ORIGINAL RESEARCH

Estimation of CA19-9 and CA 125 level in cases with carcinoma gall bladder

Dr. Pankaj Tripathi

Assistant Professor, Department of Pathology, Hind Institute of Medical Sciences, Safedabad, Barabanki, UP, India

Corresponding Author
Dr. Pankaj Tripathi
Assistant Professor, Department of Pathology, Hind Institute of Medical Sciences, Safedabad, Barabanki, UP, India

Received: 17 February, 2014 Accepted: 21 March, 2014

ABSTRACT

Background: Among the many conditions that can affect the gallbladder are congenital defects, calculi and their aftereffects, non-inflammatory, inflammatory, and malignant tumors. The present study was conducted to evaluate CA19-9 and CA 125 level in carcinoma gall bladder. **Materials & Methods:** 52 cases of carcinoma gall bladder of both genders were assessed for CA19-9 and CA 125 by chemiluminescent microparticle immunoassay (CMIA) method. **Results:** Out of 52 patients, 32 were males and 20 were females. Lesions were chronic cholecystitis in 28, xanthogranulomatous cholecystitis in 19 and chronic cholecystitis with gastric metaplasia in 5 cases. The difference was significant ($P< 0.05$). The mean CA19-9 level was 134.2± 7.5 U/ml and CA 125 level was 63.7± 8.2 U/ml. **Conclusion:** Elevated level of CA19-9 and CA 125 in carcinoma gall bladder was found. These are fairly good markers for discriminating patients of carcinoma of the gallbladder from cholelithiasis.

Key words: Carcinoma gall bladder, chemiluminescent microparticle immunoassay, gastric metaplasia

INTRODUCTION

Among the many conditions that can affect the gallbladder are congenital defects, calculi and their aftereffects, non-inflammatory, inflammatory, and malignant tumors. One of the leading causes of illness and death worldwide is gallstones.[1] Roughly 10% of adults are impacted. As people age, its incidence gradually rises. Gallbladder diseases are characterized by biliary discomfort in the epigastrium and right upper quadrant of the abdomen that radiates to the right shoulder, scapula, and interscapular region. These symptoms are often accompanied by fever, chills, anorexia, nausea, vomiting, and jaundice.[2] Although benign gallbladder lesions are somewhat frequent, only adenomatous polyps are thought to have the potential to become cancerous. Even though ultrasonography can be helpful in assessing these lesions, making the diagnosis prior to surgery may be somewhat challenging. These lesionsinclude Cholesterol polyps, inflammatory polyp, adenomyomatosis, and adenomatous polyp.[3]

The most prevalent risk factor for gallbladder cancer is gallstones. Gallstones are deposits of cholesterol and other materials that resemble pebbles and can lead to long-term inflammation in the gallbladder. Gallstones are present in up to 4 out of 5 patients with gallbladder cancer at the time of diagnosis.[4] However, gallbladder cancer is extremely uncommon, particularly in the United States, although gallstones are extremely prevalent. Additionally, the majority of gallstone sufferers never have gallbladder cancer. Research has shown that CA19-9 and CA125 are elevated in gallbladder cancer.[5]The present study was conducted to evaluateCA19-9 and CA 125 levelin carcinoma gall bladder.

MATERIALS & METHODS

The present study was conducted on 52patients with diagnosed carcinoma gall bladder of both genders.All agreed to participate in the study/

Data such as name, age, gender etc. was recorded. Clinicoradiological examination was done. In suspected lesions, FNA was carried out under USG guidance. Smears with loose, poorly formed acinar clusters of big, pleomorphic cells, a high N:C ratio, conspicuous nucleoli, and little cytoplasm were deemed to be malignant during cytological inspection. Smears that displayed cuboidal to columnar cells in a close cluster without any dysplastic characteristics were classified as malignancy-negative. Serums from the patient were gathered and prepared using the chemiluminescent microparticle immunoassay

(CMIA) technique for CA19-9 and CA 125. Histopathology was used whenever possible to corroborate the final diagnosis. Results thus obtained were subjected to statistical analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 52		
Gender	**Males**	**Females**
Number	32	20

Table I shows that out of 52 patients, 32 were males and 20 were females.

Table II Frequency of lesions

Lesions	Number	P value
Chronic cholecystitis	28	0.01
Xanthogranulomatous cholecystitis	19	
Chronic cholecystitis with gastric metaplasia	5	

Table II, graph I shows that lesions were chronic cholecystitisin 28, xanthogranulomatous cholecystitis in 19 and chronic cholecystitis with gastric metaplasiain 5 cases. The difference was significant (P< 0.05).

