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The National Center of Oncology (NCO) of the Ministry of Health of the Republic of Azerbaijan is the main structure responsible for the coordination of scientific, methodological and preventive activities providing specialized cancer care for the population in our country. The major objective of the Center is to achieve the best survival rate for patients; this is carried out by early diagnosis and such diversified treatment methods of cancer as modern surgery, radiotherapy and chemotherapy.

Having functioned as the Republican Oncological Scientific Center with a long historical development path, it received its contemporary title in 1995. Jamil Aziz Aliyev, an Academic of the Azerbaijan National Academy of Sciences, has been the General Director of the Center since March, 1990.

Both the NCO itself and the oncology service in the whole country have been tremendously developing last 20 years. In 2009, the Surgery Building equipped with the most modern medical facilities was opened at the NCO with the participation of the President of the Republic of Azerbaijan Ilham Aliyev. In 2012, the Pediatric Oncology Clinic was launched at the NCO with the participation of the First Vice-President of the Republic of Azerbaijan Mehriban Aliyeva. The Clinic has all departments necessary for the treatment of childhood cancers. Additionally, the Treatment Building and Molecular Oncology Laboratory also started operating at NCO in 2014.

In 2014, the National Center of Oncology and 'Varian Medical Systems', a US Company designing and manufacturing the most advanced technologies for radiation treatment, signed an agreement. According to it, the most advanced universal system "TrueBeam™ STx" was installed at the Center, and it was accepted as the reference center of 'Varian Medical Systems'. At the present time, the NCO has seven linear accelerators. Furthermore, in 2016, the Nuclear Medical Center was opened at the NCO with the participation of officials of the International Atomic Energy Agency, and for the first time in Azerbaijan, PET/CT examination was launched for diseases diagnosis. The Center is included in the Research for Life – the EARL accreditation program established by the European Nuclear Medicine Association.

Performing as the country's leading medical center, the National Center of Oncology has a clinical base of 1500 beds, twenty-one scientific and fifty-one clinical departments. Currently, the medical personnel of the NCO consist of 1452 people – among them one Academician, eleven Doctors of Science, six Professors, two Honored Scientists and forty-seven Doctors of Philosophy.

The National Center of Oncology effectively cooperates with the world's leading cancer institutions and centers in the global fight against cancer. Many examples of this include cooperative relations with the University of Texas MD Anderson Cancer Center, the International Prevention Research Institute, Hacettepe University and more. These relations comprise mutual scientific and research programs, the exchange of scientists and medical specialists, the conduction of joint meetings, workshops and training programs aiming to improve the knowledge and experience of the NCO's personnel. This all leads to better care for patients.

National Center of Oncology

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CASE REPORTS

CASE REPORT

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Lipoma of the Quadrigeminal Cistern as a Rare Cause of Vertigo: Case Report with Literature Review

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ABSTRACT

Intracranial lipomas are very rare mesenchymal tumors, constituting 0.1% of all cases. These tumors may be located in the quadrigeminal cistern. Most quadrigeminal lipomas do not cause any clinical symptoms and are found incidentally. If the lesion is large enough, it can cause headaches, seizures, and diplopia. We present a 56-year-old male patient who presented with the complaint of vertigo for five years and was diagnosed with quadrigeminal plaque lipoma, accompanied by magnetic resonance imaging findings and literature review. According to our knowledge, this is the first case in the literature in which a quadrigeminal cistern lipoma caused vertigo.

Keywords: Lipoma, intracranial lipoma, quadrigeminal cistern, quadrigeminal plate, quadrigeminal lipoma, vertigo

INTRODUCTION

Lipoma is a common benign mesenchymal-induced tumor with variable distribution. Intracranial lipomas (ILs) are rare and account for 0.1% of all primary brain tumors [1,2]. They are usually diagnosed incidentally [3]. IL is located in the midline regions such as the corpus callosum and quadrigeminal plate [4]. Computed tomography (CT) and magnetic resonance imaging (MRI) are usually sufficient for diagnosing lipomas. Quadrigeminal lipomas (QL) generally present as asymptomatic. However, they can cause neurologic symptoms if they are large enough to cause a mass effect [5]. Symptomatic treatment and follow-up are the main management of these cases. Surgical removal of QL carries risks of postoperative complications and morbidity due to adjacent brainstem structures. Therefore, if the patient is asymptomatic, follow-up is recommended. We report a case of a 56-year-old male who presented with vertigo caused by quadrigeminal plate lipoma.

CASE PRESENTATION

A 56-year-old white male was admitted to the otolaryngology department with vertigo as his main complaint for the past five years. He also described experiencing multiple episodes of nausea and visual disturbances during this period. The patient had a long history of seizures, treated by a neurologist. No other comorbidity was described. Family history was not remarkable. On physical examination, left-side hypesthesia was detected, but he had a normal gait and cerebellar and vestibular test results. Other findings were unremarkable. Routine laboratory tests were within the reference range. Blood tests were within the normal 60 ranges. In the MRI report, an approximately 4x3.3 10 mm lesion with a hyperintense signal on T1 and T2-weighted images was observed on the quadrigeminal cistern adjacent to the tectum (Figure 1A-E). Due to susceptibility artifacts, the lesion was hypointense on fat-saturated T1 and magnetic susceptibility weighted imaging sequences without post-contrast enhancement compatible with lipoma. No malformations or hydrocephalus were detected. The patient's condition was consulted with the neurosurgeons. Neurosurgery and neurology consultations resulted in symptomatic medical treatment and non-surgical follow-up. Betahistine 24 mg three times daily was planned and there was a slight improvement in the patient's vertigo complaint at 24-month follow-up.

