

# “Spontaneous Subcapsular Hematoma of the Liver Complicating Acute Calculous Cholecystitis”: A Rare Case Report and Literature Review

## “Akut Taşlı Kolesistiti Komplike Eden Karaciğerin Spontan Supkapsüler Kanaması” Nadir Bir Olgu Sunumu ve Literatürün Değerlendirilmesi

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### Abstract

Spontaneous subcapsular liver hematoma is a rare condition, and this case report describes the clinical course of an 85-year-old female patient who developed a spontaneous subcapsular hematoma while being followed up for acute cholecystitis. After exacerbation of right upper-quadrant pain, imaging studies revealed hematoma. The patient was managed conservatively, with subsequent imaging showing a reduction in the size of the hematoma, and her hemodynamic stability was maintained. This case highlights the diagnostic, therapeutic, and clinical considerations of spontaneous subcapsular liver hematoma and provides a broader perspective by comparing it with similar cases in the literature.

**Keywords:** Hematoma, liver, spontaneous, supcapsular

### Öz

Spontan subkapsüler karaciğer kanaması nadir görülen bir durum olup, bu olgu sunumu, akut kolesistit nedeniyle takip edilen ve spontan subkapsüler kanama gelişen 85 yaşındaki bir kadın hastanın klinik seyrini anlatmaktadır. Hastanın sağ üst kadran ağrısının şiddetlenmesi üzerine yapılan tetkiklerde kanama tespit edilmiş, konservatif tedavi ile takip edilen hastada kanama boyutlarında küçülme gözlenmiş ve hemodinamik stabilite korunmuştur. Bu olgu, spontan subkapsüler karaciğer kanamalarının tanısı, tedavi seçenekleri ve klinik seyrinde dikkat edilmesi gereken noktaları vurgulamakta ve literatürdeki benzer olgularla karşılaştırma yaparak konuya geniş bir perspektif sunmaktadır.

**Anahtar kelimeler:** Hematom, karaciğer, spontan, supkapsüler

### Introduction

Spontaneous subcapsular liver hemorrhage is a rare but potentially fatal condition. In most cases reported in the literature, an iatrogenic cause (such as surgical, percutaneous, or endoscopic intervention) or a predisposing factor (such as liver pathologies, pregnancy, trauma, or anticoagulant use (1-5)). Herein, we present a case of subcapsular hemorrhage that developed in an

85-year-old female patient with known cholelithiasis and compare it to similar cases described in the literature.

### Case Report

An 85-year-old female patient with a history of gallstones for several years presented to the emergency department with complaints of abdominal pain in the right upper quadrant. The patient had a history of coronary artery disease (CAD)



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that was treated with angiography 8 years previously but had no known additional diseases or medications. On examination in the emergency department, the patient presented with pain and tenderness in the right upper quadrant. Intravenous (IV) contrast-enhanced computed tomography (CT) images were consistent with cholecystitis. The patient, who did not want surgery and felt relief with analgesics, was discharged with a prescription for a proton pump inhibitor (PPI), antibiotic (cefuroxime), and analgesic.

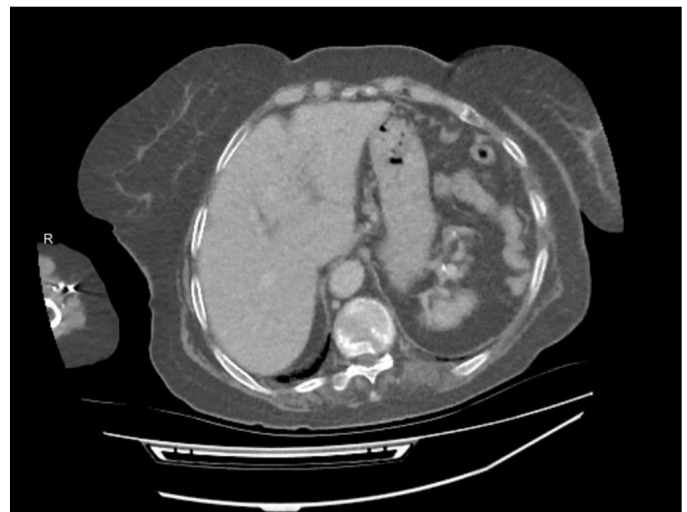
Three days later, the patient returned to the emergency department with abdominal pain and vomiting. Because of vomiting, she was unable to take oral antibiotics, and she was admitted to the general surgery department.

