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Case report

A rare case of ruptured liver metastases from a laryngeal cancer^{☆,☆☆}

Inci Kizildag Yirgin, MD^{a,*}, Meltem Ekenel, MD^b, Duygu Has Simsek, MD^c, Bulent Acunas, MD^d

^a Department of Radiology, Oncology Institute, Istanbul University, Istanbul, 34390, Capa, Turkey

^b Department of Medical Oncology, Oncology Institute, Istanbul University, Istanbul, 34390, Capa, Turkey

^c Department of Nuclear Medicine, Faculty of Medicine, Istanbul University, Istanbul, 34390, Capa, Turkey

^d Department of Radiology, Istanbul Medical Faculty, Istanbul University, Istanbul, 34390, Capa, Turkey

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ABSTRACT

Rupture of a metastatic liver tumor associated with laryngeal cancer is a very rare complication with no previous case in the literature. We present a case of ruptured liver metastases which was treated conservatively. Dynamic contrast-enhanced computed tomography demonstrated active extravasation and discontinuity of liver capsule. When the patient came to our hospital from the external medical center, we did not see active extravasation on control computed tomography. This case highlights the role of radiologic imaging in the diagnosis and follow-up of ruptured hepatic metastases.

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Introduction

Laryngeal cancer is the 14th most common malignancy in all cancers and the second most common type of cancer in all head and neck malignancies [1,2]. The vast majority of these tumors is squamous cell carcinoma (SCC) caused by tobacco use and long-term alcohol consumption [1]. Distant metastasis rates range from 6.5% to 8.5% according to the published studies. The metastases are often seen in the lung, liver, bone, and mediastinum respectively [3–5].

Although spontaneous rupture of hepatocellular carcinoma (HCC) is a relatively frequent event, it is an uncommon presentation for malignant liver metastases to rupture and cause hemoperitoneum [6]. Spontaneous rupture of liver metastases can be caused by different tumors such as lung, breast, testicle, gallbladder, stomach, kidney, skin, nasopharynx, choriocarcinoma, and hepatic lymphoma [7]. The clinical presentation is often non-specific and presents with similar symptoms as in hepatic rupture of HCC. Quick diagnosis and urgent treatment are mandatory due to their possible severe complications and a multidisciplinary approach

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* Corresponding author.

E-mail address: inci.kizildagyirgin@istanbul.edu.tr (I.K. Yirgin).

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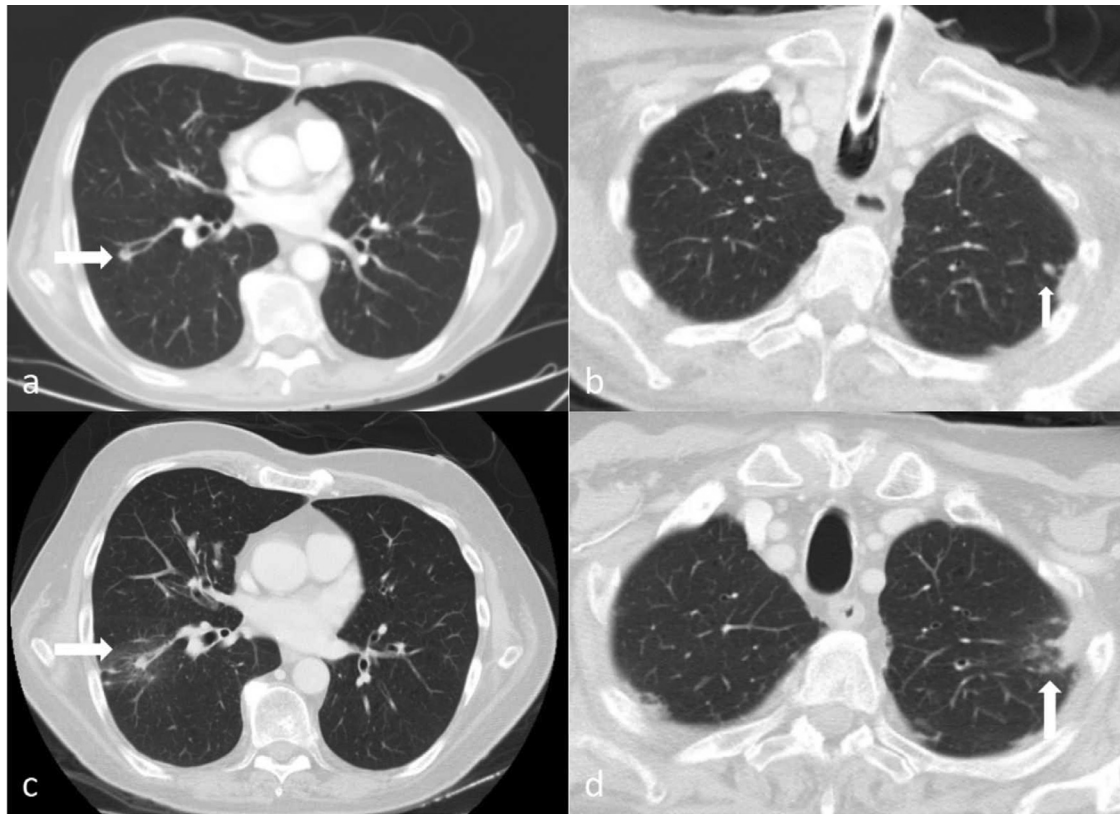


