ORIGINAL ARTICLE

Eastern Journal of Medicine

East J Med 26(2): 334-338, 2021
DOI: 10.5505/ejm.2021.76148

Evaluation of The Histopathological Analysis and Surgical Indication of The Gallbladder Polyps Determined By Ultrasonography

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ABSTRACT

Since gallbladder polyps (GBP) may carry a risk of malignancy, their follow-up and treatment are of great importance. Today, many gallbladder polyps are diagnosed symptomatically or incidentally by ultrasonography.In this study, we examined the adequacy of the conditions that affect to the surgical decision of gallbladder polyps that we operated on in our clinic.

The study was performed on 220 patients who were diagnosed with gallbladder polyp by abdominal ultrasonography and underwent laparoscopic cholecystectomy between October 2015 and October 2020. Patients with polyp size of 10 mm and above, patients with multiple polyps with smaller than 10 mm, patients with accompanied by stones and polyp, patients who want to have surgery, patients with increased in polyp size during follow-up, and patients with symptomatic were included in the study. Preoperative ultrasonography results, demographic characteristics, and postoperative pathology results of the patients were compared.

61.8%(136) of the patients were female and 38.1%(84) were male, the mean age was 62.6 ± 9.5(23-83 years). The size of the polyps was 6.8±0.6mm (3-14). 30.9% (68) of the patients had multiple polyps and 12.6%(28) had polyps 10 mm or more. In all of those with true polyps, the size of the polyp was greater than 10 mm. The most common histopathological diagnosis was cholesterol polyp on 37.3%(82) of patients, and the least common diagnoses was adenomatous polyps were seen on 5.5%(12) of patients. In our study, no malignancy was observed as a result of pathology in any patient we operated for the polyp. Therefore, surgical decision of patients with gallbladder polyp should not be made only with ultrasonography and demographic features, different risk factors that predict malignancy need to be identified.

Keywords: Gallbladder polyp, ultrasonography, laparoscopic cholecystectomy, adenomatous polyp

Introduction

Gallbladder polyps (GBP) usually originated from the gallbladder mucosa and are structures that show an intraluminal growing pattern (1). Many of them are asymptomatic and detected incidentally during the abdominal or hepatobiliary ultrasound examination. The incidence is detected as 0.3-12 % in healthy people (2) and only 5% of these cases are classified as a true polyp (3). The coexistence frequency of GBP and gallbladder stones 4-8% (4). GBPs are divided into two groups as true polyps and pseudopolyps. Pseudopolyps are composed of cholesterol polyps, inflammatory polyps, hyperplastic polyps, and focal adenomyosis. On the other hand, the true polyp group is adenomatous polyps and adenocarcinomas. The true polyps have a 5-10% of potential to develop malignancy (5). In the case of detection of malignity in polyps, it is called as gallbladder cancer and thisis usually adenocarcinoma (6). Although gallbladder cancer is seen rarely, it is the 5th most commonly seen cancer in the gastrointestinal system (7). The prognosis is remarkably bad, however, the cholecystectomy as surgical management is usually adequate treatment in case of detection at the early stage (T1a) (8). Currently management of GBP's is; monitor the polyps under 6 mm, annually and polyps between 6-9 mm at 6-month intervals, and if there is a growth of 2 mm or more in polyp size between 2 controls, or polyp size reaches 10 mm or above, cholecystectomy is recommended. In addition, if the size of the polyp is over 10 mm at the first diagnosis and the patient is medical fit, again cholecystectomy is recommended. (9) The unnecessary operations performed for GBP may not be cost-effective and create morbidity and mortality however, the patients who are not operated by mistake and need an operation may evolve a potential risk of malignancy. For this reason, the management of GBPs carries significant importance. Although the ultrasound

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Received: 12.01.2021, **Accepted:** 06.02.2021

examination is generally a suitable method for the detection of polypoid lesions, sometimes it is not enough for characterization. However it is the most used technique due to that it is an easy to apply, non-invasive, common, and low-cost method. The other scanning methods have a limited role for discrimination of benign and malignancy features in polypoid lesions and there is no studies in large case series (10).

In this study, we aimed to compare the preoperative USG results, demographic characteristics and postoperative pathologic results of patients who had the diagnosis of GBP and underwent laparoscopic cholecystectomy operation. And also, we aimed to evaluate the satisfactoriness of making a surgical decision based on these parameters.