On the day of hospitalization, complete blood count, biochemistry, and urinalysis were performed. All values were within normal ranges except for liver function tests and C-reactive protein, an acute-phase reactant. Routine tests and endoscopy were planned.

Following her admission, the infection disease specialist recommended IV clarithromycin (2,500 mg) and IV metronidazole [3,500 mg (due to suspected allergy to cefuroxime)]. Her diet was restricted to fat-free liquid foods. PPI and analgesics were added to her treatment, and IV hydration was maintained. The patient's IV contrast-enhanced CT scan performed at the emergency department did not show any additional pathology except for a hydropic gallbladder and dilated common bile duct (8 mm) (Figure 1).

On the second day of hospitalization, the patient developed sudden severe pain in the epigastric region and right upper quadrant. Physical examination revealed

only pain and tenderness upon palpation. On the same day, his hemoglobin level dropped from 14.9 g/dL at admission to 10.5 g/dL (Table 1). The patient appeared more fatigued than on the previous day. New symptoms included burning during and frequent urination. Urinalysis and urine culture were performed, and based on the advice of an infection disease specialist, clarithromycin was discontinued, and the antibiotic was switched to piperacillin/tazobactam. Meanwhile, magnetic resonance cholangiopancreatography performed the previous day to evaluate intra- and extrahepatic bile ducts revealed a fluid collection compatible with subcapsular hemorrhage surrounding the superior and lateral regions of the liver's right and left lobes, approximately 4.5 cm in length. Routine blood tests taken the same day confirmed a drop in hemoglobin levels to 10.5 g/dL.



**Figure 1.** No hemorrhage was observed in the liver on the CT scan performed in the emergency department

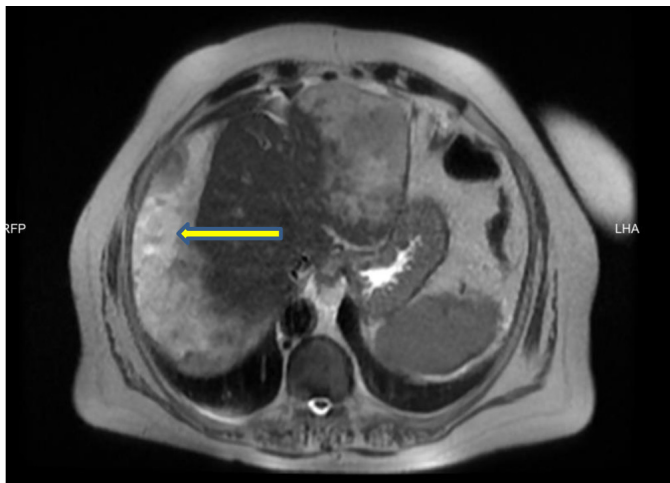
CT: Computed tomography

**Table 1. Progression of the patient's blood parameters**

Blood test	Normal range	Units	Admission	SHH diagnosed	Discharge
HB	11-16	g/dL	14.9	9.5	11.6
WCC	4-10	10 <sup>9</sup> /L	6.31	8.02	5.21
PLT	100-400	10 <sup>3</sup> /L	144	133	135
GGTP	6-42	U/L	300	296	157
AST	2-35	U/L	166.4	155.2	29.3
ALT	0-40	U/L	245.2	189.7	24.2
CRP	0-5	mg/L	103.3	68.2	25.06
INR	0.8-1.2	INR	1.05	1.18	1.13
APTT	25.4-36.9	seconds	28.6	23.6	28.5
Thrombin time	10.2-13.9	seconds	12.3	13.8	13.2

