CME LIVE OPEN ACCESS

CME Journal of Clinical Anesthesia and Research

Review Article

Perioperative Management of Non-Hepatitis B/ C Hepatocellular Carcinoma with Left Adrenal Incidentaloma for Open Left Adrenalectomy: A Case Report

Mew Har Leong

Department of Anesthesiology and Critical Care, Hospital Kuala Lumpur

Corresponding Author: Mew Har Leong, Department of Anesthesiology and Critical Care, Hospital Kuala Lumpur.

Received: 2024 Oct 29 **Accepted:** 2024 Nov 18 **Published:** 2024 Nov 28

Abstract

Hepatocellular carcinoma (HCC) is the sixth most common cancer in Malaysia with a prevalence of 2267 cases per 100,000 population. The adrenal gland is the second most common site of metastasis from an HCC [1]. Risk factors for extrahepatic metastasis are advanced intrahepatic lesions, vascular invasion, elevated tumor markers, and viral hepatitis [2]. All adrenal tumors with suspicious radiological findings, most functional tumors, and all tumors more than 4 cm in size which lack characteristic benign imaging features should be surgically excised [3]. Adrenal gland surgery requires multi-disciplinary team involvement which includes endocrinologist, radiologist, anaesthetist, and surgeon.

Keywords

Non-Hepatitis B, Anesthesia, Endocrinologist, Surgeon, Tumors.

1. Introduction

Hepatocellular carcinoma (HCC) is the commonest primary liver cancers worldwide. Extrahepatic metastases are found in 10%–15% of patients at time of diagnosis with the most frequent site being the lung (47%) followed by lymph nodes (45%), bones (37%), and adrenal glands (12%) [2]. However, there are cases in which distant metastasis can occur years after primary hepatocellular carcinoma being resected. Adrenal gland metastasis possesses unique challenges especially for the anaesthetist especially hormone secreting tumors. Detailed and careful perioperative collaborative management with other teams is necessary in order to reduce perioperative complications. Preoperative assessment and thorough investigation should be done to exclude any adrenal secreting tumor in cases of distant adrenal metastasis from hepatocellular carcinoma.

1.1. Case Presentation

A 74-year-old male patient with multiple chronic diseases post-right hepatectomy in 2018, followed by a recurrence in May 2021 with extension of HCC at segment 4a involving middle hepatic vein extending to inferior vena cava and left atrium. Patient underwent 9 cycles of immunotherapies with Atezolizumab and Bevacizumab in May 2022 and had transarterial chemoembolization.

During a surveillance CT liver 5-phase in August 2024, noted a new large left adrenal mass which exhibits heterogenous arterial enhancement pattern with washout in the delayed phase which measures 6.7x6.5x7.5cm. A PET CT was repeated in September 2024 showed no suspicious liver lesions but hyper metabolic, heterogeneously-enhancing left suprarenal mass (SUVmax8.0/7.3x7.9x7.2cm), with no clear margin against the adjacent left kidney, spleen, pancreatic tail, or left diaphragmatic crus with the impression of FDG-avid left adrenaline tumour with no nodal disease or extra-abdominal metastases. Possibilities include a poorly-differentiated HCC adrenal metastasis and a separate adrenal malignancy.

Patient was then referred to cardiology for assessment due to his premorbid of persistent atrial fibrillation with CHAD2Ds2-VaSc score of 5 (7.2% stroke risk/ year) with history of right atrial mass seen since 2021 on Dabigatran. After satisfactory cardiac stress test, patient was scheduled for open left adrenalectomy in view of rapidly progressive lesion after discussion with patient and surgeon on the balance of operative ischemic risk versus tumor progression. Routine blood investigation was taken prior to day of surgery. No adrenal hormonal studies were done in view of patient being asymptomatic and high suspicion of metastasis from HCC instead of hormone secreting tumor from CT liver 5-phase and PET scan. A further delay of surgery can occur if further non-invasive testing is done.