Fig. 1 – Bilateral lung metastases; axial CT images show 2 solid nodules smaller than 1 cm in the right lower lobe superior segment (A) and in left upper lobe apicoposterior segment (B) (white arrows). (C, D) Control axial CT images obtained after one year show ground glass densities around both nodules secondary to the radiotherapy treatment (white arrows).

including interventional radiology, hepatology, and surgery are often essential in the management of these patients. Herein, we present an extremely rare case of successful conservative management of spontaneous rupture of liver metastasis originated from laryngeal cancer. To our knowledge, no such case of rupture of a metastatic liver tumor associated with laryngeal cancer has been reported previously.

Case report

A 68-year-old man who had a very heavy history of smoking and alcohol consumption (2 packs/day / 40 years of cigarette and 1 small bottle /day / 40 years of alcohol) diagnosed with SCC of the larynx in February 2016 and had partial laryngectomy operation. Four months later in June 2016, a control computed tomography (CT) image detected 2 new nodules smaller than 1 cm on the bilateral lungs (Fig. 1). Biopsy couldn't be done because of the smaller size of the lesions. Therefore he underwent stereotactic radiotherapy with 54 Gy in 18 fractions for both lesions separately in August 2016. He did well for 3 years until June 2019 when a new recurrent laryngeal lesion was detected during routine imaging (Fig. 2). He had a total laryngectomy operation and bilateral lymph node dissection. The pathological result of the resected lesion was compatible with intermediate differentiated SCC. Due to re-

current disease, he received chemotherapy and radiotherapy between August 2019 and September 2019. In August 2020, a routine biochemical test showed increased liver function tests and alpha feta protein. He had ultrasonography (USG) which showed multiple metastatic hypoechoic lesions in the liver. Later a contrast-enhanced magnetic resonance imaging (MRI) was obtained to rule out primary HCC (Fig. 3). But MRI was not suggestive for HCC. He had a liver biopsy which revealed SCC. He received 3 cycles of gemcitabine and carboplatin. After 2 days of his last chemotherapy, he showed up in the emergency clinic with acute abdominal pain. His physical examination revealed rebound tenderness at the right upper abdomen with muscular defense, tachycardia (120 beats/minute) with low blood pressure (80/50 mm Hg). Laboratory findings were as follows: white blood cell count 20,100/mm³, hemoglobin 9.8 g/dL, hematocrit 28.8 %, platelet cell count 438,000/mm³, prothrombin time (PT): 14.3 s; INR: 1.09; activated partial thromboplastin time: 28.1 s. No coagulation abnormalities were found, 20 days before this emergent presentation, his Hb and Hct levels were 12.1 g/dL and 36.5%, respectively emphasizing rapid onset of anemia. Emergency abdominal USG showed multiple liver metastases and ascites in the perihepatic area. Dynamic contrast-enhanced CT was performed and revealed perihepatic hyperdense hematoma and multiple liver metastases. A subcapsular metastatic lesion that showed rapid growth compared to the previous imaging in the caudate lobe was detected. Protrusion of this lesion and discontinuity of the

