

Original Article



Routine Histopathological Examination After Cholecystectomy

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Abstract

Background: Cholecystectomy is one of the commonest surgeries in medical practice. Sometimes malignant condition cannot be assessed pre-operatively. Histopathology require for tissue diagnosis. **Objective:** To assess whether the histopathological examination is really needed for all bladder specimens resected for cholelithiasis and cholecystitis. **Materials and Methods:** This observational study was carried out in the General Surgery Unit, Department of Surgery, Bangabandhu Sheikh Mujib Medical University, Dhaka from May, 2016 to April, 2017. A total number of 95 patients were included in this study. **Results:** Total of 95 gallbladder specimens were submitted for histopathological examination where 33.7% were males and 66.3 % were females with mean age of 46+12.86 years. Chronic cholecystitis was the most common finding in 91.6% of cases whereas Xanthogranulomatous 2.1%. Six of the gall bladders showed adenocarcinoma (6.3%), of which four had changes on ultrasound and macroscopic gall bladder analysis (MGAS) disturbances were found in 5 cases and 1 case was found incidentally on histopathological examination. On ultrasound, only four (66.66%) and per-operative macroscopic examination by surgeon only 5(83.3%) had a clue of carcinoma. **Conclusion:** It could be concluded that , routine histopathological examination of gallbladder after cholecystectomy is necessary as USG sometimes can not differentiate neoplastic lesion from inflammatory one.

Keywords: Cholecystectomy, histopathology, gall bladder carcinoma.

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Introduction

Gallstones are the most common biliary pathology. It is estimated that gallstones affect 10-15% of the population in western societies.¹ In Asian population its prevalence is around 3-5%. Four out of 100 patients with gallstones present with symptoms ranging from simple biliary colic to complications related to it. Laparoscopic cholecystectomy is now a recommended gold standard treatment for symptomatic gall stone patients.² It has been a point of discussion that patients with incidental histopathological finding of gall bladder malignancy have suspicious features on investigations and preoperative and per-operative findings.

Materials and Methods

The present study was carried out at the department of general surgery in Bangabandhu Sheikh Mujib Medical University, Dhaka over a period of one year from May, 2016 to April, 2017. Ninety five patients with the diagnosed of cholelithiasis with cholecystitis were included in this study. Disturbances at macroscopic gall bladder analysis were performed by the surgeon (MGAS). The MGAS was started just after the end of the cholecystectomy, still in the operating room, and before sending the specimen to pathology department. During the first step of the MGAS, the serosa of the gall bladder was irrigated with water, observed and palpated on its entire

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surface. In the second step, the gall bladder was incised longitudinally and the mucosa was irrigated, observed and palpated. During the serosa and mucosa exploration, the surgeon was look for abnormalities that included (masses, indurations, thickness, papillary, nodularity, mucosal irregularity). Photograph of the gall bladder was taken and saved for further analysis of macroscopic data. Histopathological analysis after the MGAS, the gall bladder was placed in formaldehyde and sent to the pathology department. The pathologist had no knowledge of the macroscopic gall bladder analysis performed by the surgeon/resident. A proper report was prepared and information was given to the treating surgeon/resident.

Results

The mode of age distribution of the patients was in 41-50 years age range. The mean age of the patients is 46.33 years. Female were predominant 63(66.3%) and male 32(33.7%). maximum 87 (91.6%) patients had chronic cholecystitis followed by 6 (6.3%) patients had adenocarcinoma and 2 (2.1%) patients had Xanthogranulomatous (Table I). malignancy was higher in male (83.3%) than female (16.7%). malignancy was higher among the patients above 50 years old. USG shows abnormal feature in 4 malignant cases out of 6 and 2 cases having no feature suspicion on malignancy (Table II). Out of 6 cases 5 had abnormal feature on macroscopic examination by surgeon but one had no such feature that was confirmed by histopathology (Table III). sensitivity, specificity, positive predictive value, negative predictive value and accuracy of surgeon's per-operative opinion in the diagnosis of gallbladder malignancy are 83%, 80%, 33%, 86% and 81% respectively (Table IV).

