauhtémoc, 06720 Ciudad de México

*Corresponding author: Pastor I Díaz-Hernández, General Surgery Department, Hospital Regional de Alta Especialidad de Ixtapaluca, Carretera Federal México-Puebla Km. 34.5, Pueblo de Zoquiapan, Ixtapaluca 56530, México

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ABSTRACT

The cholecystitis characterized by being an inflammatory process, related to the presence of stones, in the gallbladder hepatic cholestasis and chronic gallbladder infection. Prevalence may vary, but most of the patients are over 40 years old, at the time of diagnosis. However, within the eastern zone of the Estado de Mexico, reports indicate several cases in adolescents, mainly pregnant women. Therefore in this study, the evaluation of said prevalence was carried out in adolescents, as well as its risk factors. A cross-sectional analytical observational study was conducted, and a data analysis as carried out to show the risk factors, within the study there are patients diagnosed with cholecystitis from august 2015 to august 2018; 1069 patients were included and divided into two groups PT, (over 30 years old) and PA (under 30 years old), of the 5 factors proposed, an analysis was carried out. The pregnancies number was 1.69 ± 1.27 for the group PA and 2.42 ± 1.57 for the group. PT. In the group PA 84 patients (56.37) %, used some type of hormonal contraceptive, and 94 patients (70.97%), reported any history of gallstones in a first-degree relative. The prevalence of cholecystitis in patients under 30 years old in the Hospital Regional de Alta Especialidad de Ixtapaluca, it's 21.42% according those reported, this value shows a high prevalence in this population; overweight and obesity in addition to teenage pregnancies, may have a strong relationship with the development of gallstones lithiasis. Family history and contraceptive use in the development of cholecystitis representative possibly a more relevant risk factor in our young population.

Keywords: Cholecystectomy; Cholecystitis; Young Adult; Prevalence; Risk Factors

Introduction

Acute or chronic cholecystitis is the condition most commonly seen by a specialist in general surgery. According to reports of Instituto Mexicano del Seguro Social (IMSS), more than 200,000 consultations are granted annually for this reason, being the most common cause of attention in General Surgery, therefore cholecystectomy is the intervention most performed by general surgery services and second is general after the caesarean section in the IMSS [1]. In United States it affects more than 20 million Americans annually and represents a direct cost of 6.3 billion dollars for their care [2]. The risk factors, traditionally described for which reference is made to the mnemonics of the four "F". (fat, forty, fertile, female) include individuals over 40 years old of age with obesity (BMI>34 in women; BMI >38 in men), mainly of childbearing age (woman) [3]. Therefore with INEGI, Mexico is going through a demographic transition, due to the introduction of family planning programs and increased opportunities for access to health care services causing a downward trend the birth rate with 2.9 million live birth per year, in the 1990s, they were reduced to 2.2 million live births per year, in 2017, jointly, there has been an increase in cases of cholecystitis in adolescent and young patients. Age is an important risk factor for the development of gallstone disease [4]. Gallstones form between the age of 20 and 40 but become symptomatic much later in the day. Report from developing countries with a [5] more dispersed population have already reported changes in the proportion of adolescents subjected to cholangiopancreatography retrograde endoscopy (CPRE), denoting the prevalence of this disease in this age group. Likewise, the percentage of female patients.

Studies in France showed that the prevalence of gallstone in adolescent population is higher than previously thought Reports of childhood obesity and the use of oral contraceptives, remains latent as strong independent risk factors for gallstone disease, where reports have consistently remained in recent years [5,6]. Recent studies have indicated that cholelithiasis is strongly related to body mass index [7]. This may be due to increased fat intake and less physical activity. In Mexico the prevalence of gallstones is also very common in the population derived from poor eating habits and obesity. Treatment of gallstones depends how much symptoms the patient shows. [8,9], considering the surgical risk, the lack of knowledge of the late physical changes due to gallbladder extraction [10] and the significant increase in the cost in the national health system, it is important to start investigating the factors that have led to this, in order to start designing both preventive and therapeutic strategies, according to the population that is developing this condition.