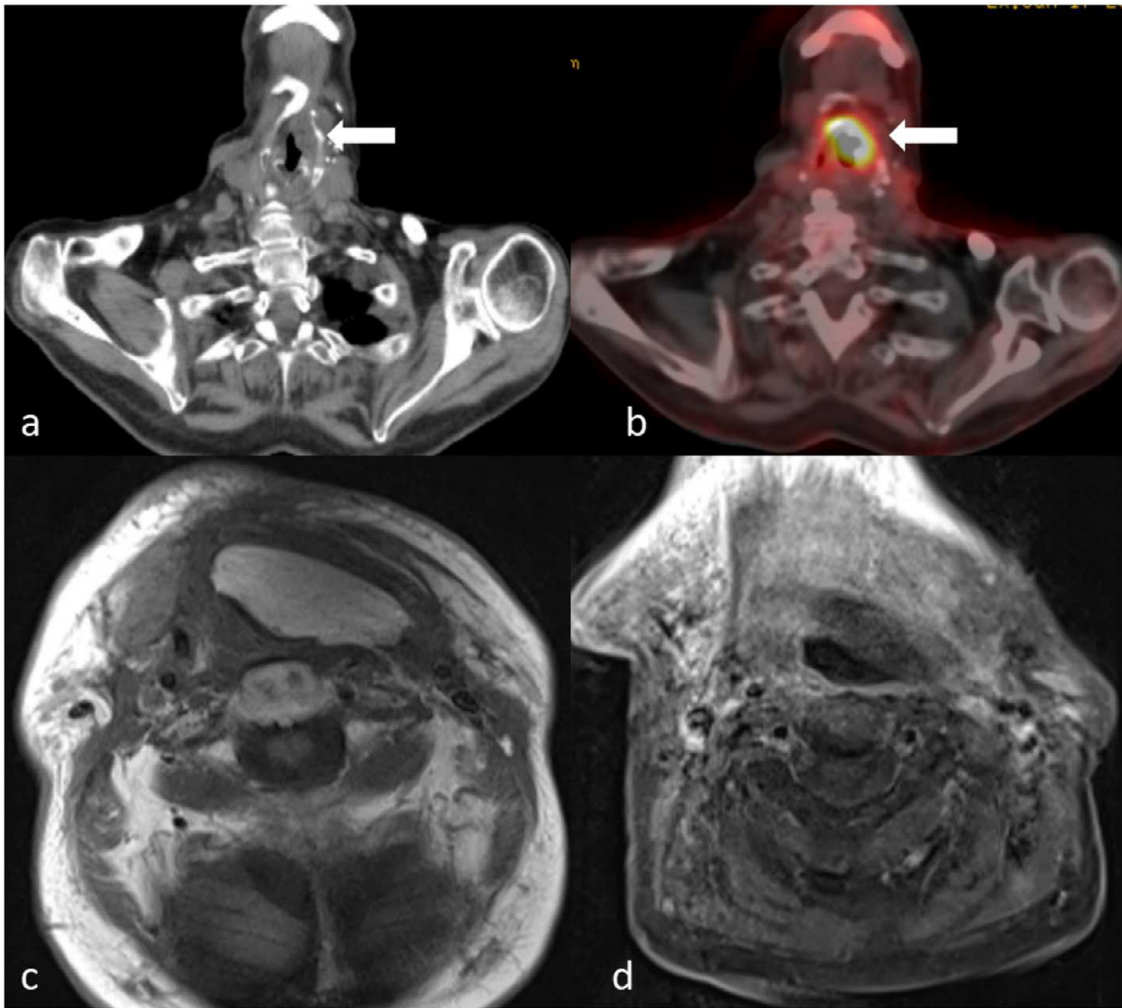


Fig. 2 – Axial PET-CT images show new recurrent laryngeal lesion (A), FDG uptake is seen (B) (white arrows). Axial non fat-sat T1W image (C) and axial fat sat T1W image (D) show post operative changes and flap reconstruction after the second operation.



Fig. 3 – (A), Axial T2W MRI image obtained in 2019 shows no metastatic lesion in the liver (B) Multiple hypointense metastatic lesions are seen in the both liver lobe and caudate lobe in 2020 (arrowheads) (C) Axial postcontrast T1W image obtained with hepatocyte specific agent shows no enhancement in the lesions concordant with metastases at delayed phases (arrowheads).

