Al-Rafidain J Med Sci. 2025;9(2):312-314.
DOI: https://doi.org/10.54133/ajms.v9i2.2457

A J M S
Online ISSN (2789-3219)

Case Report

Fifty Percent Size Reduction in Neuroendocrine Hepatic Metastasis After a Single Session of Trans-arterial Chemoembolization: A Case Report

Mustafa Saleem Khassaf [1], Noor Yousif Abed[2]*

[1]*Ibn Sina Interventional Radiology Specialty Center, Baghdad, Iraq;* [2]*Department of Radiology, College of Medicine, Al-Falluja University, Al-Anbar, Iraq*

Received: 3 September 2025; Revised: 9 November 2025; Accepted: 17 November 2025

Abstract

Background: The liver serves as a main site of metastatic disease, and cancer metastasis is considered the main limit to effectively managing the malignant tumors. NELM was found in 12% of people with gastrointestinal neuroendocrine neoplasms and 36% of people with pancreatic neuroendocrine neoplasms. Of those patients, 86% had liver-only metastases. ***Case description***: On February 9, 2025, a 57-year-old male with neuro-endocrine liver metastasis was admitted for transarterial chemoembolization (TACE) at Ibn Sina Interventional Radiology Center in Baghdad. The size of the hepatic lesions significantly decreased on follow-up imaging in June 2025, suggesting a successful course of treatment. TACE frequently calls for several sessions. The ideal number and frequency of sessions are still unknown, and repeating procedures can raise the risk of cumulative toxicity. Additionally, neuroendocrine liver metastases frequently display a variety of vascular patterns, which makes it more difficult to administer chemotherapy drugs consistently. In our case, both of these challenges are overcome; all lesions receive their blood supply from the superior mesenteric artery; replaced hepatic artery, and after the first session, there is a significant reduction in metastatic lesions, which undoubtedly delays the progression of the tumor and buys time before the next treatment is required. Usually, this results in a longer progression-free survival.

Keywords: Chemoembolization, Neuroendocrine, Metastasis.

انخفاض حجم بنسبة خمسين بالمئة في الانتشارات الكبدية العصبية الصماء بعد جلسة واحدة من الانسداد الكيميائي عبر الشرايين: تقرير حالة

الخلاصة

الخلفية: الكبد هو الموقع الرئيسي لانتشار الأورام الخبيثة، ويعتبر انتشار السرطان الحد الرئيسي لعلاج الأورام الخبيثة بفعالية. تم العثور على انتشار الكبد في 12٪ من الأشخاص المصابين بالأورام العصبية الغدد الصماء في الجهاز الهضمي و36٪ من الأشخاص المصابين بالأورام العصبية الغدد الصماء في البنكرياس. من بين هؤلاء المرضى، كان 86٪ من المرضى يعانون من نقائل في الكبد فقط. **وصف الحالة**: في 9 فبراير 2025، تم إدخال رجل يبلغ من العمر 57 عاما يعاني من انتشار ورم في الكبد لإجراء الانسداد الكيميائي عبر الشرايين (TACE) في مركز ابن سينا للأشعة التدخلية في بغداد. انخفض حجم الآفات الكبدية بشكل ملحوظ في التصوير المتتابع في يونيو 2025، مما يشير إلى نجاح مسار علاجي. غالبا ما يتطلب TACE عدة جلسات. لا يزال العدد المثالي وتكرار الجلسات غير معروف، وتكرار الإجراءات قد يزيد من خطر السمية التراكمية. بالإضافة إلى ذلك، تظهر النقائل العصبية الصماء في الكبد غالبا أنماط وعائية متنوعة، مما يجعل من الصعب إعطاء أدوية العلاج الكيميائي بشكل منتظم. في حالتنا، تم التغلب على هذين التحديين؛ جميع الآفات تتلقى إمدادها من الشريان المساريقي العلوي؛ بديل الشريان الكبدي، وبعد الجلسة الأولى، حدث انخفاض كبير في الآفات النقائلية، مما يؤخر تقدم الورم ويكسب الوقت قبل الحاجة للعلاج التالي. عادة ما يؤدي ذلك إلى بقاء أطول بدون تقدم المرض.

