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Original Article

Incidental Gallbladder Carcinoma In Cholecystectomy Specimens – Retrospective Study

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ABSTRACT

Background: Gallbladder carcinoma is the 5th most common cause of gastrointestinal tract globally-1. In India the incidence of gallbladder carcinoma is 0.8%-1%2. The risk factors are cholelithiasis, calcified gallbladder wall, adenomatous polyp, obesity, estrogen, choledochal cyst and chemical carcinogens2,3 cholecystectomy is the most common surgical procedure for chronic cholecystitis and gallbladder malignancy4,5.
Aims and objectives:1.To study age wise and sex wise analysis of gallbladder lesions 2.To determine the pathological staging of Incidental gallbladder carcinoma
Materials and Methods: A Retrospective (3yrs) study was done on abdominal and laparoscopic cholecystectomies with a clinical, radiological diagnosis of benign gallbladder lesions at Santhiram medical college and general hospital, Nandyal during the period from Jan 2021 to Dec 2023.
Results: A total of 684 cases of cholecystectomy specimens received over a period of 3 years. The most common lesion as calculous cholecystitis 420 cases (61.40%), following 240 cases were acalculous cholecystitis (36.26%) and xantho granulomatous cholecystitis 16 cases(2.34%). Among 684 cases, 12 cases (1.75%) diagnosed as Incidental gallbladder carcinoma. Out of 12 cases of Incidental gallbladder carcinoma 8 cases (66.7%) cases observed with chronic calculous cholecystitis (66%), 3 cases in chronic acalculous cholecystitis (25.5%) and one case in Xantho- granulomatous cholecystitis (8.3%).
Conclusion: Histopathological examination of cholecystectomy specimens is mandatory and gold standard for prompt management of occult malignancy.

Keywords: *Calculous cholecystitis , Acalculous cholecystitis, Xantho granulomatous cholecystitis and Incidental gallbladder carcinoma.*

INTRODUCTION

Gallbladder carcinoma is the 5th most common cause of gastrointestinal tract[1] globally. In india the incidence of gallbladder carcinoma is 0.8%-1%[2]. The risk factors are cholelithiasis , calcified gallbladder wall, adenomatous polyp, obesity, estrogen ,choledochal cyst and chemical carcinogens[2,3] cholecystectomy is the most common surgical procedure for chronic cholecystitis and gallbladder cancer.[4,5]

Incidental gallbladder carcinoma is the incidental finding of carcinoma in histopathological examination of gallbladder specimen after cholecystectomy done for benign gallbladder disease[2].

Incidental gallbladder carcinoma also known as occult / inapparent/ missed gallbladder carcinoma[6] and patients do not have a radiological or intraoperative suspicious of malignancy[7,8]

AIMS AND OBJECTIVES

1. To study age wise and sex wise analysis of gallbladder lesions
2. To determine the pathological staging of Incidental gallbladder carcinoma

MATERIALS AND METHODS

A Retrospective (3yrs) study was done on abdominal and laparoscopic cholecystectomies with a clinical, radiological diagnosis of benign gallbladder lesions at Santhiram medical college and general hospital, Nandyal during the period from Jan 2021 to Dec 2023. A total of 684 cholecystectomy specimens were received. The specimens were fixed in 10% formalin, routine processing was done , Hematoxylin & Eosin stained sections were microscopically examined and Incidental gallbladder carcinoma diagnosis was confirmed.

The pathological staging was done according to American Joint Committee of cancer gallbladder cancer staging (8^{th} edition). The case details like age, sex, presence of stones and radiological CT and USG findings were taken from the hospital records . The data analysed by using SPSS version 21.0 software programme. Ethical committee (IEC) clearence was taken prior to the study.

Inclusion criteria

Abdominal and laproscopic cholecystectomy specimen

Exclusion criteria

Diagnosed or suspected cases of gallbladder carcinoma

RESULTS

Table 1:Sex wise distribution of Gallbladder lesions

s.no	Histopathological diagnosis of Gall bladder lesions	Male	Female	Total	Percentage
1.	Chronic calculous cholecystitis	96	324	420	61.40
2.	Chronic acalculous cholecystitis	62	186	248	36.26
3.	Xanthogranulomatous cholecystitis	04	12	16	2.34
	Total	162(23.7%)	522(76.3%)	684	100

Table 2:Age and sex wise distribution of Gallbladder lesions

s.no	Histological diagnosis	21-30yrs		31-40 yrs		41-50 yrs		51-60 yrs		>60 yrs		Total
		M	F	M	F	M	F	M	F	M	F	
1	CHRONIC CALCULOUS CHOLECYSTITIS	4	16	20	80	42	124	18	72	12	32	420
2	CHRONIC ACALCULOUS CHOLECYSTITIS	2	14	10	48	24	62	18	38	8	24	248
3	XAN THO GRANULOMATOUS CHOLECYSTITIS	-	2	-	3	2	4	1	2	1	1	16
Total		6	32	30	131	68	190	37	112	21	57	684