DISCUSSION

ILs are very rare tumors whose development is poorly understood, with an incidence of about 0.1-0.5% of all brain tumors [2,4,6,7]. They are usually located in the midsagittal

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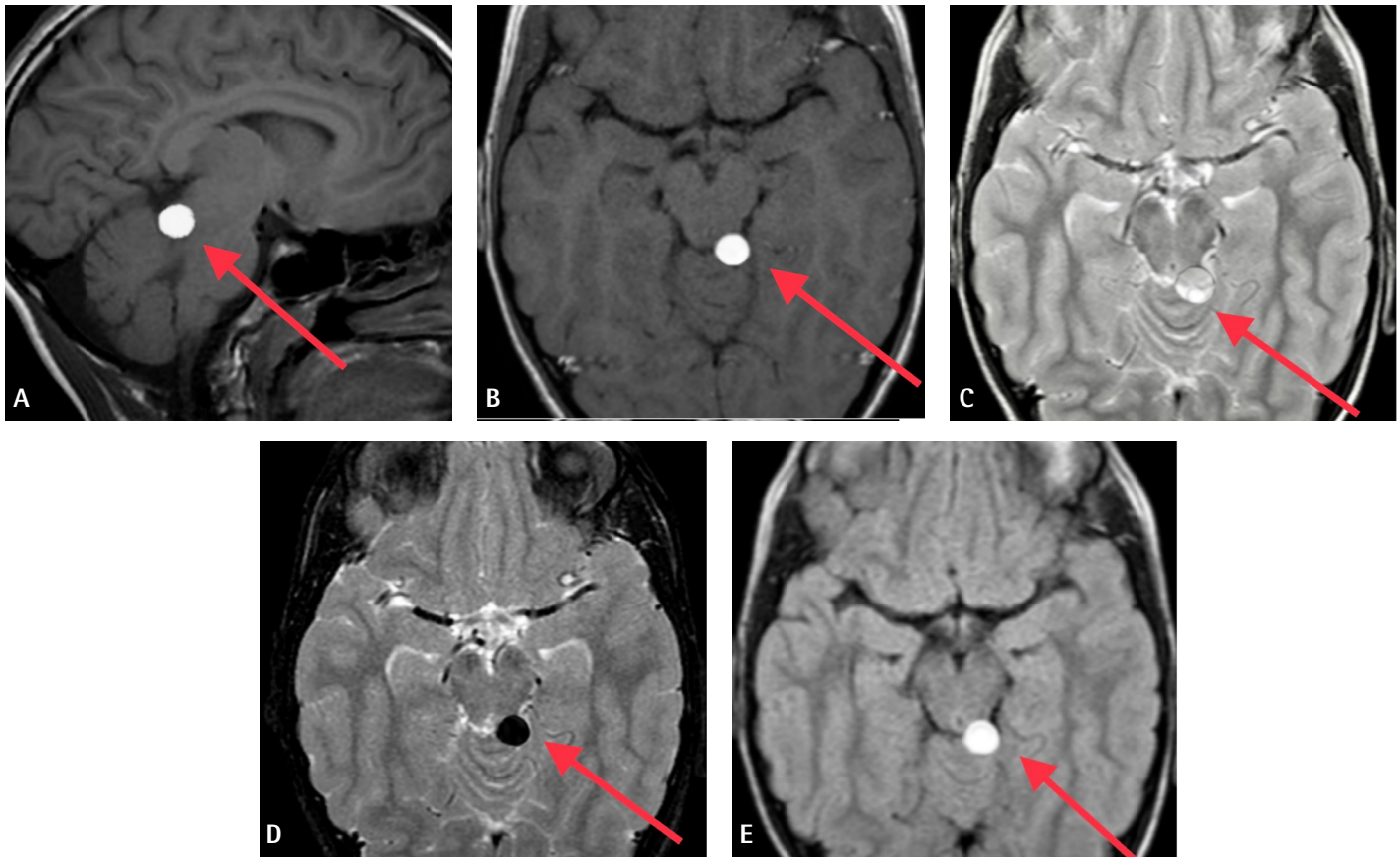

Figure 1. MRI images of the lipoma of the quadrigeminal cistern (the lesson is shown with a red arrow). (A) Sagittal T1, (B) axial T1, (C) axial T2, (D) axial T2-fat sat, (E) axial T2 FLAIR

MRI: Magnetic resonance imaging, FLAIR: Fluid-attenuated inversion recovery

region, mostly in the corpus callosum, quadrigeminal cistern, suprasellar cistern, cerebellopontine angle cistern, intercerebellar fissure, and Sylvian cistern regions [6-10].

The locations where lipomas frequently occur appear to correspond to a temporal sequence in which the primitive meninx, the embryonic tissue from which the meninges develop, dissolves during fetal development. This supports the idea that ILs form due to the meninx's abnormal persistence and differentiation. This developmental explanation for the formation of ILs also accounts for the frequent occurrence of brain hypoplasias [7]. CT and MRI can be used to diagnose IL, but MRI is an excellent imaging modality to accurately characterize these lesions and possible associated anomalies that can be considered more valuable than CT. The diagnosis is usually made based on imaging findings and doesnot require histological confirmation [2,4]. QL usually shows hyperintense on T1-weighted and mixed intensity on T2-weighted MRI [11,12]. Our case imaging findings are characteristic of a fat-containing lesion located in the quadrigeminal cistern. CT demonstrates a non-enhancing fat attenuating (HU: -50 to -100) mass in the quadrigeminal cistern without any peripheral calcification. MRI reveals high signal intensity signal characteristics of fat in T1 and T2, no enhancement in T1 C+ (Gd), and low signal intensity fat-saturated sequences.

They are mostly asymptomatic, self-limited, slowly growing lesions, diagnosed incidentally, and require no therapy. However, they may sometimes present with headaches, seizures, dementia, tinnitus, diplopia, visual hallucinations, trochlear nerve palsy, or dropping of the eyelid that needs conservative or surgical treatment [11,13-18]. Symptomatic treatment with periodic follow-up is the main management of these cases. Surgical tumor excision is considered if the lesion causes several clinical symptoms.

Studies have reported that ILs, especially corpus callosum-located lipomas, are associated with central nervous system anomalies [2,4,19,20]. QLs are usually self-limited tumors, unlike this [11]. The mean age was 36-43 years [3,11,12,14,19]. Our patient was a 56-year-old male, older than reported in the literature. Most of the QLs were tubulolobular shapes [14]. In this study, the lesion was of the same shape. There is no significant difference between males and females regarding the incidence of IL [12,14,19].