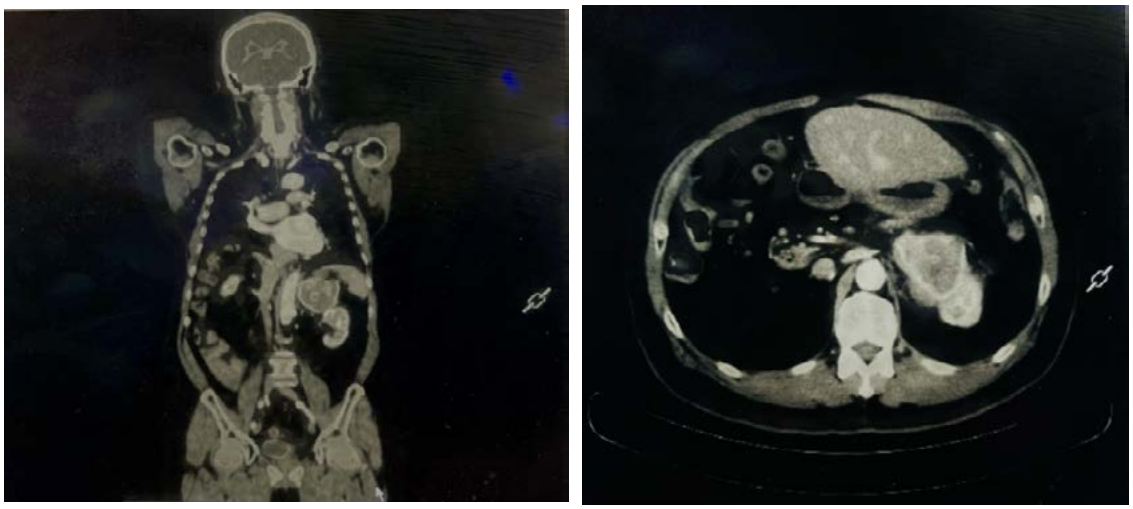

Figure 1: Whole Body CT-Based Attenuation Correction Showing Huge Left Suprarenal Mass

Patient was prepared as per standard protocol. Left internal jugular venous triple lumen and left radial artery cannulated with 21G cannula post-intubation. Low-dose inotropic support was initiated right after induction. Anaesthesia was maintained with Sevoflurane and Remifentanil infusion. No hemodynamic swing during tumor manipulation. Patient was extubated post-operatively and monitored at Intensive Care Unit. He was discharged home well after 2 days in the hospital.

Histopathology examination of left adrenal gland revealed metastatic poorly differentiated hepatocellular carcinoma. Patient was scheduled for a CT-TAP in 2 months' time.

Written consent was obtained from the patient for this case report.