Methodology

Realized an observational, cross-sectional analytical study, carried out in the Hospital Regional de Alta Especialidad, all patients admitted

under ICD-10 codes: K810 were included (Acute cholecystitis), K811 (Chronic Cholecystitis) y K819 (Unspecified cholecystitis), who have undergone procedures CIE-9: 51.0 (cholecystostomy and cholecystotomy) 51.02 (trocar cholecystectomy) 51.2 cholecystectomy (Colecistectomía), 51.22 cholecystectomy (Colecistectomía), 51.23 (Laparoscopic cholecystectomy), and 51.24 (Laparoscopic partial cholecystectomy) from August 2015 to August 2018. The database was created and later the population was divided into two groups one of patients older than 30 years; call typical presentation (TP) and the other integrated by patients under 30 years of age, called atypical presentation (AP). Fasting glucose, cholesterol and triglyceride levels were analyzed, as well as BMI and the number of pregnancies. Subsequently, a telephone survey was conducted with the group AP. trying to determine relevant background frequencies:

1. Use of hormonal contraceptives.
2. Smoking rate.
3. Alcoholism.
4. Family history of gallbladder disease.

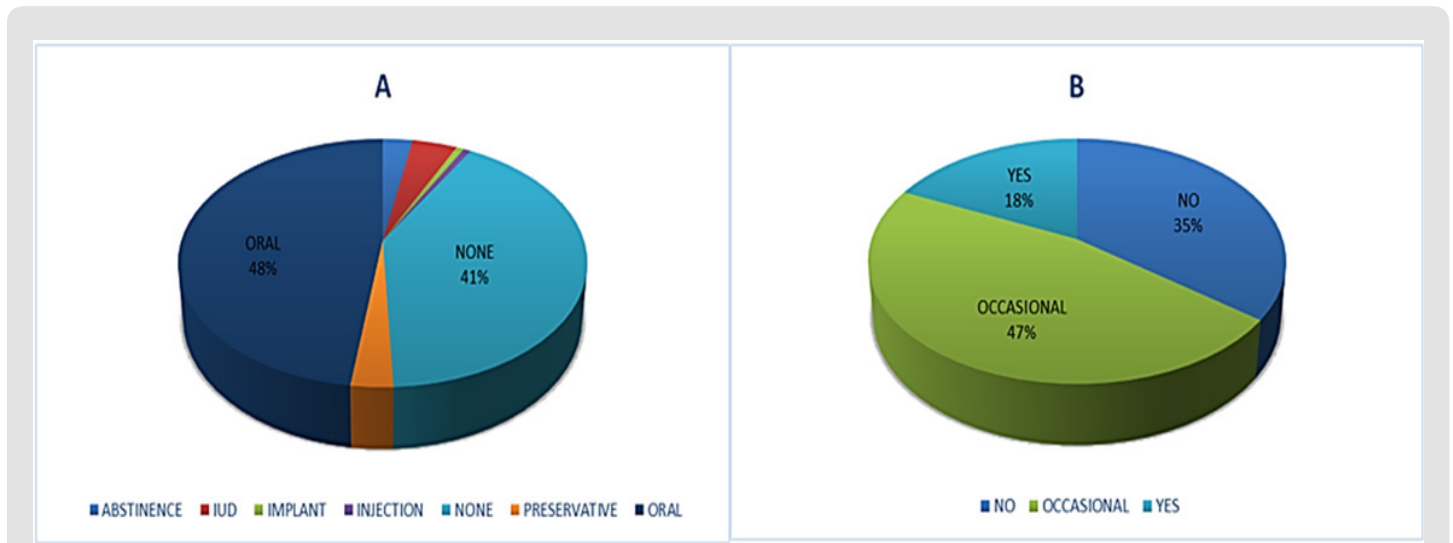
A descriptive analysis was carried out to see the behavior of the variables studied, a test of ANOVA to show a statistical difference between the variables studied, as well as a test post hoc t the Student using the statistical program JMP 16, Statical Discovery from SAS.

Results

Information was collected from 1069 patients, of which 229 correspond to those under 30 years of age, so we have a prevalence of 21.42% in our environment, 840 cases corresponded to the PT group, the descriptive data of the variables evaluated are shown in Table 1. This analysis shows overweight in both populations with a BMI of 26-27 on average for both populations. This factor is directly associated with the development of cholecystitis [11]. In both populations, normal levels were found for triglycerides with averages within the range of 150 to 199 mg/dL and cholesterol levels with averages between the normal range of 125 to 200 mg/dL. When performing the ANOVA analysis, we found a statistically significant difference in the number of pregnancies with $p < 0.0001$. This parameter shows a higher number of pregnancies in the PT group with a wider dispersion in this group. This factor has been widely referred to as a predisposition to generate cholecystitis [12]. In those that respect the frequencies of the surveys carried out on the PA group that was carried out on 205 patients, we found that 84 patients (56.37%) used some type of hormonal contraceptive, 146 patients (76.84%) had no history of smoking, 104 patients (64.59%) reported some degree of alcoholism; Within the literature, the use of contraceptives generates hypomotility of the gallbladder as a secondary effect, presenting itself as a risk factor for the generation of cholecystitis [13], however, it was long thought that oral contraceptives increased a woman's risk of gallstones 2.0 to 2.5