The differential diagnosis of QL includes tectal plate cysts, arachnoid cysts, epidermoid cysts, gliomas, and pineal gland tumors within the differential diagnosis [21,22-24]. Subacute hemorrhage may show similar T1-weighted (W) MRI patterns. T2-W images and hypointense appearance in T1-W images with fat saturation are helpful in the differential diagnosis (4). QL may mimic intracranial air on CT; MRI is helpful in that situation [22].

Total excision of the lesion is the treatment option in symptomatic patients [5,25]. Ventriculoperitoneal shunt placement is an alternative in cases with hydrocephalus [24]. Surgical excision of tumors has risks for postoperative complications and morbidity because of proximity to the critical neural structures in the midbrain. Cerebellar ataxia, 6th cranial nerve paresis, and diplopia were reported as postoperative complications [23]. The infratentorial supracerebellar approach is preferred as the surgical approach to minimize the risk of complications [5,23,26].

Moreover, surgical tumor excision is considered only if the lesion causes several clinical symptoms. In the case of a patient with an asymptomatic QL, symptomatic treatment with periodic follow-up is the main management approaches. Alternative treatment options for symptomatic QL include ventriculoperitoneal shunt placement in cases with hydrocephalus. However, this option only relieves hydrocephalus symptoms, not the tumor itself. Additionally, it is important to note that conservative management is the best approach for asymptomatic lipomas. Diagnosing and managing them accurately is essential to prevent misdiagnosis and unnecessary procedures [27-29].

Our case presentation has some limitations that should be considered. First, we have no long-term patient outcomes. As it is an infrequent cause of vertigo, there is a lack of discussion on the possible causes or mechanisms of quadrigeminal cistern lipoma formation and their relation to vertigo. Despite these limitations, the case report provides valuable information on the rare condition and can serve as a starting point for future studies

Clinicians must know the characteristics of a quadrigeminal cistern lipoma to prevent misdiagnosis and unnecessary procedures. Based on current literature, this is the first reported case of a QL causing vertigo. We hope that this case report will make a significant contribution to the scientific community and increase awareness among clinicians in outpatient clinics.

Ethics

Informed Consent: The patient consented to the publication of this case report.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: A.A., Concept: Z.K., A.A., S.M., Design: Z.K., A.A., S.M., Data Collection or Processing: Z.K., A.A., S.M., Analysis or Interpretation: Z.K., A.A., S.M., Literature Search: Z.K., A.A., S.M., Writing: Z.K., A.A., S.M.

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CASE REPORT

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Association of Chlamydia pneumoniae and Borrelia burgdorferi Infections with Multiple Sclerosis

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ABSTRACT

Many pathogens, including Chlamydia pneumoniae and Borrelia burgdorferi, have been associated with multiple sclerosis (MS). MS can be significant pathology in some patients who are infected with Chlamydia pneumoniae and Borrelia burgdorferi. In MS, the immune system attacks the myelin sheath that covers nerve fibers, resulting in the interruption of communication between the brain and body. This damage may be permanent.

Keywords: Chlamydia pneumoniae, Borrelia burgdorferi, multiple sclerosis

INTRODUCTION

In multiple sclerosis (MS), the immune system attacks the myelin sheath that covers nerve fibers, resulting in the interruption of communication between the brain and body. This damage may be permanent.

The symptoms of MS vary widely among patients and depend on the location of the damage of the nerve fibers in the central nervous system and severity of the damage. Some individuals with severe MS may lose the ability to walk or move independently, while others may experience long periods of remission without new symptoms, depending on the type of MS they have.

Common symptoms;

Numbness and weakness in one or more parts of the body at the same time, tingling sensation, electric shock sensations with certain neck movements, especially forward bending of the neck (Lhermitte's sign), the lack of coordination, unstable balance or inability to walk, the partial or complete loss of vision, double vision for a long time, blurred vision, vertigo, problems related to sexual, bowel, and bladder function fatigue, weak speech.

CASE PRESENTATION

Our patient is a 30-year-old individual who occasionally experiences severe headaches, muscle weakness, and severe muscle pain. Numbness is felt in both legs and arms. After magnetic resonance imaging examination, the patient was diagnosed with MS. However, more interesting facts are revealed after taking a deeper medical history. A year ago, the patient had pneumonia and despite using certain antibiotics, recovery was delayed (not atypical pneumonia, but bacterial pneumonia was considered).

When taking a thorough medical history, it was revealed that the patient had rash on the soles of their feet for a long time and felt itching for a while. Our research is ongoing. After all, these clinical signs, laboratory tests were requested.

DISCUSSION

We initially requested laboratory tests for Chlamydia pneumoniae and Borrelia burgdorferi, and the results were very interesting [1]. Both Chlamydia pneumoniae and Borrelia burgdorferi immunoglobulin G tested positive [2]. Treatment was started immediately. The treatment included a combination of doxycycline, azithromycin, and metronidazole as advised by an infectious disease specialist.

Two months after starting the treatment, relapses continued. After 7 months, the patient's complaints were significantly reduced, and there were no new symptoms.

The treatment lasted 12 months and in the end there was complete remission, no complaints. Currently, 3 years after treatment, there is no recurrence [3].

Ethics

Informed Consent: Patient consent was obtained.

Peer-review: Externally peer-reviewed.

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CASE REPORT

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Leptospirosis Case

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ABSTRACT

Leptospirosis is a zoonotic infection that is more commonly found in tropical regions. This spirochete is motile, aerobic, and spiral-shaped with two species: *Leptospira interrogans* and *Leptospira biflexa*. The type that causes infection in humans is *L. interrogans*. The main entry points for infection in humans are the skin and mucosa (cuts and abrasions on the skin and conjunctiva). Animals spread the infection through urine, which is why water pollution plays a significant role in transmission. These bacteria can survive in water for several weeks. Drinking water plays little role in transmission. The incubation period is 2-25 days. After the incubation period, the bacteria spread through the bloodstream and attach to paraenchymatous organs, particularly kidneys and liver, causing a rise in temperature.