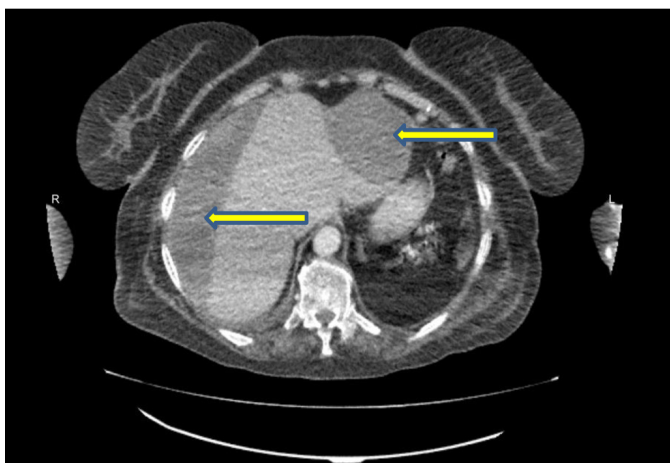
SHH: Sonic hedgehog, HB: Hemoglobin, WCC: White cell count, PLT: Platelet, AST: Aspartate aminotransferase, ALT: Alanine aminotransferase, CRP: C-reactive protein, INR: International normalized ratio, APTT: Activated partial thromboplastin time

On the third day of hospitalization, after detecting fluid consistent with hemorrhage on magnetic resonance imaging, the patient underwent another evaluation with ultrasonography (USG). The USG showed subcapsular collections measuring 15x5 cm in the dome of the right liver lobe and 6x5 cm in the left lobe, characterized by poorly defined hypoechoic areas with dense content, suggestive of hemorrhage (Figure 2). The patient had no history of trauma, and no signs of hemorrhage were observed in the CT scan taken before admission. By the third day of hospitalization, spontaneous subcapsular hemorrhage had developed, as confirmed by follow-up imaging (Figure 3).



**Figure 2.** Subcapsular hepatic hematoma detected on MRCP obtained to evaluate extrahepatic bile duct pathology (yellow arrow)

*MRCP: Magnetic resonance cholangiopancreatography*



**Figure 3.** Subcapsular hepatic hematoma on CT scan (yellow arrow)

*CT: Computed tomography*

Daily follow-up of the patient revealed a decrease in hemoglobin levels by approximately 1 g/dL over 24 hours. On the fourth day of hospitalization, the hemoglobin level was measured to be 8.8 g/dL, after which the patient received two units of erythrocyte suspension and one unit of fresh frozen plasma, raising the hemoglobin level to 10.8 g/dL. No additional pathology was found on endoscopy performed on day 4.

During the hospital follow-up, as the hemorrhage stabilized and hemoglobin levels returned to normal, discharge was planned. The patient was transferred to the pulmonology department due to respiratory distress. Before the patient was transferred to the pulmonary diseases department, a case report was prepared, and informed consent was obtained from the patient and their relatives. During the pulmonologist's follow-up, an USG showed that the hemorrhage had regressed to a size of 5 cm. Approximately 2 months after discharge, the patient was brought to the emergency department because of respiratory failure, where he subsequently experienced respiratory arrest and was declared extubated.

## Discussion

Subcapsular hemorrhage of the liver is defined as bleeding between Glisson's capsule and the hepatic parenchyma. There are different underlying causes of liver hemorrhage. It is often described as a complication of preeclampsia during pregnancy (3). Other common causes include liver trauma (4), iatrogenic injuries following endoscopic retrograde cholangiopancreatography (1), biliary tract surgery, and liver biopsy. Liver neoplasms, chronic liver diseases (2), coagulopathic, vasculitis, and anticoagulant medications (5) can also lead to subcapsular hemorrhage.

In this case, we followed an 85-year-old patient who had not used any anticoagulants for several years despite having a history of CAD and was cognitively intact and atraumatic. The clinical presentation of our patient was similar to a case reported by Burrows-O'Donoghue et al. (6), where the patient's age and clinical history were comparable to our case, although their patient was on low-dose anticoagulants (Table 2). Although low-dose anticoagulant use is not expected to cause significant life-threatening hemorrhage, it may still predispose a patient to bleeding.