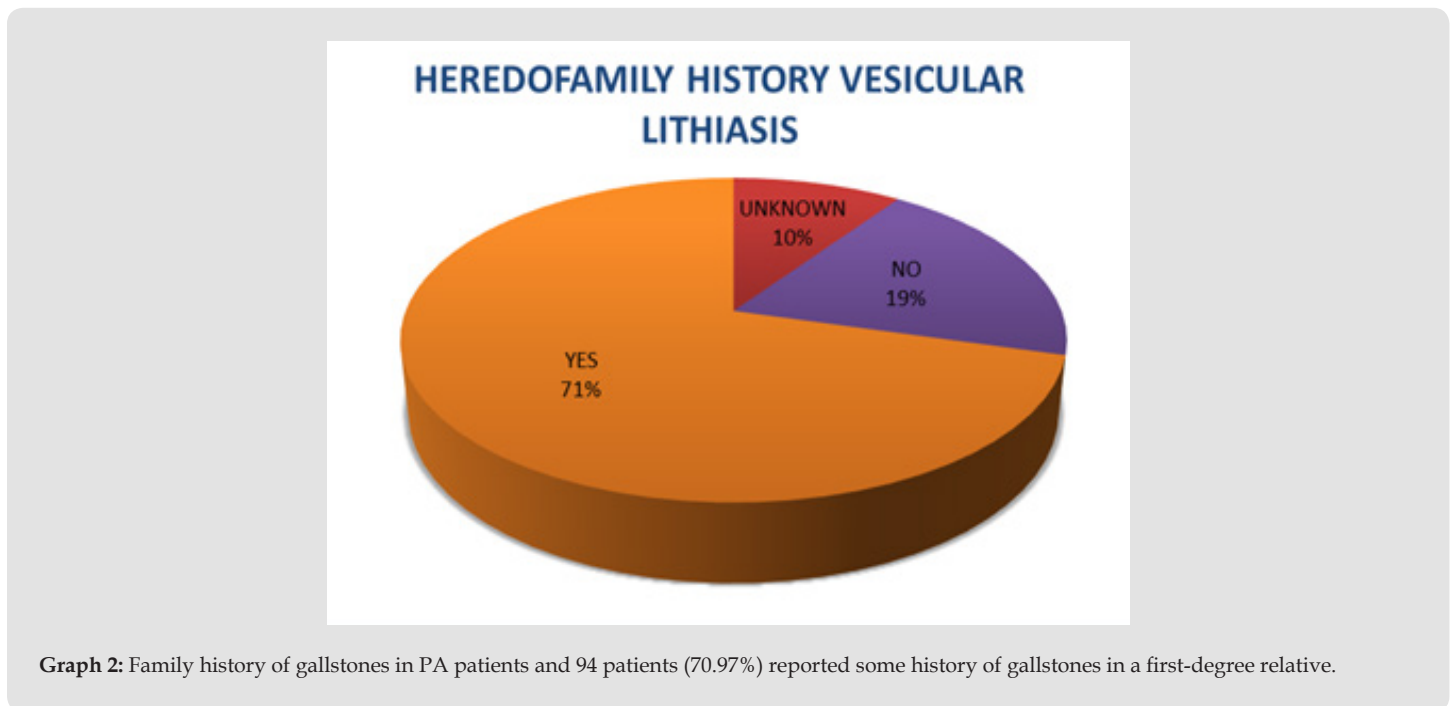
times higher than those not taking oral contraceptives. The study data Heart and Oestrogen/Progestin Replacement Study, and the Women’s Health Initiative Postmenopausal Hormone Trial concluded that there

is no significant increase before menopause, but postmenopausal women receiving estrogen-based hormone replacement therapy do have a significant increase in gallstones (Graphs 1 & 2).



