

Relation between Ischemic Heart Disease and gallbladder disease

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ABSTRACT

Background: Patients with Gall Stones (GS) was found to have Ischemic Heart Disease (IHD) and patients with IHD were found to have GS. Although there are common risk factors between the two diseases, an association exists in the absence of these risk factors.

Objectives: To find the relation between these two entities regardless the presence of common risk factors for either of them.

Setting: Azadi Teaching Hospital, Kirkuk, Iraq

Design: Cross-sectional study

Patients and methods: Through the period from May 2013 to May 2016 we collected 200 patients, 100 patients already having GS and screened for IHD and 100 patients with known IHD were screened for GS.

Patients with GS was diagnosed by ultrasonography, while IHD was diagnosed by ElectroCardioGraphy(ECG), resting one in acute cases (with and without laboratory markers) and exercise ECG in chronic stable angina (in conjunction with clinical features).

Results: The study showed significant liability of GS patients for having IHD, while the liability of IHD patients for GS was not significant.

Conclusion: Patients with GS have an increased liability to develop IHD independent of common risk factors.

Key words: Gallstone GS, Ischemic Heart Disease IHD, ElectroCardioGraphy (ECG).

INTRODUCTION

Gallstone (GS) disease is common; more than 700,000 cholecystectomies are done annually in the U.S. [1]

GS formation increases after the age of 50. In USA, the third National Health and Nutrition Examination Survey has showed

an overall prevalence of GS of 16.6% in women and 7.9% in men.

GS are formed because bile composition is abnormal. They are two main types: cholesterol stones and pigment stones. Cholesterol stones constitute > 90% of all GS in Western industrialized countries and

containing usually >50% cholesterol monohydrate with an admixture of calcium salts, bile pigments, proteins and fatty acids. Pigment stones are composed essentially of calcium bilirubinate, containing <20% cholesterol [2].

Risk factors for GS disease include age, female sex, parity, obesity, quick weight loss, hypertriglycerdemia, genetic factors (e.g. Pima Indians, Chileans), drugs (clofibrate, estrogen, ceftriaxone, Sandostatin), resection of terminal ileum, GB hypomotility (diabetes, pregnancy, post-vagotomy), Somatostatinoma, total parenteral nutrition and injury of spinal cord [3].

IHD is divided into two groups: patients with chronic coronary artery disease (CAD) presenting commonly with stable angina pectoris and patients with acute coronary syndrome (ACS) which encompasses acute myocardial infarction (with and without ST-segment elevation in the presenting ECG) and unstable angina [2].

CAD is regarded as the most common form of cardiac disease and the leading single most important cause of premature death in Europe, Russia, the Baltic States, Australia, New Zealand, North and South America. It is expected that by the year 2020, CAD will be the major cause of death in all over

the world [4]. Risk factors for CAD are divided mainly into non-modifiable risk factors (that includes age, male gender, family history of premature CAD and modifiable risk factors that includes cigarette smoking, hypertension, hyperlipidemia, diabetes mellitus, obesity, metabolic syndrome, sedentary life style and heavy alcohol intake) [5].

As early as 1878 the association between GB disease and heart disease was noted. Recent comments appeared in the literature, that favored a significant relation between the two entities. Most these contributions have pointed to a more than incidental relationship between GS disease and CAD [6].

Although the relationship between GD and risk of IHD has been debated for many years, yet some recent cross-sectional and prospective studies indicated an independent association between GD and IHD [7]

PATIENTS & METHODS

Through the period from May 2013 to May 2016 we collected 200 cases. The first group comprised of 100 patients already having GS and screened for IHD and the second group comprised of 100 patients with known IHD who was screened for GS disease.

Exclusion criteria for the first group was the presence of one of the cardinal atherosclerotic risk factors namely Smoking, Diabetes Mellitus, Hypertension and Hypercholesterolemia in addition to obesity, while the exclusion criteria for the second group was the presence of obesity, rapid weight loss, hypertriglycerdemia, medications (estrogen, clofibrate, ceftriaxone, Sandostatin), and the above mentioned risks. There was no exclusion for age or gender.

The number of cases having GS at that period was high and the number of IHD cases were even higher but the exclusion criteria we set, especially the presence of four major risk factors (which are obviously so common) made the available number be limited to 200.

GS was diagnosed by ultrasonography and IHD by ECG (exercise ECG in chronic stable angina pectoris cases, in conjunction with the clinical features) and (resting ECG, with symptoms &/or cardiac biomarkers in cases of ACS).

The first group of patients that had GS, included patients with acute calculous cholecystitis (after stabilization from the acute attack), chronic calculous cholecystitis, asymptomatic GS (found

accidentally) and GS patients prepared for surgery.

For all these patients a data form was filled for each patient that included symptoms, signs, pertinent laboratory values and body mass index, and then a resting baseline ECG was done. Wherever there was any suspicion, we advised the patient to have an exercise or treadmill ECG, as part of general medical assessment especially with regard to future general anesthesia for stone removal.

Those cases proved positive by exercise ECG were advised for diagnostic angiography and further medical and/or interventional treatment while elective operation was postponed.