* ***Corresponding author***: Noor Y. Abed, Department of Radiology, College of Medicine, Al-Falluja University, Al-Anbar, Iraq; Email: noor.yousif@uofallujah.edu.iq

Article citation: Khassaf MS, Abed NY. Fifty Percent Size Reduction in Neuroendocrine Hepatic Metastasis After a Single Session of Trans-arterial Chemoembolization: A Case Report. *Al-Rafidain J Med Sci.* 2025;9(2):312-314. doi: https://doi.org/10.54133/ajms.v9i2.2457

INTRODUCTION

The liver serves as a main site of metastatic disease, and cancer metastasis is considered the main limit to effectively managing the malignant tumors [1]. Optimal systemic and localized chemotherapy and radiotherapy for unresectable patients increase survival and may make previously unresectable patients resectable [2]. Gastroenteric and pancreatic neuro-endocrine neoplasms (NEN) are classified as borderline malignant tumors and were previously known as carcinoid or carcinoma-mimicking. NEN tumors typically grow more slowly than most carcinoma tumors that originate from the visceral organs [3]. 12% and 36% of patients with gastrointestinal and pancreatic neuroendocrine neoplasms had synchronous liver metastases (NELM), respectively, and 86% of those patients had liver-only metastases, according to analyses of the Surveillance,

Epidemiology, and End Results database. This is mainly attributed to the anatomical factor that the primary sites are drained by portal systems and the potential biological factor of the high affinity of neuroendocrine tumors with the liver micro-environment [4]. The dual blood supply of the liver by the portal vein and the hepatic artery forms the basis of chemoembolization. While the portal vein primarily supplies the liver parenchyma, liver metastasis often receives its blood supply from branches of the hepatic artery [5]. The liver is where NET metastasizes, and up to 80% of metastatic NET cases may have liver metastases. Interventional therapy, such as transarterial embolization (TAE), transarterial chemoembolization, or both, may be considered for patients with liver metastases for whom surgery is not an option. The more popular methods are thermal ablation and transarterial chemoembolization (TACE), as well as nonvascular methods like microwave, cryogenic ablation, and radiofrequency ablation [6].

Case presentation

A triphasic CT scan of a 57-year-old male patient revealed several hepatic lesions by coincidence after an ultrasound examination. The imaging showed that the liver had several bilobar, poorly defined focal lesions of different sizes. Most of them were complex, solid and cystic with uneven enhancement. The biggest lesion, measuring about 8.5 by 7.0 cm in its longest and widest dimensions, was seen in the right hepatic lobe. It looked like an ill-defined, infiltrating, heterogeneously enhancing mass involving segment IV. Furthermore, a second heterogeneously enhancing lesion, measuring 4.7 × 4.4 cm, was found in the left hepatic lobe (segments II/III) with no evidence of vascular invasion (Figure 1).

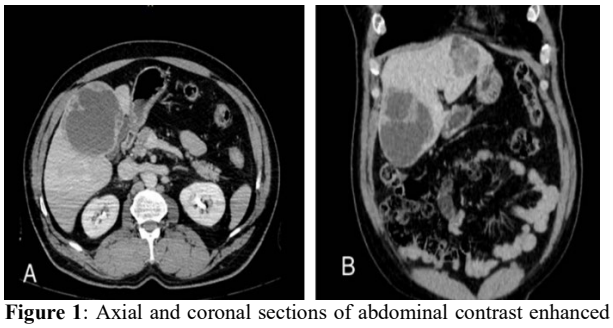

Figure 1: Axial and coronal sections of abdominal contrast enhanced CT scan at admission time, show bilobar complex hypoattenuating hepatic lesions, the largest one in the right lobe, segment IV.