Graph 1:

- A) % use of hormonal contraceptives in PA patients.
- B) % Alcoholism in PA patients.



Graph 2: Family history of gallstones in PA patients and 94 patients (70.97%) reported some history of gallstones in a first-degree relative.

Table 1: Descriptive analysis of the variables analyzed in patients with cholecystitis treated at the HRAEI.

Variable	PA Promedio/DE	PT Promedio/DE
Weight	66.75 ± 13.20	64.94 ± 12.04
Size	1.81 ± 3.70	1.99 ± 7.03
BMI(IMC)	26.99 ± 9.44	27.72 ± 9.14
Glucose	99.78 ± 33.64	93.64 ± 26.40
Triglycerides	124.17 ± 71.69	122.96 ± 65.84
Cholesterol	164.99 ± 44.55	166.51 ± 47.28
Pregnancies	2.42 ± 1.57 ***	1.69 ± 1.27

Discussion

The prevalence of cholecystitis in patients under 30 years of age in our institution is high according to what is reported in the literature [14-17], however, the data show a similar association to regions of the Americas where there is still a higher prevalence in older adults. The only data that we find with relevant statistics is the comparison of pregnancies, however, it is to be expected that the older the patients, the more likely they are to become pregnant and thus to develop cholecystitis. What is relevant is that the average pregnancy rate in the PA group is 1.69 ± 1.27 which implies a previously described problem, that is, in general, the entire universe of this population had at least one pregnancy prior to their cholecystitis, which generates a strong causal relationship [12,18]; Regarding the comparison of fasting glucose and triglycerides, we found slightly higher averages in the group PT, without reaching statistical significance regarding the cholesterol level was slightly higher in the group PA, resulting in on average non-pathological.; In relation to the comparison of fasting glucose and triglycerides, we found slightly higher averages in the PT group without reaching statistical significance, as regards the cholesterol level, it was slightly higher in the PA group and resulting in a non-pathological average. Regarding the body mass index, we found similar levels that did not reach statistical relevance, but highlighting that they are pathological and classify the two groups as overweight in both PT populations (27.72 ± 9.14) and PA (26.99 ± 9.44), reinforcing the hypothesis of this as a risk factor since its causal relationship is demonstrated in the PT group and is similar in the PA group [19-23]. It would be important to make a comparison of this variable with respect to a healthy population of the same age in order to determine the true impact they have on the development of cholecystitis. Regarding the use of hormonal contraceptives, we found several relevant factors, 56.37% declare its use, in addition to the fact that 64.54% of the patients present some family history in the first line of vesicular lithiasis, which certainly associates these two factors with the development of gallstones lithiasis, likewise these variables create a strong causal association with the use of hormonal contraceptives, family history of gallstones lithiasis with the development of gallstones lithiasis in adolescence and early adulthood.

Conclusion

We found that pregnancy in adolescence may have a strong relationship with the development of gallstones, this has important implications in the development of social programs of sexual orientation since they strengthen the need for the prevention of pregnancy in adolescents and young adults, Likewise, obesity reaffirms its association as a risk factor in this group, which reaffirms the need to further develop preventive programs for the development of the same justification for its benefit and continuity. We were unable to demonstrate that any of the biochemical expressions of obesity included in the study (fasting glucose, triglycerides and cholesterol), they will have some relevant association; however, it is noteworthy that the figures are comparable to those of a longer-lived population such as PT, being more affected. Regarding the association with family history, it is inferred as a risk factor for the development of gallstones, with this it is proposed to design preventive strategies that could range from the recommendation of pregnancy prevention and weight control to infections such as the use of litholytics as ursodetoxicolic acid in randomized controlled trials. The association that we found with the use of hormonal contraceptives invites us to guide the young population to the use of safer contraceptives that do not generate comorbidity associated with this population, since this is not the only side effect of their use. Likewise, more studies are needed to clarify this phenomenon of epidemiological transition, which undoubtedly has strong social and economic implications, since it alters the healthy development of women in adolescence and young adulthood.

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Conflict of Interest

The authors do not have any conflicts of interest.

Declaration of Human and Animal Rights

This is a retrospective research article and none of the authors have conducted studies with human or animal participants for it.

Informed Consent

This is a document that includes a retrospective review of patients who were treated at the Hospital Regional de Alta Especialidad and informed consent was not required for the analysis of the variables presented.

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Pastor I Díaz-Hernández. Biomed J Sci & Tech Res



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