

Natural history of polypoid lesions in the gall bladder

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Abstract

Background—Although polypoid lesions of the gall bladder are frequently observed in asymptomatic subjects, the natural history of these lesions has never been studied using ultrasonography.

Aim—The natural history of polypoid lesions of the gall bladder was investigated using ultrasonography.

Subjects—Among 4343 patients who presented to the outpatient clinic of Tsuchiura Kyodo General Hospital in 1988, 111 subjects were diagnosed as having polypoid lesions of the gall bladder by ultrasonography. Among these patients, two had gall bladder carcinoma. The remaining 109 subjects (58 female; age: median 54, range 25-89) were enrolled in this study.

Methods—The subjects were followed up by ultrasonography once or twice a year until 1994.

Results—Four patients received cholecystectomy and two patients died of other causes during the observation period. In one patient, gall bladder carcinoma was found, but its location was different from that of the pre-existing polyp. The size of the lesions did not change in 88.3% of the other 130 patients during this period, even among those in whom the initial size of the lesion exceeded 10 mm. There was no apparent correlation between the change in the diameter of the polypoid lesions and patients' sex or age.

Conclusion—Most polypoid lesions of the gall bladder detected by ultrasonography are benign.

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Keywords: gall bladder carcinoma, gall bladder polyp, prognosis, ultrasonography.

Ultrasonography has been widely used in clinical medicine, and its usefulness has been reported in the diagnosis of calculous gall bladder disease.¹ Mass surveys for abdominal disease have recently been performed using ultrasonography, and polypoid lesions of the gall bladder have been one of the most common findings.

There are several studies that describe the prevalence of gall bladder polyps.²⁻⁶ One epidemiological study in Japan shows that the prevalence of gall bladder polyps was 6.28% in men and 3.5% in women,² and another showed 5.3% in men.³ In Denmark, the prevalence was 4.6% and 4.3% in men and women,

respectively,⁴ and 5.9% and 5.8% in men and women, respectively, in a 70 year old population.⁵ The prevalence was as low as 1.3% in the United Kingdom.⁶ However, the only report on the prognosis of polypoid lesions of the gall bladder is an old study using cholecystography.⁷ Therefore, the natural history of patients with polypoid lesions of the gall bladder was studied in this study.

Methods

Ultrasonographic examinations were carried out on 4343 patients in the outpatient clinic of the Department of Internal Medicine, Tsuchiura Kyodo Hospital from 1 January to 31 December 1988. Among these patients, 111 were diagnosed as having polypoid lesions of the gall bladder. Two of them had gall bladder carcinoma. The remaining 109 subjects (58 females; age: median 54, range 25-89) were enrolled in this study. After an overnight fast, ultrasonographic examination was performed by a radiology licensed technician using an Aloka Echo Camera SSD-650CL equipped with a 3.5 MHz transducer (Aloka Co, Tokyo, Japan). Criteria for polypoid lesions of the gall bladder were immobile echoes protruding from the gall bladder wall into the lumen without acoustic shadows. The number of lesions and the diameter of the largest lesions were recorded. The patients were followed up by the same technician once or twice a year until 1994.

Statistical significance was analysed by Mann-Whitney U test or Spearman's rank correlation test, and $p < 0.05$ was considered to be statistically significant.

Results

Table I shows the size and the number of the polypoid lesions. The polypoid lesions were multiple in 61% and single in 39% of the patients. The diameter of the largest lesions was less than 5 mm in 57% of the patients, between 6 mm to 9 mm in 37%, and more than

TABLE I Size and the number of the polypoid lesions of the gall bladder

	Initial sizes of the largest polyps in 1988			Total
	≤5 mm	6-9 mm	≥10 mm	
Single	30 (71.4)	10 (23.8)	2 (4.8)	42 (100)
Multiple	32 (47.8)	30 (44.8)	5 (7.4)	67 (100)
Total	62 (56.9)	40 (36.7)	7 (6.4)	109 (100)

Figures in parentheses are percentages. The size of the largest polyps was significantly larger in the multiple group than the single group by Mann-Whitney U test ($p = 0.0197$).

