



Research Paper

Role of Carcinoembryonic Antigen (CEA) in Benign Gall Bladder Disease: A Prospective Study

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Abstract

Background/objective: The poor prognosis of gall bladder carcinoma (GBC) is attributable to delayed presentation in the absence of specific clinical findings in the early stages. To ascertain whether the commonly available serum tumour marker (carcino-embryonic antigen-CEA) can be used to detect benign GBC. **Methods:** This prospective study was conducted at Department of Surgery, Indira Gandhi Medical College, Shimla over the period of one year, and included the patients with benign gallbladder disease. Estimation of serum CEA in 42 patients with benign GBC was done using ELISA. **Results:** In this study, six patients had raised CEA levels. Four patients with cholelithiasis, one patient with Cholelithiasis with Cheledocholithiasis, and one patient with GB polyp had raised CEA levels. **Conclusion:** Serum levels of CEA do not have any significance in the management of benign GB disease.

Key words: GBC, CEA, Benign tumor

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I. Introduction

Gall bladder-related disease is a major public health problem all over the world, particularly in adult population. The incidence of gall bladder stone diseases shows considerable geographical and regional variations.

Gallbladder carcinoma (GBC) is the most common cancer of the biliary tract and the fifth most common cancer of gastro-intestinal tract worldwide.¹ While In India, GBC is the most common cancer of the gastro-intestinal tract.² Its geographical and racial distribution is not homogenous, as its highest incidences are reported in Indians, Pakistanis, Chileans, Bolivians, Central Europeans, Israelis, Native Americans and Americans of Mexican origin.³ In India, its incidence is more along the Gangetic plains of northern India.^{2,4}

The benign conditions, which also include polyps, adenomyomatosis, acute cholecystitis, and more, show a range of clinical signs and symptoms. Patients may be asymptomatic or stricken with acute biliary colic, jaundice, and fever. Required treatments and management strategies vary accordingly. In addition, the benign gallbladder diseases present with various imaging appearances and may mimic those of gallbladder malignancies.

Tumor markers have an increasing significance in the diagnosis and evaluation of gall bladder cancer. In this study, we determined the role of carcinoembryonic antigen (CEA) in benign gall bladder diseases.

II. Methods

This prospective study was conducted at Department of Surgery, Indira Gandhi Medical College, Shimla over the period of one year, and included the patients with benign gallbladder disease. The patients were excluded if smokers, age >80 years, poor performance status, and/or patients not willing to give consent for the study and investigations.

Methodology

Patients with diagnosed cases of benign gall bladder diseases (radiologically/by tissue diagnosis) underwent detection of tumour marker, CEA at the baseline. Further, whether operative/surgical procedure done on them or not, they underwent repeat detection of tumour markers on follow up of 3 months.

CEA measurement

CEA levels in serum were measured using ELISA technique. The upper limit for CEA was <2.5 ng/ml. CEA levels were further categorized as normal, mildly raised, and highly raised as <2.5, 2.5-10.0, and >10.0 ng/ml respectively.

Data analysis

Data were expressed as mean, standard deviation, frequency, and percentage.

III. Results

General characteristics

This study included 42 patients with benign gallbladder disease. Mean age of the patients was 51.52±14.74 years. Seventy percent of the patients were females.

Type of disease

In this study, 76.2% of the patients were diagnosed with cholelithiasis followed by cholelithiasis with choledocholithiasis (11.9%), polyp (7.14%), and post cholecystectomy choledocholithiasis (4.76%) (Figure 1).

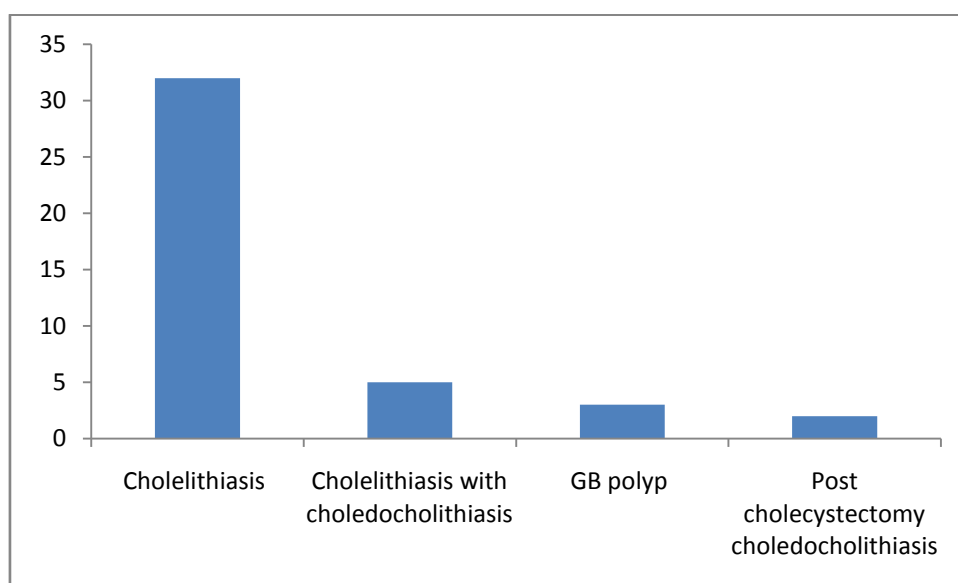


Figure 1: Type of disease

Symptoms

In our study, pain was the most common symptom in 32 patients followed by dyspepsia (n=16), anorexia (n=10), and jaundice (n=4). A few patients had more than one symptom.

CEA levels

In this study, six patients had raised CEA levels.

CEA levels with type of disease

Four patients with cholelithiasis, one patient with Cholelithiasis with Cheledocholithiasis, and one patient with GB polyp had raised CEA levels (Table 1).

Table 1: CEA levels with type of disease

	Cholelithiasis	Cholelithiasis with Cheledocholithiasis	GB polyp
Normal	28	6	2
Mildly raised	2	1	1
Highly raised	2	0	0

IV. Discussion

Benign diseases were found in mean age of 51.5±14.74 years. The mean age of presentation of GBC in India is younger than their counterparts in the USA and western European countries. The average age at diagnosis in India was 51±11 years in contrast to 71.2±12.5 years in the West. Our study showed female

predominance. Indian studies showed Women are at 2–6 times higher risk for developing GBC. Among patients with gallstones, women are at 2.4 times higher risk for GBC. The female: male ratio varies from 3:1 to 4.5:1 in various Indian series.

CEA tumor marker (Carcinoembryonic Antigen) is used as an aid in the prognosis and measurement of patient's value in whom changing concentrations of CEA are observed. The expression of CEA is high in most gastrointestinal tumours. Stefanović et al, found that CEA expression was significantly increased in GBC.⁵ However, Vij et al, suggested that CEA and AFP had little value for the diagnosis and prognosis of GBC.⁶ Our study also showed that CEA had limited value for the diagnosis and prognosis of GBC. In terms of a single marker for the diagnosis of GBC, CA19-9 has the highest sensitivity with relatively low specificity, but cannot be used alone as an effective tumour marker to identify GBC.

V. Conclusion

In conclusion, serum levels of CEA do not have any diagnostic or prognostic significance in the management of benign gallbladder disease.

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