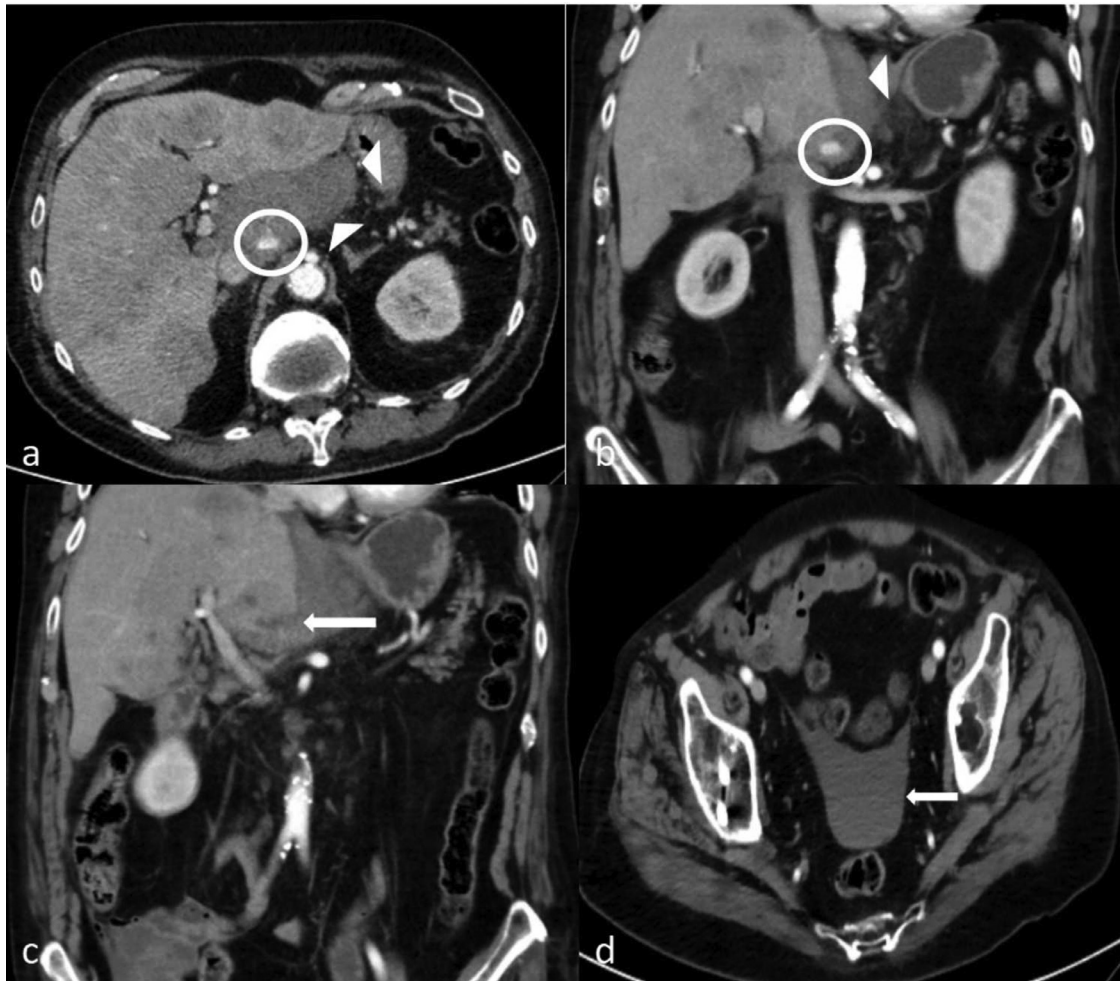


Fig. 4 – Axial (A) and coronal (B) contrast-enhanced CT images show active contrast extravasation (circles) and hematoma (arrowheads) on the arterial phase suggesting the rupture of metastases in the caudate lobe (C) Coronal contrast-enhanced CT image show the discontinuity of ruptured liver capsule (white arrow) (D) Axial CT image shows free fluid in the pelvis (arrowhead).

liver surface was observed with active contrast extravasation on the arterial phase of CT (Fig. 4). We diagnosed hemoperitoneum secondary to the rupture of a caudate lobe metastasis with these radiologic findings. Control contrast-enhanced CT showed no active extravasation (Figs. 5A, B). Considering the general condition and vital signs being normal values, the medical team including a general surgeon, interventional radiologist, and oncologist compromised on managing the patient conservatively. The patient was given palliative therapies such as blood transfusion and analgesic treatments; Hb and Hct were monitored serially and anemia improved during subsequent days and he was discharged by the improved condition. Medical oncology continued a new chemotherapy regimen. Control contrast-enhanced MRI showed no progression of the ruptured metastases. (Figs. 5C, D).

Discussion

Spontaneous rupture of metastatic disease of the liver is a rare event when compared to the rupture of a primary hep-

atic tumor, although metastatic liver lesions are much more common than primary hepatic lesions [8,9]. In this regard, the possible explanations are being less vascular and invasive, less penetrative to the liver capsule according to the literature [9]. Numerous primary tumors have been reported in liver metastases rupture including those of the lung, kidney, testis, maxillary sinus, and stomach [6-14]. But there was no report regarding rupture of hepatic metastases originated from laryngeal cancer. Several risk factors may lead to rupture including subcapsular location, rapid tumor growth and tumor necrosis (either spontaneous or after chemotherapy), damage of the vascular wall, increased intra-abdominal pressure, intravascular pressure due to tumor emboli, and tumor location. Subcapsular location, tumor necrosis, and inflammation after chemotherapy could have caused the hepatic rupture in our case.

The typical clinical features of hepatic rupture include a history of primary or secondary hepatic lesion, sudden epigastric or right upper quadrant pain, hypotension, anemia, and elevated liver enzymes [15]. USG is the first radiologic method to detect free intraabdominal blood collection