Graph I Frequency of lesions

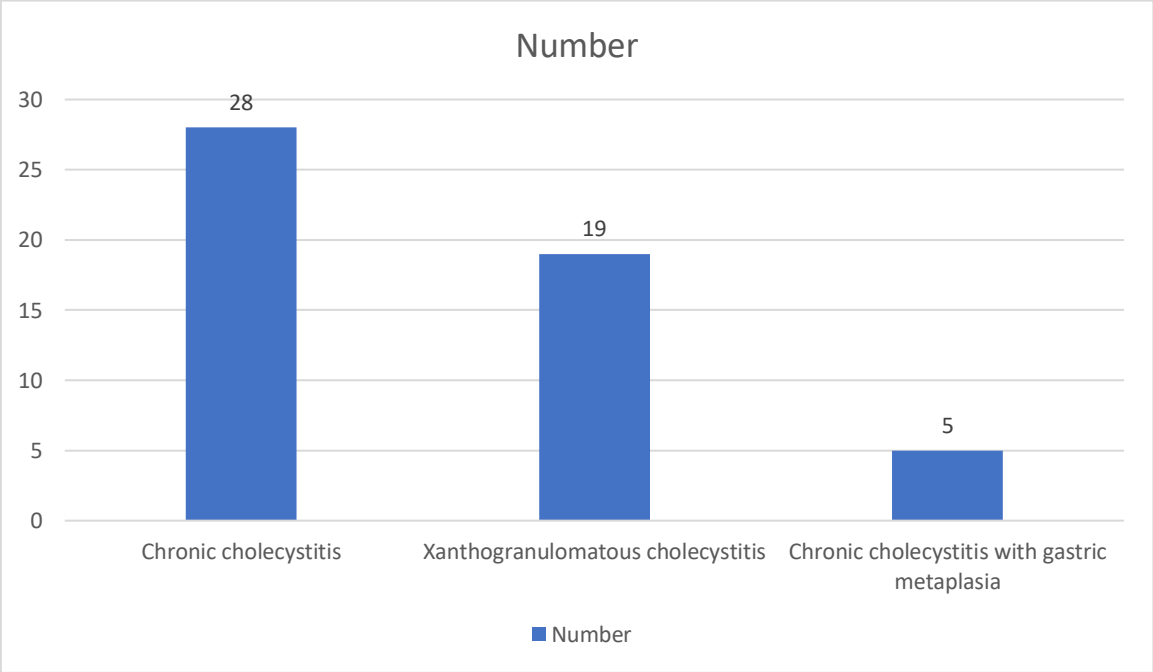

Table III Measurement of CA19-9 and CA 125 level

Parameters	Mean	SD
CA19-9 (U/ml)	134.2	7.5
CA 125 (U/ml)	63.7	8.2

Table III shows that mean CA19-9 level was 134.2± 7.5U/ml and CA 125 level was 63.7± 8.2U/ml.

DISCUSSION

A disease that primarily affects the elderly, gallbladder cancer strikes individuals in their sixth or seventh decades of life, with a 5:1 female to male ratio. Gallbladder carcinoma is regarded as an aggressive cancer, with 5–15% 5-year survival rates reported by the majority of significant series.[6] The disease may extend to adjacent soft tissue in 35% of people, distant metastases may occur in 45% of patients, and the cancer is limited to the gallbladder wall in 25% of patients.[7] Gallbladder carcinoma in its early stages has a low 5-year survival because it lacks typical clinical symptoms. Most patients are at a late stage when they are diagnosed, thus there is little hope of a drastic cure. Therefore, an early diagnosis of gallbladder cancer is crucial.[8]Nowadays, invasive tests including laparoscopy, cytology, and biopsy, as well as non-invasive supplemental imaging, are the primary methods used to diagnose gallbladder carcinoma. Gallbladder cancer cannot be diagnosed or prognosed with a single tumor marker.[9]The present

study was conducted to evaluate CA19-9 and CA 125 level in carcinoma gall bladder.

We found that out of 52 patients, 32 were males and 20 were females. Lesions were chronic cholecystitis in 28, Xanthogranulomatous cholecystitis in 19 and chronic cholecystitis with gastric metaplasia in 5 cases. 118 cases with a 4:1 female to male ratio were included by Mancuso TF et al.[10] Of these, 27 (23%) were cancerous and 91 (77%) were benign. Serums from patients were gathered, and the CMIA technique was used to evaluate them for CA19-9 and CA125. Both benign and malignant cases had mean (SD) CA19-9 values of 12.86 (17.54) and 625.35 (186.52) U/ml, respectively. It was determined to be 17.98 (13.69) and 239.63 (73.72) U/ml for CA 125, respectively. There was a statistically significant difference (P<0.001). The values of CA 19-9 and CA 125, which were determined to be 252.31 U/ml and 92.19 U/ml, respectively, when the mean - 2SD value of malignant lesions was selected as the cutoff, were found to be significant in order to imply or diagnose a case of gall bladder carcinoma in conjunction with clinicoradiological data. Using these values as a cutoff, the detection of malignant cases for CA 19-9 and CA 125 was 100% & 98.90% and 100% & 94.50%, respectively.