Materials and Methods

Our study was conducted at our hospital general surgery clinic after obtaining ethical approval with the number of 71/1160 on 02/12/2020.A total of 220 patients who had a diagnosis of GBP and underwent laparoscopic cholecystectomy between October 2015 and October 2020 were included in the study. The patients' data were reached from the hospital registry system and the clinic's patient data files. The diagnosis of GBP was done and accepted when there are hyperechoic lesions that have not acoustic shadowing and not mobile during the change of position on ultrasound examination (11). In USG examination, patients with polyp size of 10 mm and above, patients with polyp size smaller than 10 mm with multiple polyps, patients with polyps and gallstones, patients with when 2 mm or more increase in polyp size in 2 consecutive USG follow-ups, symptomatic patients and while patients who did not accept follow-up and wanted to undergo surgery were included in this study, symptomatic patients with concomitant upper gastrointestinal system problems and patients with have previous invasive attempts to the gallbladder were excluded from the study. The patients' data regarding demographic features, ultrasound reports, and pathology results were evaluated retrospectively. The cholesterol polyps, cholesterolosis, inflammatory polyps, hyperplastic polypsand focal adenomyosis were accepted as pseudopolyp, on the other hand, adenomatous polyps and adenocarcinoma were accepted as true polyps based on the postoperative histopathologic examination.

Statistical Analysis: The statistical analyses were performed by using the Statistical Package for the Social Sciences (SPSS) for Windows (25.0 version). The categorical variables were presented as frequency (percent %) and numeric variables were presented as (mean ±standard deviation).

Results

The mean age of patients was 62.6±9,5 (23-83 years). 61.8% (136) of patients were male and 38.1% (84) of patients were female. The size of the polyps was 6.8±0.6 mm (3-14 mm). Multiple polyps were detected in 30.9% (68) of patients. %12.7 (28) of patients had a polyp size of 10 mm and larger. The data regarding causes of surgery in patients who were operated on was as follows: 11.4% (25) of patients had polyp size smaller than 10 mm but didnot accept the follow-up, %30.9 (68) of patients had multiple polyps or coexistence of gallbladder stone, %18.2 (40) of patients had an increase in polyp size on follow up examinations and %26.8 (59) of patients had right upper quadrant pain and didnot have any pathology other than polyp in examination with upper gastrointestinal endoscopy and imaging studies (Table 1).

The histopathologic examination revealed that %5.5 (12) of patients had a true polyp and all of these polyps were adenomatous polyp. The polyp size was larger than 10 mm in all patients who had true polyp. The gallbladder pathologic examination showed that %37.3 (82) of patients had cholesterol polyp, 15(33) of patients had cholesterolosis, %5.5(12) of patients hadan adenomatous polyp, %29.5 (65) of patients had cholecystitis. No polyp was observed in %12.7(28) of cases in the histopathologic examination (Table 2).

Dıscussıon

Ultrasound examination is the most widely used imaging method for the diagnosis of gallbladder polyps (9). Its advantages are rapid, low cost, easy to apply, and noninvasive, whereas the disadvantages are its physician-dependent feature and some technical difficulties regarding patient's physical characteristics.

Cholecystography, computed tomography (CT), and endoscopic cholangiopancreatography (ERCP) have no superiority on ultrasoundregarding the polyp diagnosis (12). The generally accepted approach in GBPs; in addition to the size of the polyp larger than 10 mm, cholecystectomy is recommended if the polyp is enlarged, changed of shape during follow-up, the patient is old, the presence of primary sclerosing cholangitis, the presence of gallstones and symptomatic (9,13). The follow up with ultrasound examination is advised to patients that are not included in these determined groups with the

Table 1. The operation indications of gallbladder polyps

Operation indication	Number of patients/percent		Polyp size (mm)	
	(n:220)	(%)	Mean±SD	Min-Max
Probability of malignancy	28	%12.7	12.2±2.6	11-14
Patients refused to follow-up	25	%11.4	8.7±0.6	7.8-9.2
Coexistence of polyp-stone	68	%30.9	3.9±1.6	2.8-8.4
Increase in polyp size on follow-up	40	%18.2	7.6±0.6	6.2-8.9
Symptomatic polyp	59	%26.8	4.6±0.4	3.2-4.8

Tablo 2. Histopathologic results of gallbladder polyps

Histopathologic results	Patients' number (n:220)	Patients' percent (%)
Cholesterol polyp	82	% 37.3
Cholesterolosis	33	%15.0
Adenomatous polyp	12	%5.5
Cholecystitis	65	%29.5
No polyp detected	28	% 12.7

frequency of once a year if polyp size is smaller than 6 and once a six month for polyp size of 6-9 mm (9) (Chart 1). Similar management protocols were followed during the decision of operation and management for patients in our study and clinic.

The differential diagnosis of true and pseudopolyps in GBPs is crucial because there is no risk of malignity in pseudopolyps. On the other hand, true polyps have risk of malignancy (14). Due to this, the necessity of operation is mandatory in true polyps however surgery is not needed in pseudopolyps unless the presence of symptomatology.