Keywords: Leptospirosis, Weil's disease, jaundice, renal failure

INTRODUCTION

Leptospirosis is a zoonotic infection that is more commonly found in tropical regions [1-5]. This spirochete is motile, aerobic, and spiral-shaped with two species: *Leptospira interrogans* and *Leptospira biflexa*. The type that causes infection in humans is *L. interrogans* [6]. The main entry points for infection in humans are skin and mucosa (cuts and abrasions on the skin and conjunctiva). Animals spread the infection through urine, which is why water pollution plays a significant role in transmission. These bacteria can survive in water for several weeks. Drinking water plays little role in transmission. The incubation period is 2-25 days. After the incubation period, the bacteria spread through the bloodstream and attach to paraenchymatous organs, particularly kidneys and liver, causing a rise in temperature.

Non-icteric forms are observed in 90% of patients with leptospirosis, while Weil's disease, which is characterized by fever, jaundice, bleeding tendency, acute liver and renal failure, is observed in 5-10% of cases. The mortality rate for this disease, which is accompanied by severe jaundice and hepatorenal failure, is very high [2].

Routine laboratory tests are not specific for diagnosing leptospirosis. Diagnosis is made on the basis of the doctor's request and clinical examination, and blood and urine culture and serological tests. Early initiation of antibiotic therapy plays an important role in controlling infection and reducing mortality [3].

CASE PRESENTATION

A 27-year-old patient with complaints of headache, nausea, fever and gradually increasing jaundice was admitted to the intensive care unit of our hospital. After admission, jaundice, encephalopathy, high fever, and acute renal failure were detected.

The temperature was 37.4 °C, pulse was 140-142 (sinus tachycardia), A/T 90-50, and complete blood count revealed high neutrophil count, and biochemical analysis showed high levels of jaundice and renal failure (Table 1).

DISCUSSION

Weil's disease is a severe clinical form of Leptospira infection. In these individuals, the disease can rapidly progress over 5-10 days and can lead to clinical conditions such as jaundice, kidney and liver failure, hypotension, and even coma.

This patient presented with jaundice, bleeding from the mouth and nose, fever, thrombocytopenia, and liver and kidney failure. The presence of hyperbilirubinemia and partially liver failure necessitated further investigation, such as ultrasound examination, to identify any pathology that could

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Table 1. Levels of jaundice and renal failure				
	1 day	3 day	7 day	7 day
Hemoglobin (g/dL)	8.8	10.9	8.9	9.5
Leukocyte (mm^3)	24.54	25.79	23.36	11.96
Platelet (mm^3)	104	122	188	450
SGPT (U/L)	25	62	27.0	25.1
SGOT (U/L)	71.7	78	26.1	24.3
Total bilirubin (mg/dL)	53.5	42.3	27.3	14.6
Direct bilirubin (mg/dL)	39.6	32.9	-	-
Na (mmol/L)	136	139	137	140
K (mmol/L)	3.0	3.5	3.8	4.1
Creatinine (mg/dL)	8.2	5.35	2.67	1.88
CRP (mg/dL)	9.4	3.0	1.9	0.9
Procalcitonin (ng/mL)	7.9	6.4	1.51	0.27
SGPT: Serum glutamic oxaloacetic transaminase, SGPT: Serum glutamate pyruvate transaminase, CRP: C-reactive protein				

cause jaundice. However, no pathology that could lead to jaundice in the liver or urinary tract was detected during this examination. Although the clinical picture was similar to toxic and viral hepatitis, no virus or toxic substance was identified in the laboratory tests. Toxic and viral hepatitis were excluded.

Until the diagnosis was confirmed by laboratory tests, the patient was given penicillin and teecycline antibiotics, and treatment was continued to maintain electrolyte balance.

Considering the patient's lifestyle, sanitation conditions, and clinical condition, the physician investigated leptospirosis infection at the request of the clinical specialist. Leptospira IgM was detected as a positive in the initial examination [4].

One of the main reasons for the high mortality rate in Weil's disease is the development of kidney failure. Hypovolemia, vasoconstriction after endotoxin secretion, ischemia, acute tubular necrosis, and other processes lead to kidney failure.

Despite being a rare infection, the unique aspect of this case was the rapid change in the patient's clinical condition and laboratory parameters (note Table 1, the direct bilirubin increased to 39.6 mg/dL, which is a rare occurrence).

After an accurate diagnosis was made, the patient's clinical condition improved with proper treatment, and this was also reflected in the laboratory tests. The patient was discharged on the condition of following the recommendations.

Ethics

Informed Consent: Informed consent was obtained from the patient.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: U.Z.N., G.R., Concept: U.Z.N., G.R., Design: U.Z.N., G.R., Data Collection or Processing: U.Z.N., G.R., Analysis or Interpretation: U.Z.N., G.R., Literature Search: U.Z.N., G.R., Writing: U.Z.N., G.R.

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CASE REPORT

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Breast Metastasis from Primary Lung Adenocarcinoma: A Rare Occurrence with Diagnostic Challenges and Treatment Implications

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ABSTRACT

Breast metastasis from non-mammary sites is a rare occurrence with a prevalence ranging from 0.5 to 3%. Accurate diagnosis is crucial as it influences treatment planning and management. Distinguishing primary breast cancer from metastatic disease can be challenging, and an incorrect diagnosis can result in unnecessary surgical interventions. Immunohistochemistry plays a crucial role in identifying the primary tumor origin, especially when cytological patterns appear atypical. Here we present a case of a 53-year-old female patient with breast metastases from a primary lung adenocarcinoma. Pathology from the lung biopsy revealed a well to moderately differentiated adenocarcinoma with epidermal growth factor receptor mutation. Immunohistochemical analysis using specific markers such as TTF-1 and GATA-3 was instrumental in determining the malignant cell origin and formulating a treatment plan. This report highlights the importance of early diagnosis, thorough investigation and the role of immunohistochemical markers in managing this rare occurrence.