We observed that the mean CA19-9 level was 134.2± 7.5 U/ml and CA 125 level was 63.7± 8.2 U/ml.In their investigation, Kankonkar et al[11]also discovered a comparable number (847.6 U/mL). Additionally, Shukla et al.9 discovered that malignant lesions had a higher serum CA19-9 value than benign gallbladder lesions (211.27 U/mL vs. 86.06 U/mL). Serum CA 19-9 was also found to be a sensitive marker for gallbladder cancer in other investigations.

Shukla et al[12]determined the utility of serological markers in carcinoma of the gallbladder (CaGB).This study was carried out in 55 cases and 8 healthy controls presenting to a single surgical unit of the University Hospital, Varanasi, India. CA242, CA19-9, CA15-3 and CA125 were assayed preoperatively in serum of patients with carcinoma of the gallbladder (39), cholelithiasis (16) and healthy controls (8) using ELISA technique.Mean concentration of all tumor markers was significantly raised in carcinoma of the gallbladder when compared with cholelithiasis. CA 242 was 12.10 vs 42.19 u/ ml, CA19-9 was 211.27 vs 86.06 u/ml, CA 15-3 was 71.42 vs 1.93u/ml and CA125 was 253.61 vs 65.5 u/ml <0.05). Sensitivity and specificity were calculated at various cut off points. Significant changes in CAl9-9 and CA242 occurred with advanced stage (p <0.05) and grade of tumor (p<0.001). When two tumor markers were combined, like CA242 and CA125, sensitivity and specificity improved to 87.5% and 85.7% respectively. Diagnostic accuracy is highest with a combination of CA 19-9 and CA 125 (80.65%). However, combination of tumor markers did not improve any further sensitivity or specificity of markers.

The limitation of the study is small sample size.

CONCLUSION

Authors found elevated level of CA19-9 and CA 125 in carcinoma gall bladder. These are fairly good markers for discriminating patients of carcinoma of the gallbladder from cholelithiasis.

REFERENCES

1. Caygill CP, Hill MJ, Braddick M, Sharp JC. Cancer mortality in chronic typhoid and paratyphoid carriers. Lancet 1994; 343:83–84.
2. Bond GG, McLaren EA, Sabel FL, Bodner KM, Lipps TE, Cook RR. Liver and biliary tract cancer among chemical workers. Am J Ind Med 1990; 18:19–24.
3. Kankonkar SR, Joshi SV, Deshpande RR. Significance of tumour markers in cancer of gall bladder. Open J Immunol 2013;3:33-6.
4. Henson DE, Albores-Saavedra J, Corle D. Carcinoma of the gallbladder: histologic types, stage of disease, grade, and survival rates. Cancer 1992; 70:1493–1497.
5. Khan ZR, Neugut AI, Ahsan H, Chabot JA. Risk factors for biliary tract cancers. Am J Gastroenterol 1999; 94:149–152.
6. Strom BL, Soloway MD, Rios-Dalenz JL, et al. Risk factors for gallbladder cancer: an international collaborative case-control study. Cancer 1995; 76:1747–1756.
7. Welton JC, Marr JS, Friedman SM. Association between hepatobiliary cancer and typhoid carrier state. Lancet 1979; 1:791–794.
8. Nagorney DM, McPherson GAD. Carcinoma of the gallbladder and extrahepatic bile ducts. Semin Oncol 1988; 15:106–115.
9. Albert MB, Steinberg WM, Henry JP. Elevated serum levels of tumor marker CA19-9 in acute cholangitis. Dig Dis Sci 1988;33:1223-5.
10. Lowenfels AB, Lindstrom CG, Conway MJ, Hastings PR. Gallstones and risk of gallbladder cancer. J Natl Cancer Inst 1985; 75:77–80.
11. Mancuso TF, Brennan MJ. Epidemiological considerations of cancer of the gallbladder, bile ducts, and salivary glands in the rubber industry. J Occup Med 1970; 12:333–341.
12. Shukla VK, Gurubachan, Sharma D, Dixit VK, Usha. Diagnostic value of serum CA242, CA 19-9, CA 15-3 and CA 125 in patients with carcinoma of the gallbladder. Trop Gastroenterol 2006;27:160-5.