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TABLE II Size of the polypoid lesions of the gall bladder in relation with age

	Age (y)				
	≤39	40-49	50-59	60-69	≥70
≤5 mm	7 (43.8)	12 (52.2)	18 (56.3)	17 (60.7)	8 (80.0)
6-9 mm	7 (43.8)	9 (39.1)	11 (34.4)	11 (39.3)	2 (20.0)
≥10 mm	2 (12.5)	2 (8.7)	3 (9.4)	0 (0)	0 (0)
Total	16 (100)	23 (100)	32 (100)	28 (100)	10 (100)

Figures in parentheses are percentages. A statistical correlation was seen between the size of the polypoid lesions of the gall bladder and age by Spearman's rank correlation test (p=0.0490).

TABLE III Patients withdrawn during the observation period

Patients	Age	Sex	Withdrawn	Cause	Polypoid lesions
1	53	Male	March 1988	Cholecystectomy	Benign (10×10 mm)
2	67	Female	July 1988	Cholecystectomy*	Benign (3×4 mm)
3	47	Male	November 1989	Died (gastric cancer)	Benign (6×6 mm)
4	89	Male	March 1990	Died (gastric cancer)	Benign (5×5 mm)
5	50	Male	December 1991	Cholecystectomy	Benign (7×7 mm)
6	77	Female	July 1992	Cholecystectomy	Adenocarcinoma (24×15 mm)

*Cholecystectomy was performed during the operation for early gastric carcinoma.

than 10 mm in 6%. The size of the polypoid lesions was significantly larger in younger populations (Table II). With the exception of six patients who died or underwent cholecystectomy, all of the patients were followed up for a five year observation period (Table III). Gall bladder carcinoma was found in one patient, who underwent cholecystectomy, but its location was different from that of the pre-existing polyp. The size of most of the lesions, including even those larger than 10 mm in diameter, did not change during the observation period (Table IV). There were no apparent correlations between the change in the diameter of the polypoid lesions and patients' sex (Table V) or age (Table VI). None of the patients had gall stones.

TABLE IV Initial sizes of the largest polyps and the change in the diameter of the polypoid lesions of the gall bladder between 1988 and 1993

	Initial sizes of the largest polyps in 1988			
	≤5 mm	6-9 mm	≥10 mm	Total
Enlarged*	9 (15.3)	2 (5.3)	1 (16.7)	12 (11.7)
No change	48 (81.4)	34 (89.5)	5 (83.3)	87 (84.5)
Reduced*	0 (0)	2 (5.3)	0 (0)	2 (1.9)
Disappeared	2 (3.4)	0 (0)	0 (0)	2 (1.9)
Total	59 (100)	38 (100)	6 (100)	103 (100)

Figures in parentheses are percentages. A statistical correlation was not seen between the size of the polypoid lesions of the gall bladder and the outcome of the lesions by Spearman's rank correlation test (p=0.3039). *Changes more than 3 mm were defined as enlarged or reduced.

TABLE V Sex and the change in the diameter of the polypoid lesions of the gall bladder between 1988 and 1993

	Male	Female
Enlarged*	5 (10.2)	7 (13.0)
No change	41 (83.7)	46 (85.2)
Reduced*	1 (2.0)	1 (1.9)
Disappeared	2 (4.1)	0 (0)
Total	49 (100)	54 (100)

Figures in parentheses are percentages. No sex difference was observed by Mann-Whitney U test (p=0.3667). *Changes more than 3 mm were defined as enlarged or reduced.