Keywords: Breast metastasis, lung cancer, core biopsy, EGFR mutation

INTRODUCTION

Breast metastasis from non-mammary sites is a rare occurrence, with an incidence of 0.5% to 3%. Accurate diagnosis is crucial as it influences treatment planning and management. Distinguishing between primary breast cancer and metastatic disease can present diagnostic challenges, potentially leading to unnecessary surgical interventions. The distinction becomes even more critical when cytological patterns appear atypical, necessitating the use of complementary diagnostic tools. Metastasis to the breast from extra mammary malignancies, such as lung adenocarcinoma, is an unexpected finding due to the relatively uncommon nature of such events. Lung neoplasms can metastasize through hematologic and lymphatic routes with distant metastases most commonly affecting organs such as the liver, adrenal glands, bones, and brain. However, the breast involvement remains rare, making its diagnosis particularly challenging. In this context, we present a case report of a 53-year-old female patient with breast metastases from a primary lung adenocarcinoma. Our aim is to emphasize the clinical significance of early and accurate diagnosis and the challenges associated with differentiating primary breast cancer from metastatic disease. The role of immunohistochemistry (IHC) in assisting with the identification of malignant cell origin and the formulation of a tailored treatment plan will also be discussed.

CASE PRESENTATION

A 53-year-old female patient was referred to the ENT station by the maxillofacial surgeon because of confirmed adenocarcinoma manifestations in the right occipital area. The primary tumor has not yet been found. Complaints regarding the shortness of breath, cough, hemoptysis, or B-symptomatic were denied. She had no pre-existing oncological disease. Only the patient's mother had a malignancy of the abdomen (uterus, not further specified), otherwise, she had no family history of known risk factors and no history of exposure to noxious agents. Computed tomography-thorax imaging with contrast medium revealed some pulmonary changes but not a clear tumor mass. It showed an unclear structure in the caudomedial area of the left breast. The patient underwent a bronchoscopy with EBUS and a lung biopsy. The histopathologic examination of biopsies and cytology materials indicated a well to moderately

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differentiated adenocarcinoma. In further molecular analyzes, an epidermal growth factor receptor mutation [c.2573T>G, p. Leu858Arg (27%, NM_005228.5)] was detected in tumor cells. The tumor infiltration was primarily in the lingula area with the involvement of the distal and medial main bronchus on the left side.

With suspicion of a second carcinoma in the breast tissue, a core biopsy of the breast mass was performed. Histopathological evaluation revealed adenocarcinoma with a predominantly tubulopapillary growth pattern. Primary immunohistochemical evaluations showed a triple negative adenocarcinoma (ER, PR, and Her2 negative). Considering the recently detected bronchial adenocarcinoma of the lung and the untypical histological image for a primary triple-negative breast carcinoma, a diagnosis of breast metastasis by tumor cells of bronchial carcinoma was considered. This assumption could be confirmed by additional immunohistochemical evaluations. The tumor cells in the breast biopsy were also negative for GATA-3 and mammaglobin. However, they were strongly positive for CK7 and TTF1 (Figure 1). The results of conventional histopathological and immunohistochemical evaluations confirmed breast metastasis by bronchial carcinoma.

Further imaging analyzes revealed meningosis carcinomatosa with subarachnoid tumor nodes without any involvement of brain tissue. Magnetic resonance imaging of the spine also showed multifocal bone metastases with complete infiltration of thoracic vertebrae 11 and 4 with a suspected risk of fracture. In addition, larger metastases were detected near the baseplate in thoracic vertebra 12 and left in sacral vertebra 1 without evidence of a clear spread into the spinal canal.

DISCUSSION

Lung adenocarcinoma is the most common subtype of non-small-cell lung cancer, accounting for approximately 40% of all lung cancer cases [1]. Metastatic disease of the breast is an uncommon occurrence with reported clinical cases ranging from 0.2% to 2.7% [2,3]. Metastatic cancer presenting as a breast mass is an unexpected finding in female patients because it is relatively uncommon due to the large area of fibrous tissue and poor blood supply in the breast [4]. According to a study by Riihimäki et al. [5], metastases from lung adenocarcinoma most frequently occur in the bone, liver, and brain, while metastases to the breast are relatively rare.

Accordingly, the presence of synchronous tumor masses in the lung and breast of a patient is more consistent with two distinct

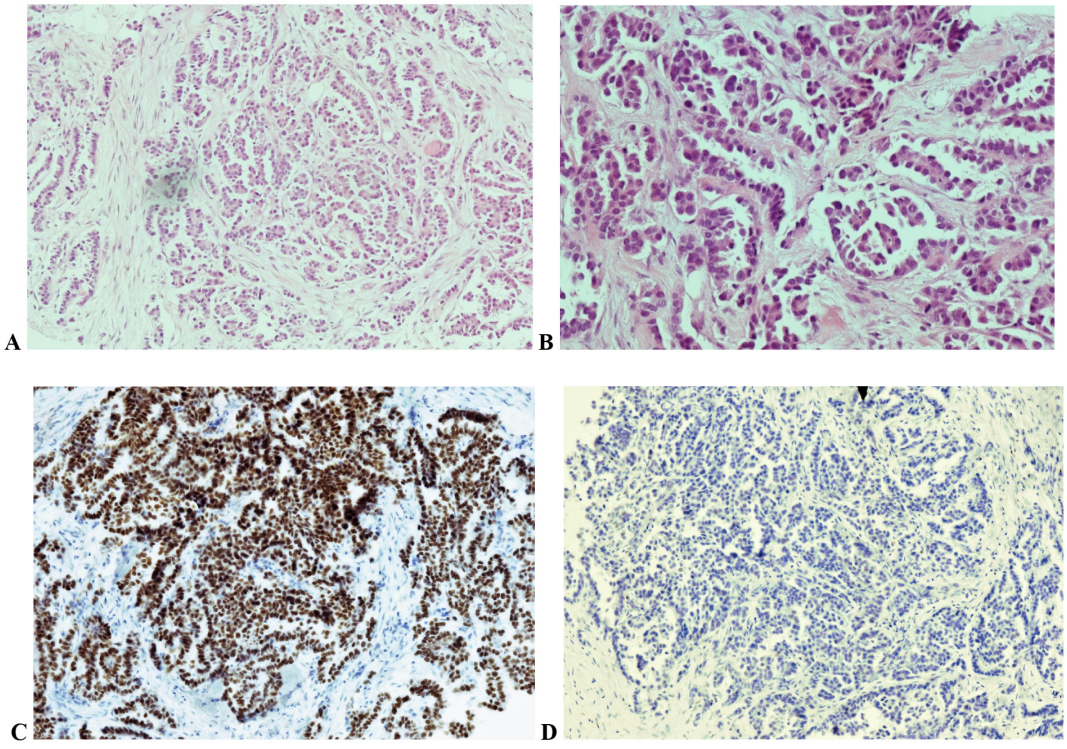

Figure 1. (A, B) The biopsy of the breast shows a tubulopapillary epithelial growth of invasive adenocarcinoma (H and E, ×100; x200); (C, D) immunohistochemical staining of the tumor shows widespread nuclear positivity for TTF-1 and negative for GATA-3 (H and E, ×100)