The second group were patients with proved IHD i.e. patients with chronic stable angina (already diagnosed by stress test and or diagnostic coronary angiography) and patients with ACS (acute myocardial infarction and unstable angina) after stabilization. All were sent for abdominal ultrasound for GS, also a form was filled containing the relevant data.

RESULTS

The total number of patients studied was 200, divided into two groups: the first group, which included 100 cases, having GS, their age ranged from 35 to 66 years, the mean

SD of male patients' age was 58 ± 4.3 years, while for females were 42 ± 5.8 years.

IHD was found in 24 (24%) patients out of 100, and were distributed as follows: Acute calculous cholecystitis in one case, Chronic calculous cholecystitis in 4 cases, Asymptomatic gall stones (found accidentally) in 2 cases, while the remaining 17 patients with Gallstones were prepared for surgery, Figure-1.

By calculation of Confidence interval, the confidence level (95%) was ± 8.37 ; the range for true population was (15.63 to 32.37 %).

While the second group which were 100 cases of IHD, their age ranged from 45- 68 years. Mean SD for males' age was 55 ± 7.5 years, and for females were 45 ± 5.2 years. GS was found in 11 cases in this group who were diagnosed by ultrasonography, and they were distributed into two subgroups:

1. Chronic stable angina (7 patients);
2. ACS (4 patients), Figure - 2.

The confidence level (95%) was ± 6.13 with true population ratio of (4.86 to 17.13%).

There was significant relation between Gall bladder Disease & IHD as shown in Table (1). $\chi^2 = 5.82$, the result was significant ($p < 0.5$).

DISCUSSION

The study idea came after we were constantly facing certain shared problems

between IHD and gallbladder disease or features of GS that complicated the diagnosis and management of IHD, and when evaluating a patient with GS for surgery IHD was found. Examples were patients diagnosed as having GS and not known to have IHD, but when prepared for surgery were found to have features of IHD (Clinically and by ECG) preoperatively and operations thereafter postponed.

Symptomatically some known GS patients developed acutely severe epigastric which was found to be acute inferior myocardial infarction or chronically epigastric pain on exertion (Angina), complicating the situation

On the other hand, we faced patients IHD suffering from acute severe epigastric pain that turn to be GS pain or IHD cases complicated by heart failure having right hypochondrial pain of liver congestion again complicating the situation.

Ryan, E.T., Pak, P.H. and DeSanctis, R.W mentioned that Chest pain and shortness of breath are often considered as typical indicators of cardiac problems; however, there is clinical association of these symptoms with non-cardiac conditions such as cholecystitis[8]

Our results showed that significant number of patients with GS had IHD independent of

shared or common risk factor and another but non-significant number of patients with IHD had GS.

Jun LV, et al [9] confirmed the findings of Kadoorie Biobank who examined the association of GS disease with IHD among nearly 199 000 men and 288,000 women ,whose age was ranging from 30–79 years in China, that the presence of GS disease was associated with an increased risk of IHD independent of othercardiovascular disease risk factors .

Time Newman [10] reporting the work of a team, led by Dr. Lu Qi, professor of epidemiology at Tulane,who carried out a meta-analysis of more than 840,000 participants, including more than 50,000 cases of CAD, looking at the relationship between CAD and the development of GS, showed in their analysis that a history of GS disease was associated with a 23 % increase in the risk for CAD. In a second analysis of more than 260,000 participants, Dr. Qi found that heart disease was commonly seen alongside GS disease because of the shared risk factors. Interestingly, in the second analysis, Dr.Qi also found that individuals with GS who were otherwise healthy (not obese, normal blood pressure, and non-diabetic) still had a higher risk of developing CAD than those who were diabetic, obese,

and had high blood pressure.In other words, regardless of the risk factors for the two conditions, simply having GS alone is enough to increase the risk of heart disease . Prospective analysis of 270 000 women and men from 3 USA Cohorts and Meta-Analysis findings support that a past history of GS disease is associated with increased risk of IHD , independent of known risk factors and this associations appeared to be stronger in individuals not having diabetes, hypertension or obesity compared with their counterparts [11].

Also the association of liability of IHD patients for GS we found a study cohortbetween January 2007 and September 2011involving 1,270 patients who underwent coronary angiography for the first time concluded that GS disease was significantly associated with CAD because the prevalence of GS disease in this study was significantly higher in CAD-positive(19.5%) than in CAD negative patients (11.3%).[12].

Regarding gender ,male patients were higher in our study ,although Giovanni Targher and Cristopher Byrene interestingly found the association between gall bladder disease and IHD stronger in women than in men.[13].

But age wise, our mean age was 58 years while Muideen, Hung and Jiann et al found the excess risk was particularly high in younger GD patients.[14] .

Finally the opposite situation,i.e. the occurrence of GB disease in patients with IHD was not studied extensively but we found a Harverd medical publication stating that people with heart disease are three times more likely to have gallstones than those free of heart disease[15]

CONCLUSION

Patients with GS are liable for IHD irrespective of shared predisposing factors and but IHD patients are not liable for GS.