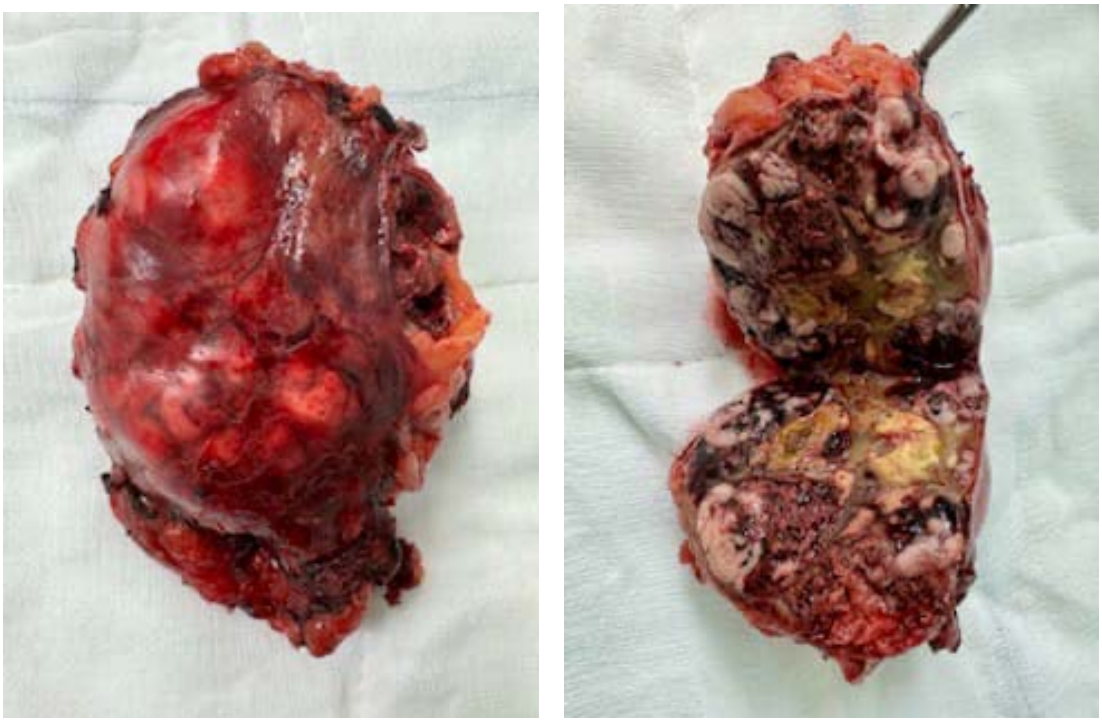

Figure 2: Left Adrenal Gland (left) and its Cross Section (right)

2. Discussion

Adrenal incidentalomas are tumors of the adrenal gland discovered incidentally during radiologic examination of many reasons, be it for surveillance of metastasis or for other purposes. The incidence of adrenal incidentalomas has increased tremendously due to growing use of cross-sectional imaging [4]. Given the complex and diversified clinical landscape of adrenal incidentalomas, it is important to develop extensive, multi-disciplinary and evidence-based guidelines for the purpose of diagnosing, short- and long-term management and monitoring of patients with adrenal incidentalomas, based on the local policy and infrastructure. Several guidelines have been published by various organisations: The American Association of Clinical Endocrinologists (AACE) and American Association of Endocrine Surgeons (2009), European Society of

Endocrinology (ESE) (2023), Korean Endocrine Society (2023) [5, 6, 7]. All guidelines previously recommended a clinical assessment for signs and symptoms of adrenal hormone excess and 1mg overnight dexamethasone suppression test (DST) but an addition to the 2023 guidelines is the statement that in frail patients with limited life expectancy, the DST may not be necessary based on evidence of increasing serum cortisol levels after a DST with age and diminishing the clinical significance of autonomous cortisol secretion in patients over 65 years of age [8]. In the background of HCC and asymptomatic of adrenal hormonal excess, with heterogenously-enhancing adrenal mass more than 3cm which is growing rapidly, surgery should be undergone to prolong survival. Hormonal investigations may be performed on case-by-case basis but not in all patients particularly asymptomatic patients who are known case of HCC.

Surgery is a therapeutic option for adrenal metastasis from HCC although there are different treatment modalities including radiation, chemotherapy or no treatment. However, studies have shown that adrenalectomy in case of metastatic HCC has better survival compared to patients treated with local ablation, chemo- or radiotherapy, or surveillance only [9]. Despite of this, there was no clear preoperative guideline for anaesthetists previously regarding hormonal work-up to be undertaken and most of the centres still require detailed hormonal work-up to rule out pheochromocytoma and autonomous cortisol secretion in case of adrenal incidentaloma planning for adrenalectomy [10]. This can be challenging in centres with limited resources and may delay further surgical intervention and treatment. With the key updates in 2023 ESE guideline which is more comprehensive, it improves the preoperative management and institutes cost-efficient clinical pathways and avoids excessive investigations in patients with adrenal metastases who are known case of HCC. Intraoperative monitoring and management should be done according to standard protocol. Ideally, postoperative care should be carried out in either intensive care or high dependency unit.

