



## Spontaneous Tumor Lysis Syndrome Following Untreated Metastatic Colorectal Adenocarcinoma: A Case Report

Benjamin Reardon<sup>1\*</sup>, Andrea Knox<sup>1</sup>, Syapiq Long<sup>2</sup> and Cecily Forsyth<sup>1</sup>

<sup>1</sup>Department of Hematology, University of Newcastle, Central Coast Local Health District, Australia

<sup>2</sup>Department of Hematology, Hunter New England Health District, Australia

### Abstract

We report a case of the spontaneous tumor lysis syndrome in untreated metastatic colorectal adenocarcinoma. Tumor lysis syndrome is normally associated with hematological malignancies. A previously well 65-year-old Caucasian male presented with confusion after a recent diagnosis of metastatic colorectal cancer. He was found to have clinical and laboratory findings consistent with tumor lysis syndrome, and was managed aggressively as such. The recognition of spontaneous tumor lysis syndrome in solid tumors is important to prevent diagnostic delays and ensure appropriate therapy.

**Keywords:** Tumor lysis syndrome; Colorectal; Metastasis; Solid tumor; Adenocarcinoma

### Abbreviations

TLS: Tumor Lysis Syndrome; LDH: Lactate Dehydrogenase; CEA: Carcinoembryonic Antigen; CA19-9: Cancer Antigen 19-9; CA125: Cancer Antigen 125; LFT: Liver Function Test; ALP: Alkaline Phosphatase; GGT: Gamma-Glutamyl Transpeptidase; AST: Aspartate Transaminase; ALT: Alanine Transaminase; Hb: Hemoglobin; CK20: Cytokeratin 20; CDX2: homeobox CDX2; BER-EP4: Histological stain BER-EP4; P40: Antibody p40; CK5/6: Cytokeratin 5/6; P63: Antibody p63

### Introduction

Tumor Lysis Syndrome (TLS) is a group of metabolic derangements resulting from the release of large amounts of cellular components into the circulation due to the rapid lysis of malignant cells [1]. It is frequently observed following treatment of high-grade hematological malignancies, but only rarely associated with treatment of non-hematological solid tumors [2,3]. Spontaneous TLS prior to the initiation of therapy has been described in solid organ malignancies, although rare [4]. We report a case of spontaneous laboratory and clinical TLS in a patient who presented with untreated metastatic colorectal cancer.

### Case Presentation

A 65-year-old Caucasian male presented to the emergency department with a history of increasing confusion. Two weeks prior, abnormal Liver Function Tests (LFTs) were noted on blood tests performed to investigate lethargy. This was followed by an abdominal ultrasound which showed hepatic lesions suspicious for malignant metastases. A CT abdomen and pelvis suggested likely metastatic colorectal cancer with irregular mural thickening of the sigmoid colon and multiple heterogeneous deposits in an enlarged liver (Figure 1). Prior to further investigation, he presented to hospital with worsening confusion over three days. His initial investigations demonstrated significant metabolic and hepatic derangement with no intracranial abnormalities. Blood results showed hyperphosphatemia 2.42 mmol/L (normal range 0.75–1.5), hyperkalemia 5.7 mmol/L (3.5 to 5.2), hyperuricemia 1.03 mmol/L (0.24 to 0.48), hypocalcemia 1.48 mmol/L (corrected 1.96 mmol/L, 2.10 to 2.60) and a raised LDH 4716 U/L (120 to 250) and creatinine 221 umol/L (60 to 110). The patient's tumor markers were also deranged including CEA 2990.8 ug/L (<5); CA19-9 7027 kU/L (<37); CA125 164 kU/L (<35). LFTs continued to be deranged with a predominantly obstructive pattern (bilirubin 56 µmol/L [3 to 20]; albumin 16 g/L [35 to 52]; protein 41 g/L [60 to 80]; ALP 310 U/L [30 to 110]; GGT 283 U/L [9 to 36]; AST 114 U/L [12 to 36], ALT 13 U/L [<55]). He also had a significant leucocytosis of  $36.2 \times 10^9/L$  (4.0 to 11.0) with a neutrophilia  $33.2 \times 10^9/L$  (2.0 to 8.0) and normocytic anemia Hb 122 g/L (130 to 180). Two months prior his baseline creatinine and

