

Omental band induced bowel ischemia following combination immunotherapy in a patient with renal cell cancer

S. Khan, U. Aleem, N. Peters.

Medical Oncology Department, University Hospital Limerick, St Nesses's Rd., Dooradoyle, Co. Limerick, Ireland.

Abstract

Presentation

A 62-year-old female, diagnosed with intermediate IMDC risk metastatic clear cell renal cell cancer, with multifocal metastases to left pleural membrane and primary renal mass in-situ, received combination of 1st line Nivolumab/Ipilimumab therapy. She was admitted to hospital within 2 weeks of administration of 1st cycle of immunotherapy with severe abdominal pain, vomiting, and nausea. On examination, she was noted to have severe abdominal tenderness with positive guarding. Her blood levels showed increased white cell count, C-reactive protein, and high lactate levels.

Diagnosis

A CT Abdomen and Pelvis and CT Mesenteric Angiogram was performed which showed evidence of mechanical small bowel obstruction. Secondary mesenteric oedema was also noted, and early ischemic changes of bowel were evident.

Treatment

Emergency laparotomy was performed. Omental banding of the small bowel loop was noted. This omental banding had resulted in bowel obstruction and ischemia. She underwent surgical resection of 15cm of gangrenous small bowel with an ileostomy formation. Histological examination revealed inflammatory cells and exudate present in small bowel biopsy sample.

Discussion

Small bowel obstruction because of an omental band is an extremely rare occurrence. It is thus postulated that the patient's omental band developed as a consequence of immune mediated enteritis secondary to immunotherapy. Although small bowel obstruction secondary to immunotherapy is rare, with under five cases in the literature, it is a potentially life-threatening complication that treating physicians need to be aware of.

Introduction

Immune checkpoint inhibitors (ICIs) enhance antitumour immunity via blockade of PD-1, PD-L1, and CTLA-4 signalling pathways, and are now standard therapy across major tumour groups^{1,2}. Combination nivolumab–ipilimumab improves survival in metastatic RCC compared with sunitinib³.

Immune-related enterocolitis occurs in 1–22% of patients depending on the regimen, with rates up to 30% in combination therapy⁴. Symptoms include abdominal pain, diarrhoea, nausea and, rarely, intestinal obstruction or perforation. True mechanical small bowel obstruction due to immune-mediated inflammation is extremely uncommon, with fewer than five cases described in the literature^{5,6}, and no prior reports of obstruction secondary to omental band formation. We report the first documented case of an omental band causing bowel ischemia following nivolumab–ipilimumab therapy.

Case Report

A 62-year-old female patient was admitted in the University Hospital Limerick, with complaints of shortness of breath and cough. Her background history included type II Diabetes mellitus, dyslipidaemia and high BMI, with previous surgical history of appendectomy more than 40 years ago. A Chest X-ray showed a large left sided pleural effusion. She was admitted under the Respiratory team, who performed the diagnostic pleurocentesis. Cytological examination revealed malignant cells. A pleural biopsy was subsequently performed which was negative. A PET-CT scan in April 2024 revealed a right renal cortical mass suspicious for solid tumour and pleural nodularity concerning for metastasis. She underwent a renal mass biopsy. Histological findings were consistent with metastatic clear cell subtype of renal cell carcinoma (RCC), and malignant cells stained strongly for PAX-8, CAIX, Vimentin, and other epithelial markers. The pleural lesion were likely metastases from the RCC. She was referred to Medical Oncology and commenced on combination immunotherapy with nivolumab and ipilimumab.

Two weeks after the first cycle, she presented to the Emergency Department with a two-day history of worsening abdominal pain, nausea, and vomiting. Examination revealed diffuse abdominal tenderness and guarding. Laboratory results showed elevated lactate. CT abdomen/pelvis and CT mesenteric angiogram demonstrated mechanical small bowel obstruction likely secondary to internal herniation of small bowel loops or adhesions. Also, secondary mesenteric oedema was noted, and early ischemic changes of bowel were evident.

She underwent emergency laparotomy. Surgeons noted extensive omental banding, which had led to small bowel obstruction and ischemia eventually. A 15cm of gangrenous distal ileum was resected and ileostomy was performed. Histopathology of the small bowel showed extensive congestion and oedema in association with inflammatory exudate. She required

post-operative care in the high-dependency unit and was later discharged with an ileostomy, followed by surgical review for reversal.