The liver function test was normal, and the tumor markers, including CEA and CA19-9, were within normal range; unknown primary site of tumor and unremarkable findings regarding abdomen and pelvic imaging; the patient did not receive local or systemic chemotherapy. Immunohistochemical (IHC) staining and histopathological analysis were in line with grade II well-differentiated neuroendocrine tumor (NET) metastases. On February 9, 2025, the patient was admitted for transarterial chemoembolization (TACE) at Ibn Sina Interventional Radiology Center in Baghdad. With real-time guidance in the catheterization lab, the procedure was carried out under local anesthesia using the right femoral artery approach. HepaSphere loaded with doxorubicin hydrochloride was successfully used as a chemotherapy for the tumor masses. During the procedure and DSA, a replaced right hepatic artery that comes from the superior mesenteric artery (SMA) was seen. This shows that the hepatic artery anatomy is different (Figure 2).

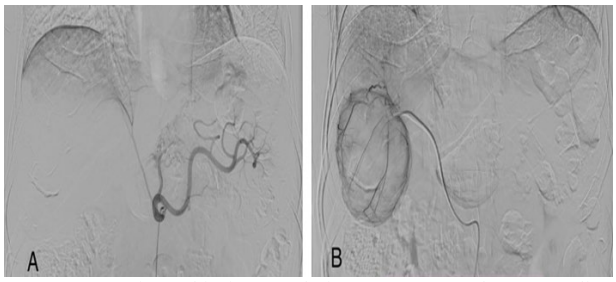

Figure 2: Angiographic images during TACE procedure. **A**) celiac artery angiography; **B**) superior mesenteric artery angiography; note that hepatic lesions are supplied by SMA.

The size of the hepatic lesions significantly decreased on follow-up imaging; by the same imaging modality, contrast-enhanced CT scan in June 2025, the largest one measured 4.0 x 3.8 cm (Figure 3), suggesting a successful course of treatment. The liver function was also preserved. The patient received a second TACE session at the same facility for ongoing disease control because of the positive outcome. Informed consent was taken from the patient for publishing the case, and the study was registered in Al Fallujah University, College of Medicine.

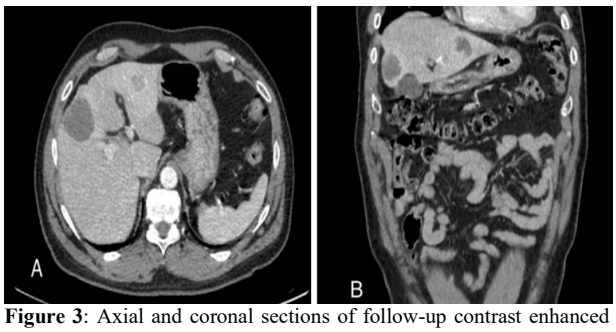

Figure 3: Axial and coronal sections of follow-up contrast enhanced CT scan after TACE in June 2025.

DISCUSSION

Transarterial chemoembolization (TACE), which aims to obstruct small-caliber arteries that feed NELMs and induce tumor ischemia and necrosis, was performed on our patient after he was admitted to Ibn Sina Interventional Radiology Center in February 2025 with multiple neuroendocrine hepatic metastases. The therapeutic response to TACE has not been evaluated in a large prospective study and frequently calls for several sessions. Yu *et al*. [7] described the application of six