H and E: Hematoxylin and eosin

and independent malignanciesor breast carcinoma with lung metastasis than bronchial carcinoma with breast metastasis. In this context, the correct diagnosis of breast metastasis from bronchial carcinoma requires a high index of suspicion and the application of an appropriate profile of immunohistochemical findings. One of the key diagnostic features in this case was the histopathological appearance of the tumor in breast biopsy. The histologic appearance of carcinoma in the breast was not typical for triple-negative breast carcinoma (TNBC). TNBC accounts for approximately 10-20% of all breast cancer cases and is associated with a poor prognosis [1]. Except for specific triple-negative low-grade tumors of the breast (adenoid-cystic carcinoma of the breast and micro-glandular adenosis), most triple-negative breast cancers are high-grade tumors with necrosis, show aggressive biological behavior and have a higher rate of distant metastases compared to other subtypes of breast cancer [6-8]. In one study, 18% of TNBCs showed lung metastasis in 5-year follow-up, compared to 7% for non-TNBCs [9].

The clinical presentation of breast metastases from lung cancer can vary widely and may include palpable masses, nipple discharge, and skin changes. In some cases, breast metastases may be the first sign of underlying lung cancer. In most cases, metastatic disease of the breast occurs after the primary tumor has been diagnosed. However, in approximately 25% of patients, a breast mass is the initial mode of presentation [10]. Breast metastases from extramammary sites can often present as solitary breast masses and can be challenging to distinguish from primary breast malignancies or benign diseases. A potential list of usual sources of metastasis to the breast includes lung, ovarian, gastrointestinal, and soft tissue tumors [11,12].

The use of immunohistochemical staining in this case played a crucial role in confirming the diagnosis of metastatic lung adenocarcinoma. This finding is consistent with previous studies showing that the use of immunohistochemical markers can help differentiate between primary and metastatic tumors [1]. Several markers can be helpful in differentiating metastatic breast tumors from primary breast carcinoma. TTF-1 and napsin-A are helpful in identifying lung adenocarcinoma, whereas PAX-8 and CA-125 are useful for ovarian cancer. Gastrointestinal tumors can be identified using CK20, CDX-2, and villin, and soft tissue tumors can be identified using markers such as S-100, smooth muscle actin, and desmin [13,14].

In addition, molecular profiling using next-generation sequencing (NGS) can be useful in identifying the origin of metastatic tumors [15,16]. Overall, the use of IHC and NGS can aid in the diagnosis of metastatic breast tumors and help differentiate them from primary breast carcinoma, ultimately guiding appropriate treatment strategies.

In conclusion, breast metastasis from non-mammary sites is a rare occurrence that can pose diagnostic challenges for clinicians. Metastasis of lung adenocarcinoma to the breast represents a triple-negative carcinoma and should be considered in differential diagnosis by a pathologist, particularly when the histological findings are not completely typical for triple-negative breast carcinoma. Accurate diagnosis is important and helps prevent unnecessary breast surgery or additional tumor therapy.

Ethics

Informed Consent: Informed consent was obtained from the patient.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: R.R., M.M., I.P., Concept: R.R., M.M., I.P., Data Collection or Processing: R.R., M.M., I.P., Analysis or Interpretation: R.R., M.M., I.P., Literature Search: R.R., M.M., I.P., Writing: R.R., M.M., I.P.

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CASE REPORT

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A Case of Esophageal Leiomyoma Resected After Selective Circular Myotomy in Submucosal Tunneling Endoscopic Resection

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ABSTRACT

Submucosal tunneling endoscopic resection (STER) is one of the recommended treatment modalities in patients with subepithelial lesions (SEL). There is limited information in the literature about the applicability of STER in SEL originating from the deep muscularis propria (MP) layer. This report presents a case of SEL originating from the deep MP layer that underwent STER in which challenging dissection at the base of the lesion was facilitated by selective circular myotomy proximal to the lesion.

Keywords: Submucosal tunneling endoscopic resection, selective circular myotomy, subepithelial lesion

INTRODUCTION

Advances in endoscopy have increased the detection rate of subepithelial lesions (SEL) [1]. The majority of SELs are found in the upper gastrointestinal tract (most frequently found in the esophagus, esophagogastric junction, gastric cardiac) [2]. The treatment for symptomatic SEL is uncertain, and the main options are endoscopic resection [endoscopic mucosal resection, endoscopic submucosal excavation, endoscopic submucosal dissection (ESD), endoscopic full-thickness resection, and submucosal tunneling endoscopic resection (STER)] and surgery [3]. Among these methods, STER is a safe and less invasive approach in the treatment of SEL, especially that originating from the deep muscularis propria (MP) layer. When submucosal tunneling is feasible, STER is the safest technique because mucosal flap entry is easier to close than ESD or EFTR. The most suitable locations for the STER method are the middle or lower esophagus and gastric cardiac [3,4].

This report presents a case of SEL originating from the deep MP layer that underwent STER in which challenging dissection at the base of the lesion was facilitated by selective circular myotomy (SCM) proximal to the lesion.