Discussion

A polyp-cancer sequence has been especially implicated in cases with gall bladder adenomas, and a follow up observation every six months has been recommended for polypoid lesions smaller than 10 mm.⁸ However, the only report on the prognosis of polypoid lesions of the gall bladder, was made in an old study using cholecystography.⁷ In this study, we studied the natural history of polypoid lesions of the gall bladder in 109 patients. During the observation period of five years, most of the polyps did not change in size. Although gall bladder carcinoma was found in one patient, its location was different from that of the pre-existing polyp. Thus, polypoid lesions of the gall bladder detected by ultrasonography seem to be benign.

Eelkema *et al* studied 226 patients diagnosed as having polypoid lesions of the gall bladder by cholecystography, and suggested that cholecystographically demonstrated polypoid lesions without stones are benign and remain benign.⁷ Their result is consistent with our findings. In their study, however, 30 of the patients were not available for study, 58 patients were lost during the follow up period, and only 113 patients were analysed after 15 years. Furthermore, cholecystography has much less diagnostic sensitivity than ultrasonography. Therefore, although no malignancies were observed during the follow up period in their study, the actual prognosis of those lesions is not clear.

In a study of 411 patients who underwent cholecystectomy for gall bladder disease, Koga *et al* found adenocarcinomas in eight patients and benign polyps including cholesterol polyps and adenomatous hyperplasias in 32 patients.⁹ The ratio of malignant disease was high in their study probably because they analysed operated cases who presented to the hospital with symptoms, but this is difficult to confirm because the actual basal diseases were not shown in their report. Many of the patients with gall bladder carcinoma presented symptoms such as upper quadrant, epigastric or colicky pain, or all three, and the size of the lesions was greater than 10 mm in seven of eight patients. In one patient, the size of the polyp was 5 mm at presentation but increased rapidly to 10 mm within five months of follow up. More recently, Chijiwa and Tanaka from the same department reported on 716 cases of cholecystectomy and found 44 cases of polypoid lesions. Among the 44 cases of polypoid lesions, 12 cases were shown to be gall bladder carcinomas.¹⁰ Again, most of the malignant polypoid lesions had diameters larger than 10 mm. On the other hand, Ukai *et al* reported a case with cholesterol polyps that changed in size from 9×6 mm to 12×10 mm in 10 months,¹¹ suggesting that benign polyps also change in size in comparatively short periods of time. In the subjects with multiple lesions, however, it is practically impossible to confirm by ultrasonography whether the largest polyps detected in 1988 were the same as those observed in 1994. Nevertheless, it is noteworthy that no carcinoma developed in polyps.

TABLE VI Age and the change in the diameter of the polypoid lesions between 1988 and 1993

	Age (y)				
	≤39	40-49	50-59	60-69	≥70
Enlarged*	2 (13.3)	1 (4.5)	4 (13.3)	3 (11.1)	2 (22.2)
No change	13 (86.7)	21 (95.5)	25 (83.3)	22 (81.5)	6 (66.7)
Reduced*	0 (0)	0 (0)	0 (0)	1 (3.7)	1 (11.1)
Disappeared	0 (0)	0 (0)	1 (3.3)	1 (3.7)	0 (0)
Total	15 (100)	22 (100)	30 (100)	27 (100)	9 (100)

Figures in parentheses are percentages. Statistical correlation was not seen between the outcome of the lesions and the age by Spearman's rank correlation test ($p=0.8116$). *Changes more than 3 mm were defined as enlarged or reduced.

In five patients in this study, the lesions seemed to be benign because they did not change in size during the observation period even when they initially exceeded 10 mm in diameter. As pathological assessment of the polypoid lesions was not made, however, it remains to be clarified whether polypoid lesions that grew from an initial size that already exceeded 10 mm were benign or not.

A recent study has shown that a significantly high incidence of gall stone disease was found among subjects with former polyps in the gall bladder, suggesting either that gall bladder polyps may facilitate gall stone formation, or that some of the gall stones may have been misdiagnosed as gall bladder polyps.¹² In that study, no malignancies were found during the five year follow up period. In our study,

however, none of the subjects with polypoid lesions had gall stones five years later.

In conclusions, most polypoid lesions of the gall bladder detected by ultrasonography are benign.

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