Table I: Histopathological findings of the gallbladders of the study subjects (n=95)

Histopathological findings	Frequency	Percentage
Chronic cholecystitis	87	91.6
Xanthogranulomatous	2	2.1
Adenocarcinoma	6	6.3

Table II: USG findings of gallbladders in positive and negative malignancy (n=95)

USG findings	Malignant Nonmalignant		p value
	(n =6)	(n =89)	
Normal	2 (33.3)	57 (64.0)	0.195
Abnormal (Thickened wall,contracted)	4 (66.7)	32 (36.0)	

Table III: Macroscopic features of gallbladder in positive and negative malignancy (n=95)

Macroscopic features	Malignant	Non-malignant	p value
	(n =6)	(n =89)	
Normal	1 (16.7)	74 (83.1)	0.001*
Abnormal (Thickened wall, Nodular, Focal mass)	5 (83.3)	15 (16.9)	

Table IV: Validity parameters of surgeon's opinion in the diagnosis of malignancy in gall bladder

Validity parameters	Percentage	95% CI
Sensitivity	83%	5.7-100.0
Specificity	80%	98.9-100.0
Positive predictive value (PP')	33%	5.7-100.0
Negative predictive value (NF)	86%	98.9-100.0
Accuracy	81%	97.9-100.0

Discussion

Gall bladder carcinoma is an aggressive disease with late presentation, rapid progression, early recurrence and dismal outcome.³ Available literature reveals that 0.3% to 2.85% of the patients who undergo cholecystectomy for presumed benign disease are found to have carcinoma of gall bladder.⁴

Mean age of the patients is 46.33 ± 12.85 years and age range 20-70 years. This is in accordance with study conducted by Khan et al.⁵ shows mean age was 46.22 ± 10.15. In our study shows that most of the patient were female. Female 63(66.3%) and male 32(33.7%). This is in accordance with study conducted by Khan et al, Almuslamani et al, Talreja et al.^{5,6,7} shows majority were female 73.8%,74.75%,70.29% respectively.

In our study shows histopathological findings of the gall bladders of the study subjects. Maximum 87 (91.6%) patients had chronic cholecystitis followed by 6 (6.3%) patients had adenocarcinoma and 2 (2.1%) patients had Xanthogranulomatous. This is in accordance with study conducted by Ahsan et al⁸ in where malignancy was found 6.15%. Some studies from other areas of Pakistan and India have reported even higher percentages (i.e. 6% to 11%) of such patients with gall bladder carcinoma.⁹ These large differences in the frequencies may be due to some geographical and environmental factors.

Malignancy was significantly higher among the patients above 50 years old. Mean age of the malignancy and non malignancy cases were 55.0 ± 4.47 and 45.75 ± 13.04 years there was no significant difference between two groups. Older age group seems to have higher predilection for development of carcinoma gall bladder. This is in accordance with study conducted Ahsan et al,⁸ where most of malignancy over 50 years. Talreja et al⁷ where average age of patients was 41.30±8.43 years (range 26-68 years) Mittal et al¹⁰ shows mean age of malignancy 56.2, Almuslamani et al⁶ mean age 61.5 years, Khan et al⁵ shows mean age 68.5.

In our study Malignancy was significantly higher in male (83.3%) than female (16.7%). Similar study conducted by Darmas et al¹¹ in where Malignancy was significantly higher in male (83.3%) than female (16.7%), Elshaer et al¹² in where men 72% women 28%. But female patient were found more in study conducted by Sajjad et al,¹³ Bawahab et al.¹⁴

In our study 4 out of 6 malignant cases had thick wall gall bladder in USG, in comparison of USG findings of the gall bladders in positive and negative malignancy there is no significant difference between malignancy and nonmalignant cases. This is in accordance with study conducted by Byars and pursnani.¹⁵ Five out of seven had thick wall gall bladder on USG, Ahsan et al⁸ shows thick wall gall bladder 10 out of 16 malignant case that indicate thick wall gall bladder one of the most important risk factor and should be consider for histopathological examination.

In malignancy cases, 4 (4.21%) had thickened wall, 1 (1.05%) had focal mass 1 (1.05%) had no macroscopic abnormality, identified on histopathology but in non malignancy cases, maximum 72 (80.9%) had normal features followed by 15 (16.9%) had thickened wall and 2 (2.2%) had nodular gall bladder. Similar study by Tiwari et al¹⁶ shows gallbladder cancer was found to be 1.25% of total gall bladder specimen following histopathology. Tasleem et al¹⁷ shows 14 (0.73%) incidental carcinomas with no gross abnormalities. subsequent staging revealed 7 adenocarcinomas in stage IA, 3 adenocarcinoma in stage IIA and 4 adenocarcinomas in stage III. Kalita et al¹⁸ shows incidentally detected cases comprised 0.44%, in contrast Byars et al¹⁵ shows all⁷ patients (100%) satisfied the criteria in the study for being referred to histology on suspicion of cancer on the basis of intra-operative macroscopic abnormalities. Mittal et al¹⁰ reported on a 10-year retrospective series in which they detected 13 gallbladder carcinomas. Suspicion was raised pre-operatively and/or intra-operatively in every case. In our study sensitivity, specificity, positive predictive value, negative predictive value and accuracy of surgeon's opinion in the diagnosis of gallbladder malignancy are 83%, 80%, 33%, 86% and 81% respectively. This is in accordance with study conducted by González et al.¹⁹

Conclusion

The frequency of gall bladder carcinoma in our population was much higher than other parts of the world. Ultrasonography could miss malignant lesions and macroscopic examination by surgeon could miss malignant lesions. Procedure of careful macroscopic examination of surgeon describe in this study could detect malignancy up to pathological stage pT1b onward. Therefore, present study highlights the importance of careful gross and histopathological evaluation of all the gall bladder specimens.