Discussion

ICIs have revolutionised cancer therapy but carry the risk of unpredictable immune-mediated toxicities⁴. Enterocolitis is well described; however, the progression to full mechanical obstruction is exceptionally rare. Published reports include inflammatory strictures, adhesive obstruction, and internal herniation⁵⁻⁸, but none describe omental band formation. The mechanism in our case is likely immune-mediated enteritis leading to serosa inflammation and subsequent fibro-inflammatory adhesion formation, ultimately causing mechanical strangulation and ischemia. This case is novel in two aspects: one, the obstruction occurred after first cycle of dual checkpoint blockade; secondly, the mechanism was new omental band formation, rather than typical inflammatory stenosis.

Early recognition is critical: mortality from bowel ischemia rises with every hour of delay. CT mesenteric angiography allows early detection of strangulation. Clinicians managing ICI recipients with abdominal symptoms must consider immune-mediated enteritis, infective colitis, small bowel obstruction—even without surgical history, and risk of fatal ischemia.

Declarations of Conflicts of Interest:

None declared.

Corresponding Author:

Sunder Khan,
Medical Oncology Department,
University Hospital Limerick,
St Nesson's Rd.,
Dooradoyle,
Co. Limerick,
Ireland.

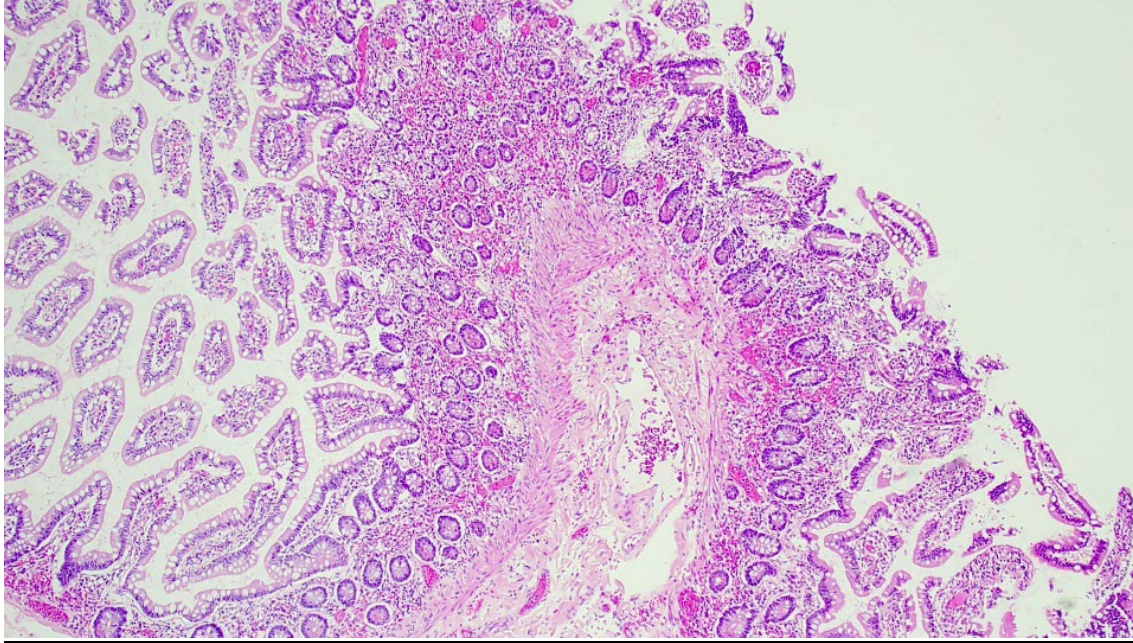
E-Mail: drsundermehran@gmail.com

References:

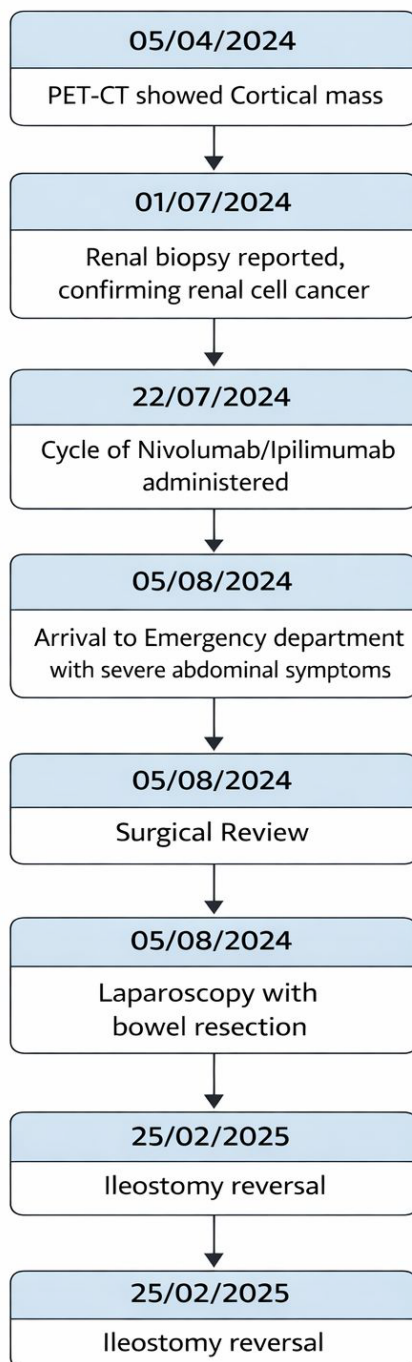
1. Sahu M, Suryawanshi H. Immunotherapy: The future of cancer treatment. J Oral Maxillofac Pathol. 2021 May-Aug;25(2):371. doi: 10.4103/0973-029X.325257.

2. Ling SP, Ming LC, Dhaliwal JS, Gupta M, Ardianto C, Goh KW, Hussain Z, Shafqat N. Role of Immunotherapy in the Treatment of Cancer: A Systematic Review. *Cancers (Basel)*. 2022 Oct 24;14(21):5205. doi: 10.3390/cancers14215205.
3. Motzer, R.J., Tannir, N.M., McDermott, D.F., Arén Frontera, O., Melichar, B., Choueiri, T.K., Plimack, E.R., Barthélémy, P., Porta, C., George, S., Powles, T., Donskov, F., Neiman, V., Kollmannsberger, C.K., Salman, P., Gurney, H., Hawkins, R., Ravaud, A., Grimm, M.-O. and Bracarda, S. (2018). Nivolumab plus Ipilimumab versus Sunitinib in Advanced Renal-Cell Carcinoma. *New England Journal of Medicine*, 378(14), pp.1277–1290. doi:<https://doi.org/10.1056/nejmoa1712126>.
4. J. Haanen, M. Obeid, L. Spain, F. Carbonnel, Y. Wang, C. Robert, A.R. Lyon, W. Wick, M. Kostine, S. Peters, K. Jordan, J. Larkin, Management of toxicities from immunotherapy: ESMO Clinical Practice Guideline for diagnosis, treatment and follow-up, *Annals of Oncology*, Volume 33, Issue 12, 2022, Pages 1217-1238, ISSN 0923-7534, <https://doi.org/10.1016/j.annonc.2022.10.001>
5. Ping Wei S, Abdul Karim NK, Aziz ME, Shong Sheng T. Adhesional Omental Hernia With Small Bowel Obstruction in an Elderly Patient With a Virgin Abdomen: A Case Report. *Cureus*. 2023 Aug 12;15(8):e43365. doi: 10.7759/cureus.43365. PMID: 37700966; PMCID: PMC10494554.
6. Olivier, D. I. R. Y. I. V. U. Z. E. (2024) "Band adhesions in a virgin abdomen: A case report," Elsevier Ltd. doi: 10.1016/J.IJSCR.2024.110427.
7. Sha, S., R J Goyette, E., West, L. A., & Bentz, J. L. (2024). Recurrent pembrolizumab-induced mechanical small bowel obstruction in a patient with metastatic cervical cancer. *Gynecologic oncology reports*, 53, 101382. <https://doi.org/10.1016/j.gore.2024.101382>
8. Lu, X., Qian, L., Yu, C., & Zhou, Q. (2025). Small bowel obstruction in patients associated with immune checkpoint inhibitors combined with chemotherapy: Two case reports and a review. *Medicine*, 104(40), e44910. <https://doi.org/10.1097/MD.00000000000044910>

Appendix:



Small Bowel biopsy, showing extensive congestion and oedema in association with surface inflammatory exudate.



Brief timeline of events