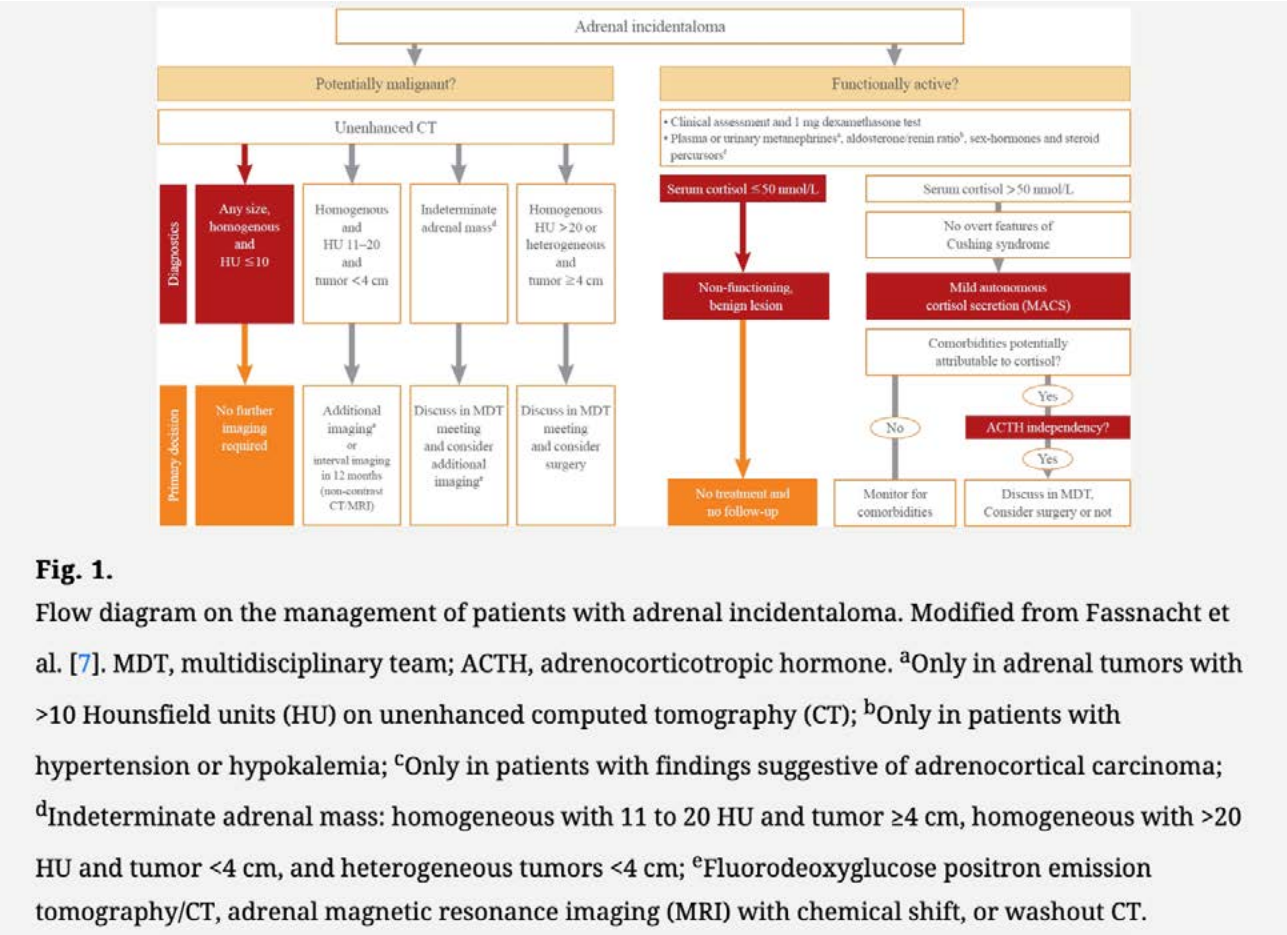

Fig. 1.