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References

1. Williams NS, Bulstrode CJK, O' Connel PR, Eds. Bailey and Love's Short Practice of Surgery. 26th ed. Broken Sound, Parkway, NW: CRC Press, Taylor and Francis Group. 2013;26:1116-1117.
2. Halldestam I, Enell EL, Kullman E, and Borch K. Development of symptoms and complications in individuals with asymptomatic gallstones, British Journal of Surgery. 2004; 91:734-738.
3. Sikora SS, Singh RK. Surgical strategies in patients with gall bladder cancer: Nihilism to optionism. Journal of Surgical Oncology. 2006; 93: 670-681.
4. Samad A. Gall bladder carcinoma in patients undergoing cholecystectomy for cholelithiasis. Journal Pakistan Medical Association. 2005; 55:497-499.
5. Khan F, Manzoor A., Muhammad Burhan Ul, Haq MBU, Histological Examination of Cholecystectomy Specimens JRM. 2014;18(2):240-242.
6. Almuslamani AJ, Alsoude M, Alomari M, Mnazel T, Khasawana G. Histopathological examination on suspicious gallbladder specimens at Royal Medical Services Hospitals. Rawal Medical Journal. 2001;36:93-96.
7. Talreja V, Ali A, Khawaja R, Rani K, Samnani SS, and Farid FN. Surgically Resected Gall Bladder: Is Histopathology Needed for All? Hindawi Publishing Corporation Surgery Research and Practice Volume, Article ID 9319147. 2016; 4.
8. Ahsan K, Masood M, Jawaid, Department of surgery, Unit V Dow university of health science and civil hospital, Karachi Pakistan Journal of Surgery. 2009;25:264.
9. Naqvi SQH, Mangi IH, Farkhanda. Frequency of carcinoma of gall bladder in patients with cholelithiasis. Gomal Journal Medical Science. 2005; 3(2):41-43.
10. Mittal R, Jesudason MR, Nayak S. Selective Histopathology in Cholecystectomy for Gallstone Disease. Indian Journal of Gastroenterology. 2010;29(1): 29-30.
11. Darmas B, Mahmud S, Abbas A, and Baker AL. Is there any justification for the routine histological examination of straight forward cholecystectomy specimens? Annals of the Royal College of Surgeons of England. 2007; 89 (3), 238-241.

12. Elshaer M, Gravante G, Yang Y, Hudson S, Thomas K, Sorge R et al. Routine versus selective histologic analysis of gallbladder specimens for the detection of incidental gallbladder cancers. *The American Journal of Surgery*.2014;12:38.
13. Sajjad M, Khan RA, Iltaf S. Microscopic assessment of macroscopically normal gall bladder specimens: Is it worth the trouble? *Rawal Medical Journal*.2012; 37(2); 113-114.
14. Bawahab MA, Maksoud WM, Ali HF, Salman AN. Does Routine Histopathological Examination of Gallbladder after Simple Cholecystectomy Add Additional Value? *Bahrain Medical Bulletin*. 2013;35; 4.
15. Byars JD, Pursnani k. An Alternative Approach to Sending All Gallbladders for Histology Following Cholecystectomy? *Surgical Science*.2012;3:15-20.
16. Tiwari A, Raj R, Jain SK, Importance of Routine Histopathological Examination of Gallbladder Specimen in Detecting Incidental Malignancies *Journal of Lumbini Medical College*.2016;4:1
17. Tasleem DR, Niyaz DI, Summyia D, Gul DN, Amin D.A., Ali D.S. Khanday, Rasool D.W. Histopathology Of Routine Cholecystectomy Specimens Is Justifiable *International Journal of Advanced Research*. 2016; 4:1634-1638.
18. Kalita D, Pant L, Singh S, Jain G, Kudesia M, Gupta K, Kaur C. Histopathological Examination of Cholecystectomy Specimens for Early Detection of Malignancy *Asian Pacific Journal Cancer Prev*.2013; 14 (5), 3315-3318.
19. González RJR, A Garza-Flores AG, PérezMaldonado LM, Elizondo JAD, Eguía JJM, Quintana AB. Gallbladder selection for histopathological analysis is based on a simple method: a prospective comparative study. *Ann Royal College Surgeon England*.2012; 94: 159-164.