Our literature review identified eight cases of spontaneous subcapsular hepatic hemorrhage without a clear underlying cause. In addition to our presented case, we evaluated a total of nine patients and found that the average age

was 57.7 years. However, it should be noted that the age distribution of the patients was broad, ranging from 36 to 85 years. Interestingly, 66.6% of the reported cases were female, whereas 33.3% were male.

When examining the clinical course of these cases, we observed that in six of the cases (66.6%), the hemorrhage regressed with supportive care and conservative

management, without the need for any interventional procedures or surgical intervention. In only one case reported by Tanaka et al. (11), arterial embolization and percutaneous drainage were required because of sudden hemodynamic deterioration (development of hemorrhagic shock). In the case reported by Malle and Kone(12), surgical intervention was necessary due to rupture of the hematoma capsule. Both patients were discharged following inpatient

**Table 2. Summary of reported spontaneous subcapsular liver hemorrhages and a comparison of their clinical courses**

	Information	Procedure	Maximum hematoma size	Outcome
<b>Case 1 (7)</b>	81 year-old Male Hipothyroidism Left renal agenesis	Conservative treatment and follow-up	1 cm	Discharge after 3 days of follow-up
<b>Case 2 (8)</b>	40 year-old Male No comorbidities	Conservative treatment and follow-up	16x10x3 cm	Discharge after 1 week of follow-up
<b>Case 3 (9)</b>	36 year-old Female No comorbidities Use of compression garment (Faja)	Conservative treatment and follow-up	13.7x5.6x9.5 cm	Discharge after 1 week of follow-up
<b>Case 4 (6)</b>	79 year-old Female CAD, heart failure, type 2 diabetes, obesity, cholecystitis	Conservative treatment and follow-up	Not specified	Discharge after 1 month of follow-up
<b>Case 5 (10)</b> <b>(History of recurrent liver hemorrhage)</b>	52 year-old Female Hypertension Breasts cancer (Taking tamoxifen)	Conservative treatment and follow-up (Due to suspicion tamoxifen was discontinued and parasite treatment was initiated)	-13 cm (in segment 8) -8.8 cm (in segment 6) -1.7 cm (in segment 1) (Three episodes of hemorrhage occurred, each two months apart.)	Discharge after follow-up
<b>Case 6 (11)</b>	44 year-old Female Breast cancer (Taking tamoksifen and transtuzumab)	2 arterial embolizations and 1 percutaneous drainage	Not specified	At the 7-month follow-up, the hematoma was found to have decreased in size
<b>Case 7 (12)</b>	60 year-old Male No comorbidities Pain onset after coughing	Visceral surgery (laparotomy)	17x14x5 cm	Discharge after follow-up
<b>Case 8 (13)</b>	43 year-old Female Steinert disease Nephrolithiasis (right)	Death occurred following two days of right upper quadrant pain attributed to nephrolithiasis. The autopsy revealed approximately 2 liters of hemoperitoneum due to subcapsular hematoma of the liver. The cause of death was recorded as subcapsular hematoma of the liver.		

care. Among the reported cases, only one case (11.1%) resulted in death, and the cause of death was confirmed to be spontaneous subcapsular hepatic hemorrhage on autopsy (13). The remaining eight cases (88.8%) were discharged without adverse events.

## Conclusion

Considering the clinical course of all previously reported cases, spontaneous subcapsular hemorrhage of the liver may resolve with mild symptoms within a few days. However, it also has the potential to rupture, which can lead to rapid hemodynamic deterioration and death. Conservative treatment and clinical follow-up are the first-line approaches for patients with stable hemodynamics after diagnosis. The patient's vital signs and blood parameters should be closely monitored, and the extent of bleeding should be tracked through radiological imaging. In cases of hemodynamic instability or rapidly expanding hemorrhage, percutaneous interventions, arterial embolization, and surgery may be considered.

## Ethics

**Informed Consent:** Consent was obtained from the patient and their relatives.

## Footnotes

### Authorship Contributions

Surgical and Medical Practices: E.S., İ.D., B.T., Concept: E.S., Design: E.S., B.T., Data Collection or Processing: E.S., Analysis or Interpretation: E.S., Literature Search: E.S., İ.D., Writing: E.S., İ.D., B.T.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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