Table 3:Incidence of Benign and Malignant lesions of Gallbladder

s.no	Gall bladder Lesions	No of cases	%
1	Benign gallbladder	672	98.24%
2	Incidental gallbladder carcinoma	12	1.75%
	Total	684	100%

Table 4: Incidence of Incidental Gallbladder carcinoma among male and females in Gall bladder lesions

s.no	Incidental gallbladder carcinoma	male	Female	Total	Percentage
1	Calculous	2	6	8	66.7
2	Acalculous	1	2	3	25
3	xanthogranulomatous cholecystitis	0	1	1	8.3

Table 5:Age and sex wise distribution of incidence of Incidental Gallbladder carcinoma in lesions of gall bladder .

s.no	Incidental gallbladder carcinoma	21-30 yrs		31-40 yrs		41-50 yrs		51-60 yrs		>60 yrs		Total
		M	F	M	F	M	F	M	F	M	F	
1	Chronic calculous cholecystitis	-	-	-	1	1	3	-	1	1	1	8
2	Chronic acalculous cholecystitis	-	-	-	-	-	1	1	1	-	-	3
3	Xanthogranulomatous cholecystitis	-	-	-	-	-	-	-	-	1	-	1
	Total	-	-	-	1	1	4	1	2	2	1	12

Table 6: Gross findings of Incidental gall bladder carcinoma

s.no	Gross findings	Thickness size	No of cases	%
1	**Mucosal thickness**	<3mm	4	33.3
		>3mm	8	66.7
2	**Mucosal ulceration**	Present	6	50
		Absent	6	50

Table 7: Histopathological features of Incidental Gallbladder Carcinoma

Variable	No of cases	%
Histological grade		
1(well differentiated)	3	25
2(moderately differentiated)	8	66.7
3(poorly differentiated)	1	8.3
Lymphovascular invasion		
Present	6	50
Absent	6	50
Perineural invasion		
Present	1	8.3
Absent	11	91.7
Lymphnode status		
Positive	1	8.3
Negative	11	91.7

Table 8: Pathological staging of Incidental Gallbladder carcinoma

Diagnosis	Status	No of cases	%
Pathological staging	p T1a	2	16.7
	p T1b	3	25
	p T2	6	50
	p T3	1	8.3

Table 9: Comparison of Incidence rates in different studies.

Studies	No of IGBC cases	Total no of cholecystectomy cases	Incidence rate
Daphna et al [24]	6	1697	0.3%
Gayatri devi et al[20]	11	2379	0.46%
Morera et al [26]	4	372	1.1%

Amanullah et al[25]	8	428	1.9%
Shigeki et al [27]	4	84	4.7%
R Shrestha et al [4]	9	570	1.4%
Mistry et al [9]	15	857	1.75%
Present study	**12**	**684**	**1.75%**

FIGURES:

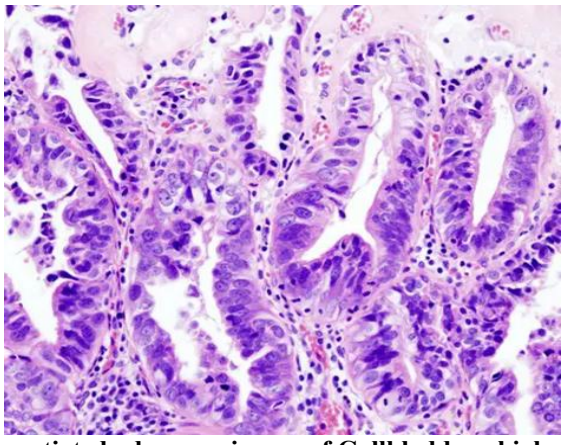

Figure 1 : Well differentiated adenocarcinoma of Gallbladder - high power view (H & E)

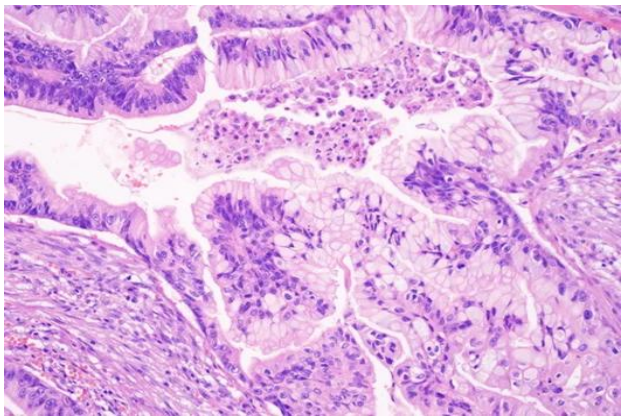

Figure 2: Moderately differentiated adenocarcinoma of gallbladder – high power view (H& E)

684 cases of cholecystectomy specimens received over a period of 3 years. The most common lesion was calculous cholecystitis 420 cases (61.40%), following 240 cases were acalculous cholecystitis (36.26%) and 16 cases(2.34%) were Xanthogranulomatous cholecystitis. The mean age noted was 41.6 year (age range of 30-60 years)**(Table 1&2).**

The male to female ratio of 1:3. The most common presenting symptom was pain in the right hypochondrium in 90% of patients, followed by nausea , vomitings(8%) and epigastric pain (4%).