sessions of TACE in the twelve-year treatment of multiple liver metastases from small intestinal stromal tumors that were resistant to multiple TKIs. The radiological response is primarily assessed depending on the response evaluation criteria in solid tumors (RECIST) algorithm, which is based on the largest dimension of the tumor measured in a strict axial section. More recent studies, however, only take into account the largest dimensions of persistent tumor enhancement in the same axial plane [8]. Based on RECIST criteria, the biggest focal liver lesion had its axial dimensions cut in half, and its enhancement density dropped noticeably after the first trans-arterial chemoembolization session. This suggests a positive initial response to transarterial chemoembolization, with a detectable decrease in tumor burden and no complications reported. A well-differentiated Grade II neuroendocrine tumor has an indolent course, and repeated loco-regional therapy is still a viable strategy for disease control. To ensure accurate embolization and reduce non-target ischemia, the identification of variant hepatic arterial anatomy—the replacement of the right hepatic artery from the SMA—highlights the significance of thorough vascular mapping before intervention. To improve patient outcomes and extend progression-free survival, it is advised that TACE be continued in combination with multidisciplinary surveillance and potential systemic therapy, based on current findings and imaging follow-up.

Conclusion

To keep the disease under control, TACE frequently calls for several sessions. The ideal number and frequency of sessions are still unknown, and repeating procedures can raise the risk of cumulative toxicity. Additionally, neuroendocrine liver metastases frequently display a variety of vascular patterns, which makes it more difficult to administer chemotherapy drugs consistently. Some lesions may receive blood supply from extrahepatic arteries, which makes complete embolization difficult. In our case, both of these challenges are overcome; all lesions receive their blood supply from the superior mesenteric artery, and after the first session, there is a significant reduction in metastatic lesions, which undoubtedly delays the progression of the tumor and buys time before the next treatment is required. Usually, this results in a longer progression-free survival.

Conflict of interests

The authors declared no conflict of interest.

Funding source

The authors did not receive any source of funds.

Data sharing statement

N/A.

REFERENCES

1. Del Basso C, Usai S, Levi Sandri GB. Non-colorectal non-neuroendocrine liver metastasis: a narrative review of surgical treatment. *Chin Clin Oncol*. 2022;11(4):28. doi: 10.21037/cco-22-13.
2. Faris RM, Mohammed MM, Delan AA. Complete response of an Iraqi patient with multiple liver metastasis, colon cancer and deep vein thrombosis to XELOX/Bevacizumab treatment. *Al-Rafidain J Med Sci*. 2024;7(1 Special):S53-57. doi: 10.54133/ajms.v7i1(Special).922.
3. Arita J, Kiritani S, Hasegawa K. Management of neuroendocrine liver metastasis: Searching for new prognostic factor and appraising repeat hepatectomy. *Hepatobiliary Surg Nutr*. 2021;10(3):410-412. doi: 10.21037/hbsn-21-88.
4. Kasai Y, Ito T, Masui T, Nagai K, Anazawa T, Uchida Y, et al. Liver transplantation for gastroenteropancreatic neuroendocrine liver metastasis: optimal patient selection and perioperative management in the era of multimodal treatments. *J Gastroenterol*. 2025;60(1):1–9. doi: 10.1007/s00535-024-02166-z.
5. Vogl TJ, Lahrsow M. The role of conventional TACE (cTACE) and DEBIRI-TACE in colorectal cancer liver metastases. *Cancers (Basel)*. 2022;14(6):1503. doi: 10.3390/cancers14061503.
6. Huiyi S, Feihang W, Sothea Y, Danyang Z, Zihao H, Junqi S, et al. Comparison of TACE alone versus TACE combined with synchronous ablation for neuroendocrine neoplasms with liver metastases. *J Cancer Res Clin Oncol*. 2025;151(8):227. doi: 10.1007/s00432-025-06274-y.
7. Yu B, Luo J, Wu J, Gu L, Zhang Y. Transcatheter arterial chemoembolization with tyrosine kinase inhibitor in the 12-year treatment of hepatic metastases from gastrointestinal stromal tumor: a case report. *J Gastrointest Oncol*. 2024;15(3):1315-1323. doi: 10.21037/jgo-24-403.
8. Barat M, Cottereau AS, Kedra A, Dermine S, Palmieri LJ, Coriat R, et al. The role of interventional radiology for the treatment of hepatic metastases from neuroendocrine tumor: An updated review. *J Clin Med*. 2020;9(7):2302. doi: 10.3390/jcm9072302.