Flow diagram on the management of patients with adrenal incidentaloma. Modified from Fassnacht et al. [7]. MDT, multidisciplinary team; ACTH, adrenocorticotropic hormone. [a]Only in adrenal tumors with >10 Hounsfield units (HU) on unenhanced computed tomography (CT); [b]Only in patients with hypertension or hypokalemia; [c]Only in patients with findings suggestive of adrenocortical carcinoma; [d]Indeterminate adrenal mass: homogeneous with 11 to 20 HU and tumor ≥4 cm, homogeneous with >20 HU and tumor <4 cm, and heterogeneous tumors <4 cm; [e]Fluorodeoxyglucose positron emission tomography/CT, adrenal magnetic resonance imaging (MRI) with chemical shift, or washout CT.

Figure 3

3. Conclusion

The management of adrenal incidentalomas has improved over the years. It is particularly crucial for anaesthetists to be aware of the latest updated 2023 ESE guideline, which highlights the need for standardised approaches and exclusion of detailed hormonal investigations in asymptomatic patients who are known case of HCC with imaging suspicious of adrenal malignancy.

Acknowledgements

I would like to thank Hepatopancreaticobiliary team of Hospital Selayang, and particularly Dr Suryati Mokthar and

Datuk Dr Harjit Singh, for their assistance in this case report. There was no specific funding for this case report.

References

1. Ha-Kawa, S. K., Harima, K., Tanaka, Y., Akashi, Y., Koreeda, C., et al (1990). A clinical evaluation of distant metastases from a hepatocellular carcinoma with reference to location, frequency, symptoms, treatment & prognosis. *Gan no rinsho. Japan Journal of Cancer Clinics, 36*(11), 2012-2016
2. Zeineddine, F. A., Ahmed, Z., Victor, D., Farach, A., Divatia, M., & Kodali, S. (2023). Hepatocellular carcinoma recurrence as isolated adrenal metastasis. *ACG Case Reports Journal*, *10*(6), e01065.
3. Zeiger, M. A., Siegelman, S. S., & Hamrahian, A. H. (2011). Medical and surgical evaluation and treatment of adrenal incidentalomas. *The Journal of Clinical Endocrinology & Metabolism, 96*(7), 2004-2015.
4. Ebbehoj, A., Li, D., Kaur, R. J., Zhang, C., Singh, S., Li, T., ... & Bancos, I. (2020). Epidemiology of adrenal tumours in Olmsted County, Minnesota, USA: a population-based cohort study. *The lancet Diabetes & endocrinology, 8*(11), 894-902.
5. Zeiger, M. A., Thompson, G. B., Duh, Q. Y., Hamrahian, A. H., Angelos, P., et al (2009). American Association of Clinical Endocrinologists and American Association of Endocrine Surgeons medical guidelines for the management of adrenal incidentalomas. *Endocrine practice, 15*, 1-20.
6. Martin Fassnacht, Styling's Tsagarakis, Massimo Tremolo et al. European Journal of Endocrinology, Volume 189, Issue 1, July 2023, Pages G1-G42, DOI: 10.1093/ejendo/lvad066
7. Park, S. S., & Kim, J. H. (2023). Recent updates on the management of adrenal Incidentalomas. *Endocrinology and Metabolism, 38*(4), 373-380.
8. Deutschbein, T., Reimondo, G., Di Dalmazi, G., Bancos, I., Patrova, J., et al (2022). Age-dependent and sex-dependent disparity in mortality in patients with adrenal incidentalomas and autonomous cortisol secretion: an international, retrospective, cohort study. *The Lancet Diabetes & Endocrinology, 10*(7), 499-508.
9. Rubio, E., González, J., Jimenéz, M., Lucena, J. L., Gimenez, L., et al (2009, April). Right adrenal metastases of hepatocarcinoma after liver transplantation: case report and literature review. In *Transplantation proceedings* (Vol. 41, No. 3, pp. 1067-1069). Elsevier.
10. Fassnacht, M., Dekkers, O. M., Else, T., Baudin, E., Berruti, A., et al (2018). European Society of Endocrinology Clinical Practice Guidelines on the management of adrenocortical carcinoma in adults, in collaboration with the European Network for the Study of Adrenal Tumors. *European journal of endocrinology,* 179(4), G1-G46.