RECOMMENDATION

Patients with GS should routinely be screened for IHD but patients with IHD need not be scared for GS

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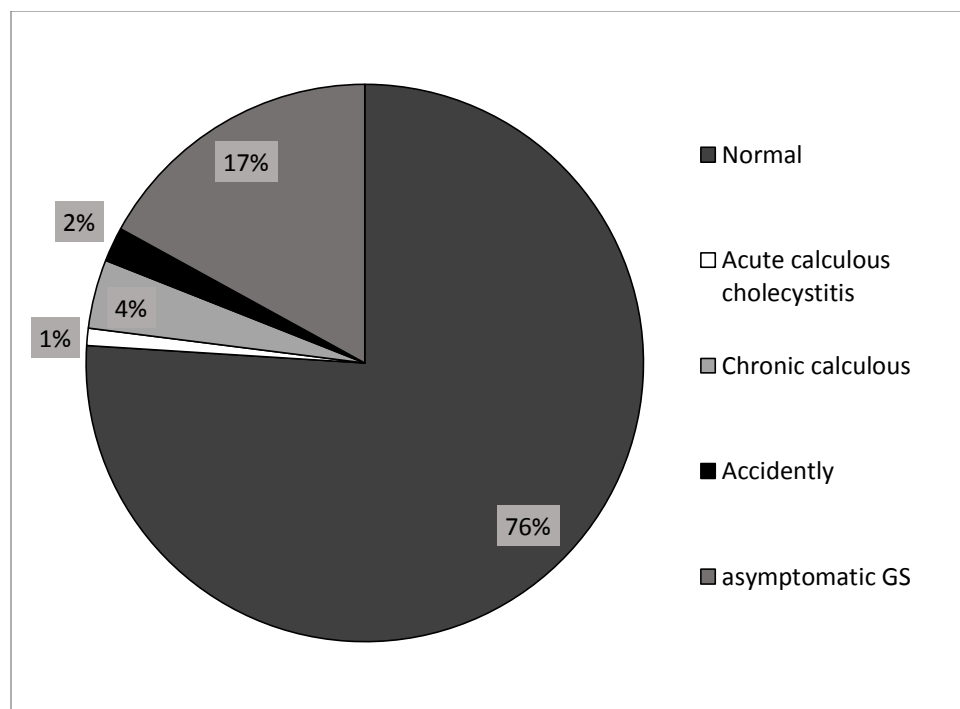


Figure 1: shows group 1 patients with GS disease having IHD.

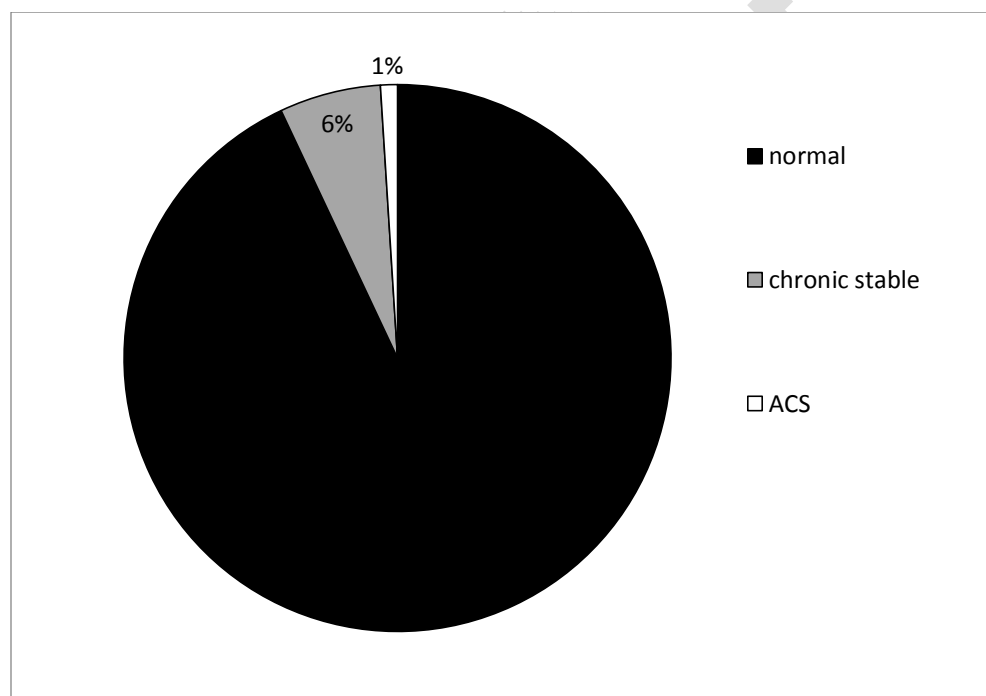


Figure 2: shows group 2 patients with IHD having GS disease.

Table – 1: Relation between Gall bladder Disease &IHD.

Study group patient	Patients of GBD	Patient with IHD	Total
Patient with both diseases(GBD+IHD)	24	11	35
Patient with one disease (GBD or IHD)	78	89	165
	100	100	200

Chi²=5.82, the result were significant (p<0.5)