Among 684 cases, 12 cases (1.75%) diagnosed as Incidental gallbladder carcinoma. All these cases were studied based on preoperative imaging findings and pathological TNM staging was done [9]. Out of 12 cases of Incidental gallbladder carcinoma 8 cases (66.7%) cases observed with chronic calculous cholecystitis (66%), 3 cases in chronic acalculous cholecystitis (25.5%) and one case in Xantho- granulomatous cholecystitis (8.3%). Majority of cases Incidental gallbladder carcinoma observed in 9 cases(75%) in females and 3 cases(25%) in males. The age range noted was 31-60 year in females and 41-60 year in male**(Table 3,4 &5).**

Preoperative USG detected increased wall thickness (>3mm) in 8 cases(66.7%) and without intraluminal mass 4 cases less than 3mm in total 12 cases(33.3%). Gross inspection of majority of specimens revealed thickening of gallbladder wall in 8(66.7%).Out of 12 cases, 6 (50%) cases revealed mucosal ulceration **(Table 6).**

Majority of cases of Incidental gallbladder carcinoma 8/12 were associated with gallstones and histologically shown Adenocarcinoma,lymphovascular invasion 6/12(50%) and perineural invasion was seen in 1 case(8.3%).Histological grade G2(moderately differentiated) was seen in 8 cases (66.7%)**(Figure 2)**Incidental gallbladder carcinoma grade G1(well differentiated) **(Figure 1)** and grade G3 (poorly differentiated)were seen in 3 cases and 1 case. Out of 12 cases of Incidental gallbladder carcinoma one case was positive for lymphnode metastasis **(Table 7).**

Tumour cell infiltration noted up to lamina propria (pT1a) 2 cases (16.7%) muscularis propria in 3 cases(pT1b), tumour cells invaded beyond perimuscular connective tissue (p T2)6(50%) , and serosa (pT3) in 1 case (8.3%)**(Table 8).**

DISCUSSION

The Incidental gallbladder carcinoma following cholecystectomy for benign diseases was noted as low (0.73%)[10] . The early stage of gallbladder carcinoma is diagnosed incidentally because the symptoms overlapse with co existent cholecystitis or cholelithiasis

The characteristics such as thickening of wall, intraluminal polypoid mass, CBD and pericholecystic collection are not hallmark of gallbladder carcinoma, even they can be present in cholecystitis[9] .

The incidence of incidental gallbladder carcinoma reported to be 0.2%-2.1%[17,18,19]. Incidence was less in Daphna et al[24] (0.3%),it was even higher as shown by Shigeki et al [27](4.7%). Gayatri Devi et al [20] ,Morera et al [26], R Shrestha et al [4],Amanullah et al [25] shown 0.46%,1.1%,1.4% and 1.9%.Our study differ with above authors and consistent with Mistry et al[9] (1.75%)**(Table 9).**

Incidental gallbladder carcinoma more common in female 9 cases(75%). Study correlated with Pyo et al 2020[12] , Emmett et al 2009[13], Jha V etal 2016[14]. Singh et al 2020[15] and Sarbjith Mohapatra et al2024[10]

In the present study the mean age at diagnosis was around 45.4 years correlates with Lund gren et al 2014[11], not correlated with vibhor jain et al [16].

Incidental gallbladder carcinoma more common in females (1:3) comparable with Gayatri Devi et al 2019 [20]. Majority of cases of incidental gallbladder carcinoma are associated with cholelithiasi[21,22,23].

In the present study 8 cases (66.7%) of incidental gallbladder carcinoma noted with cholelithiasis. Vidhya jha et al[2] 2018(70%), Waghmare RS et al and kamat KN et al 2014[7](85%) of incidence incidental gallbladder carcinoma with gallstones. Our study correlated with the above authors study.

In the present study well differentiated carcinoma were 3 cases(25%) G1,Moderately differentiated carcinoma were 8 cases (66.77) G2, and poorly differentiated carcinoma was one case (8.3%) G3. Our study correlated with Gayatri Devi et al 2019 [20]and Wagh mare RS et al 2014[7] .

In the present study out of 12 cases 2 cases were pT1a (2 Well differentiated), 3 cases of pT1b (1 Well differentiated & 2 moderately differentiated). pT2 were 6 cases (moderately differentiated) and one case of pT3(poorly differentiated). The staging of the disease is most important prognostic factor for patient survival **(Table 8).**

CONCLUSION

1. Gall bladder cancers are the most common malignancy of GIT
2. In our study the incidence of incidental gall bladder carcinoma is 1.75%
3. Cholelithiasis, especially Asymptomatic cases, should not be taken lightly as it may harbor an occult malignancy . Histopathological examination of cholecystectomy specimens is mandatory for early detection and prompt management of occult malignancy.

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