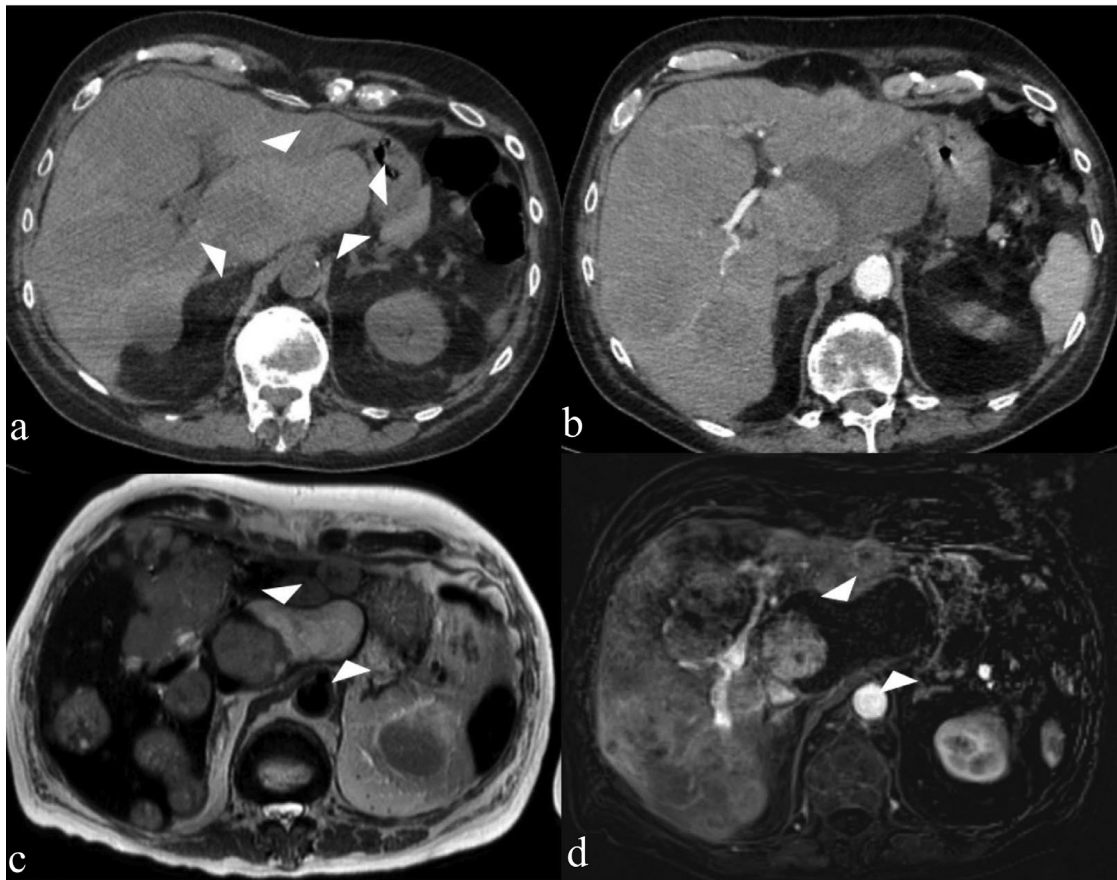


Fig. 5 – (A) Axial noncontrast-enhanced CT image shows hyperdense hematoma with no progression in size (B) Axial contrast-enhanced CT image shows no active extravasation. Axial T2W image (C) and postcontrast T1W image (D) show no progression in size of both caudate lobe metastases and hematoma.

and liver lesion due to being a simple, fast, available and non-invasive technique. Dynamic CT imaging is the second modality of choice and valuable for the diagnosis of contrast extravasation in the arterial phase, signs of possible cirrhosis, localization of the tumor, and extent of metastatic lesions.

Treatment options depend on the tumor size, tumor location, patient's performance status, and bleeding severity, with control of the hemorrhage markers [16]. In the absence of active extravasation on CT, conservative therapy is appropriate and has been achieved hemostasis in many cases. Transcatheter hepatic arterial embolization (TAE) is an ideal technique that can be done without general anesthesia to stop the active bleeding. There is evidence in the literature regarding the successful treatment of ruptured HCC by TAE [17]. Many cases resulted in successful use in ruptured liver metastases [10,14,18]. Surgical resection of liver metastasis is another option of treatment. Significant mortality rates in the emergency setting have been reported but it can be considered to use after hemostasis is achieved, especially in cases of peripherally located solitary liver metastasis. A study that included ten ruptured HCC patients showed the favorable outcomes of delayed hepatectomy after emergency TAE [19].

Conclusion

We reported a case of ruptured liver metastases diagnosed with laryngeal cancer as the first case in the literature. It is very important to diagnose the rupture of liver metastasis due to potential life-threatening bleeding. Contrast-enhanced CT plays a primary role in rapid diagnosis and follow-up.

Patient consent

The patient declared her fully consent for the publication of the case.

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