CASE PRESENTATION

A 52-year-old female patient was admitted to our gastroenterology clinic with complaints of dysphagia for the past 10 months. Esophagogastroduodenoscopy showed a SEL approximately 25 cm in length that caused partial esophageal obstruction on the anterior wall of the proximal esophagus (Figure 1). Endosonographic examination revealed a 28×20 mm hypoechoic SEL originating from the MP layer diameter. Informed consent was obtained from the patient after which STER was performed. A 3 mm flush knife was used for tunneling

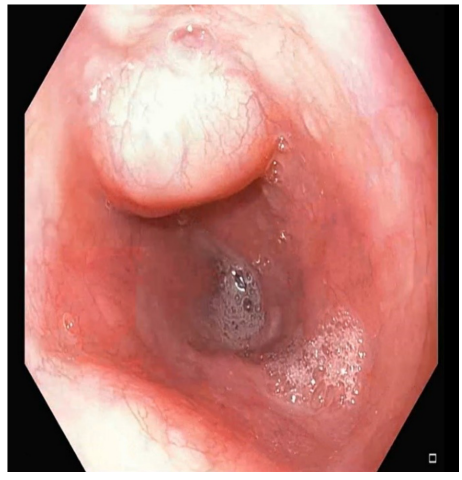

Figure 1. Esophagogastroduodenoscopy showed a SEL approximately 25 cm in length that caused partial esophageal obstruction on the anterior wall of the proximal esophagus

SEL: Subepithelial lesion

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at 5 cm proximal to the SEL to access the lesion. Submucosal dissection was first performed to separate the lesion from the mucosal layer, but the lesion was found to originate from the deep MP, which complicated the dissection at the base of the lesion. Bleeding during blunt dissection at the base of the lesion using an insulation-tipped knife further blurred the already limited view at the base of the lesion. To locate the bleeding site, a 1 cm SCM was performed immediately proximal to the lesion, which made the base of the lesion visible. STER + proximal SCM not only made the bleeding site visible but also facilitated dissection (Figure 2). Following this procedure, which lasted approximately 28 min, SEL was resected en bloc (Figure 3). No complications occurred after the procedure. Histopathological examination confirmed leiomyoma diagnosis.

DISCUSSION

STER was inspired by peroral endoscopic myotomy for resection of upper gastrointestinal SEL, especially those arising from the MP layer [4]. This technique is highly effective (en bloc resection: 94.6%, complete resection: 97.5%) but its success may be influenced by tumor depth. Procedures for tumors originating from the deep MP layer may last longer, have lower rates of en bloc resection, and have an increased risk of complications [5]. The width of the tunneling space may facilitate submucosal dissection, but damage to the tumor capsule and bleeding may occur during the deep muscular dissection. Cai et al. [6] reported in a limited case series that STER is also a feasible, safe, and effective endoscopic technique to achieve curative resection for extraluminal SEL. In their case series, full-thickness myotomy was performed above the estimated location of the

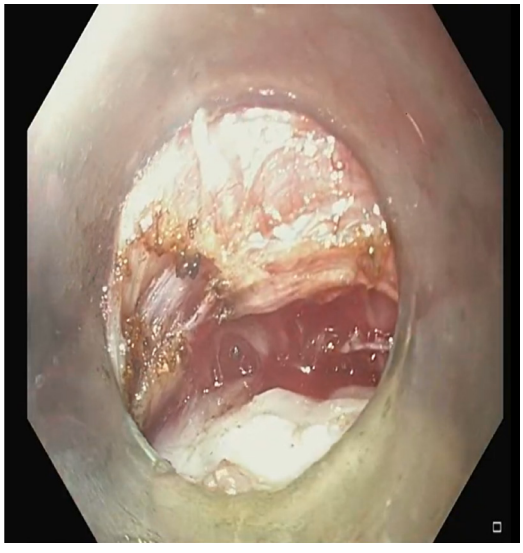

Figure 2. One cm selective circular myotomy was performed immediately proximal to the SEL, which made the base of the lesion visible
SEL: Subepithelial lesion

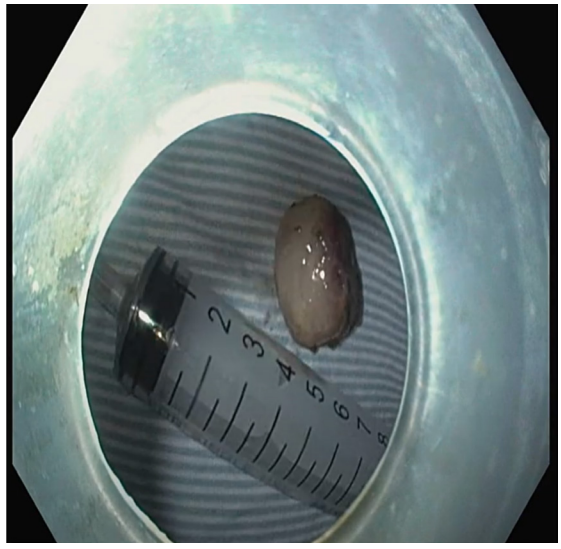

Figure 3. SEL was resected en bloc
SEL: Subepithelial lesion

extraluminal tumor [6]. In this study, since the SEL was located with the deep MP, proximal selective myotomy was sufficient. As in our case, when the source of bleeding cannot be found from the deep layer of the SEL or deep muscle dissection becomes difficult, STER + proximal SCM may be an effective and rescue method.

In our clinic, we have recently gained a greater experience of third-space endoscopic procedures. We have been using the STER procedure more frequently than before. As a result, we believe that using the STER + proximal SCM technique in SELs originating from the deep MP layer can facilitate dissection at the base of the lesion and reduce the risk of complications.

Ethics

Informed Consent: Informed consent was obtained.

Peer-review: Externally peer-reviewed.

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CASE REPORT

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Carbon Dioxide Cholangiography in Diagnosis of Gallbladder Perforation: Deciphering Black, and White

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ABSTRACT

Gallbladder perforation is a rare and serious complication of acute cholecystitis that requires prompt diagnosis and treatment. Current imaging techniques, such as the use of iodinated contrast agents, have limitations in certain patient populations. Carbon dioxide (CO_2) contrast media has emerged as a potential alternative due to its non-nephrotoxic and non-allergenic properties. However, there is limited research on the use of CO_2 cholangiography for assessing gallbladder perforation. In this case presentation, we describe the use of CO_2 cholangiography in a 72-year-old woman with suspected acute cholecystitis and gallbladder perforation. The patient underwent percutaneous cholecystostomy because of her unsuitable general condition for surgery. CO_2 cholangiography revealed loss of biliary tract integrity and obstruction of the cystic canal. CO_2 cholangiography offers the advantages of decreased cholangitis risk and improved patient comfort. Although this case demonstrates the feasibility of CO_2 cholangiography for gallbladder perforation assessment, further studies are needed to validate the safety and efficacy of this technique. Overall, CO_2 contrast media may provide high-quality imaging with a lower risk of complications, highlighting the potential benefits of its use in percutaneous interventions for biliary leakage evaluation.