We observed that 61.8% of patients were female according to our study results, this data was consistent with the literature but gender is not accepted as a risk factor for malignity occurrence (15). The mean age of our patients was 62.6±9,5 (23-83 years). The studies reported that demographic characteristics such as older age, male gender, genetic factors, ethnicity (Indian) and also diabetes mellitus, hypertension, and obesity have role in the development of gallbladder polyp. Also, the malignity potential increases over the age of 50. (16,17)

The main problem with GBP is to decide which patient will be operated and which will be followed up. Because ultrasound is inadequate in discriminating the malignant-benign lesion despite its useful features. Our operation indications are forming by the demographic features, co-morbidities, and change in size of polyp during follow-up examinations. Despite all these things, the most of patients who were operated for GBP were found to have benign lesions. The majority of these lesions are composed of cholesterol polyps (50-70%). The neoplastic lesions are mostly adenoma and it corresponds to the 5% of all GBPs. (5,18)

In our study, the histopathologic evaluation of gallbladders revealed that 37.3% (82) of patients have cholesterol polyps, 15% (33) of patients have cholesterolisis, and 5.5% (12) of patients have adenomatous polyps. Therefore, our results were consistent with the literature. The age of all patients (12.7%) with polyp size greater than 10 mm was over 50 in our study. 18.1% (40) of patients who showed a 2 mm or higher increase in polyp size during 6 month follow-up examinations underwent operations. However, malignancy was not detected in any of our patients. Polyp was not detected in 12.7% (28) of our patients in the histopathologic examination. The majority of our patients underwent operation due to coexistent polyp+gallbladder stone, multiple polyps cases and symptomatic patients. Most of this patients polyp size smaller than 10 mm. We think that the higher number of cases without polyps might be due to this reason in pathological examination.

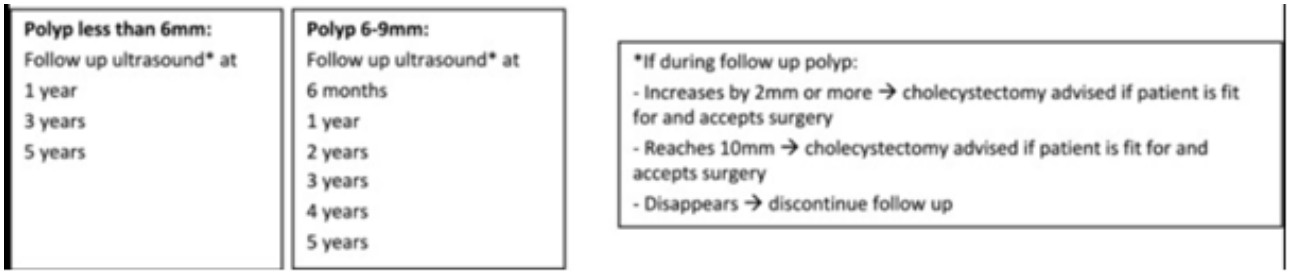

Chart 1. Recommended algorithm for follow up gallbladder polyps

As a result of 5 studies conducted on the subject, the sensitivity of USG varies between 40-100% and the specificity varies between 80-96% for the diagnosis of GBP(19). When we evaluated the other imaging methods; endoscopic ultrasonographywas found to have superiority to the ultrasound for detection of GBPs (19-21). However endoscopic ultrasonography is not an adequate and useful method for discrimination of benign and malignant lesions especially in smallpolyps(20). In addition, some factors like it is an endoscopic procedure that requires sedation, have access in limited centers and necessitates experience make it difficult to apply. Some studies report the superiority of PET-CT over ultrasound for discrimination of benign-malignant lesions (22).

Many studies in the literature pointed outthe high risk of malignancy in polyp larger than 10 mm of sizes and therefore urge the necessity of surgery. There are studies that report patients with polyp size larger than 12 mm should be operated. On the other hand, some other studies propose surgery for smaller polyps (23,24). In our study, 12.7% (28) of patients were found to have polyp size of 10 mm and larger. When several studies in the literature evaluated regarding the polyp size of 10 mm and larger, it is observed that there is no or very low seen malignancy (16,24-26). Our study's results are consistent with the literature data.

GBPs are usually asymptomatic. The polyps that are located near the gallbladder neck and coexistent with stones may be symptomatic. In addition, incidental gallbladder cancer is common with gallstones, especially there are studies supporting the relationship of the stone larger than 3 cm with the risk of cancer. (27,28). In our study, 30.9% (68) of patients had coexistence gallbladder stones with polyps and 26.8% (59) of patients were symptomatic. For this reason, most widely indication for cholecystectomy was formed by these two groups.

The limitation criteria of our study is that ultrasonographic examinations were performed by more than one radiology specialists with different devices.

In conclusion, malignity was not observed in any of our patients with histopathologic examination even though many factors like ultrasound results, presence of coexistent pathologies, increase in polyp size, the number of polyps, presence of symptomatic polyps was taken into account during the decision of operation. This shows us that there is a need for more precise markers to be identified for deciding on operation because ultrasound and current parameters seem to be insufficient.

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