Keywords: Carbon dioxide (CO_2), cholangiography, gallbladder perforation

INTRODUCTION

Gallbladder perforation is a relatively rare complication that occurs most frequently as a result of acute cholecystitis, with a relatively high mortality [1]. In patients with suspected acute cholecystitis, imaging is important for two main reasons; first, to confirm the diagnosis of acute cholecystitis, the latter is to detect complications that require urgent surgery such as gangrenous, emphysematous cholecystitis, and perforation [2]. Iodinated contrast agents are accepted as the gold standard for percutaneous and angiographic imaging worldwide [3]. A better alternative is carbon dioxide (CO_2) contrast, which is used for vascular interventions in patients with renal impairment or iodine hypersensitivity due to non-nephrotoxic and non-allergenic characteristics [4]. There are few studies in the literature on using CO_2 contrast media in biliary imaging. There is no study published about gallbladder perforation assessment using CO_2 cholangiogram.

CASE PRESENTATION

A 72 years old woman presented to our hospital emergency department with acute onset fever, severe abdominal pain, nausea, and vomiting. The patient was referred to the radiology department for imaging purposes with prediagnosis of acute cholecystitis, according to the findings of the physical examination and laboratory findings. Ultrasonographic examination revealed that the gallbladder wall of the patient was markedly edematous and thickened, the sac was hydropic, and the luminal sludge was fullof gallbladder calculi were also monitored at neck level approximately 2 cm in diameter. It has also been suspected to be a sustained integrity of the gallbladder wall. Heterogeneous hypoechoic solid lesions were observed in the liver parenchyma with a multiplicity of which the greatest is about 6 cm in diameter and primarily interpreted in favor of metastasis. In subsequent examinations, cholangiocarcinoma was detected as the primary pathology.

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Percutaneous cholecystostomy was performed with sonographic guidance in our interventional radiology unit owing to the fact that the general condition of the patient is not suitable for surgery due to a history of dementia and heart failure. For this patient, CO_2 cholangiography was chosen as a control imaging technique because of the low risk of cholangitis [5]. CO_2 cholangiography showed that the integrity of the biliary tract was lost and the cystic canal was obstructed (Figure 1).

DISCUSSION

Perforation of the gallbladder, which was first reported in 1844 by Duncan, is a rare serious complication of cholecystitis [5]. Clinical manifestations of acute gallbladder perforation can be similar to those of acute cholecystitis, and this could account for the delay in the diagnosis [6].

Rates of gallbladder perforation have fallen because of widespread imaging methods and better treatment approaches. Nonetheless, accurate diagnosis is crucial to decrease rates of mortalityand complications such as peritonitis [7]. For this purpose, CO_2 cholangiography can be used as a safe imaging technique because of the decreasing rate of cholangitis.

Initially, CO_2 was used for retroperitoneal insufflation [8]. More recently, it has been safely injected intraarterial digital subtraction angiography [9]. Recently, CO_2 retrograde cholangiography reduces the risk of cholangitis and therefore can be used for percutaneous imaging of gallbladder perforation [10]. CO_2 is being used as a contrast material for a long time in endoscopic retrograde cholangiopancreatography (ERCP) imaging of the biliary tree and is increasingly preferred due to its safety, less painful, and discomfort complaints [11]. In addition, the utilization of CO_2 in cholangiography significantly reduced the incidence of cholangitis and the mean hospital stay time after ERCP [10]. Even though there was not enough experience in anterograde cholangiography with CO_2, perforation was clearly observed in this study. The accuracy of the method should have been investigated with a greater number of patients. The use of CO_2 during percutaneous interventions in the evaluation of biliary leakage can be superior to other methods to provide higher quality images with lower risk of cholangitis and allergic reaction and higher postoperative comfort of the patient. Further studies are needed to advance this method and elaborate the safety and validity of the technique.

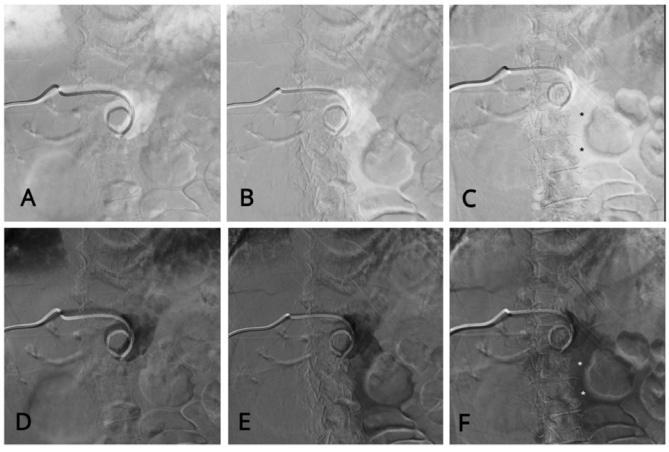

Figure 1. A-C images were obtained with injection of CO_2 contrast material. D-F are negative images of these images. As indicated by the stars (*) in the C and F images, the contrast material in the carbon dioxide cholangiography is more expanse

CO_2: Carbon dioxide

Ethics

Informed Consent: Informed consent was obtained from the patient.

Peer-review: Externally peer-reviewed.

Authorship Contributions

Surgical and Medical Practices: İ.C., Concept: İ.C., Design: İ.C., Data Collection or Processing: İ.C., M.B.D., A.B.Y., Analysis or Interpretation: İ.C., Literature Search: İ.C., Writing: İ.C., A.M., M.B.D., A.B.Y.

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

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