### OPEN ACCESS

#### \*Correspondence:

Benjamin Reardon, Department of Hematology, University of Newcastle, Central Coast Local Health District, Westmead Hospital, Corner of Hawkesbury Road and Darcy Road, Westmead, New South Wales 2145, Australia, Tel: 0411 964 913; E-mail: Benjamin.reardon@health.nsw.gov.au

Received Date: 08 Sep 2020

Accepted Date: 25 Sep 2020

Published Date: 28 Sep 2020

#### Citation:

Reardon B, Knox A, Long S, Forsyth C. Spontaneous Tumor Lysis Syndrome Following Untreated Metastatic Colorectal Adenocarcinoma: A Case Report. Oncol Case Report J. 2020; 3(3): 1026.

Copyright © 2020 Benjamin

Reardon. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.



**Figure 1:** Non-obstructive irregular focal thickening of the sigmoid colon.

potassium were 70 umol/L and 3.9 umol/L, respectively.

Sigmoidoscopy revealed an ulcerated, partially circumferential non-obstructing mass in the sigmoid colon. Histopathology confirmed this as adenocarcinoma of colorectal origin (KRAS, CK20, CDX2 and BER-EP4 stain positive; patchy positive for CEA; and negative for P40, CK5/6, p63). Molecular testing and cytogenetics were unsuccessful due to inadequate yield. The immunohistochemistry of this patient's adenocarcinoma was negative for the BRAF V600E mutation, and RAS gene mutation analysis showed a KRAS missense mutation.

The patient was diagnosed with spontaneous tumor lysis syndrome and admitted to the high dependency unit. He received aggressive diuresis and measures to correct his electrolyte and acid-base abnormalities. Rasburicase followed by allopurinol was used to manage hyperuricemia. The patient's hyperkalemia improved, however his acute kidney injury and hepatic dysfunction continued to worsen despite treatment. Unfortunately the patient continued to deteriorate, both clinically and biochemically, and it was decided he was not for further intervention. The patient died in peace and dignity surrounded by his immediate family 9 days after hospital presentation.

## Discussion and Conclusion

This patient fulfilled the Cairo-Bishop criteria for spontaneous laboratory and clinical TLS with the diagnosis of metastatic colorectal cancer [5,6]. There was no evidence of risk factors for TLS including hemolysis, hematological malignancy, or metastatic renal invasion. Additionally he had no previous history of gout, thyroid or parathyroid disease, pre-existing kidney disease, diabetes or alcohol abuse.

TLS has been described as a rare complication of solid tumors, predominantly after therapy has been commenced [3]. We have found one report of untreated colorectal cancer presenting with spontaneous TLS [7], and one of adenocarcinoma of likely gastrointestinal origin [8]. The first documents a widespread mucinous adenocarcinoma in a young patient who presented in TLS and received one cycle of lymphoma-directed immunochemotherapy prior to the diagnosis of adenocarcinoma being established. The second, in 1977, describes a post-mortem diagnosis of TLS in a male with untreated anaplastic adenocarcinoma of likely gastrointestinal tract primary, who presented with acute renal failure. Within gastrointestinal malignancies there are other case reports, including two of gastric

adenocarcinoma [9,10], and one of hepatocellular carcinoma [3]. This supports the notion that hematological malignancy is certainly not the only cause of TLS. The other reports of spontaneous solid tumour TLS have common the themes of a large burden of disease and an extremely poor prognosis [11]. Reports in cases where patients survived either did not meet the criteria for laboratory TLS or were clearly associated with chemotherapy [3,12].

TLS is commonly associated with high-grade hematological malignancies, either occurring spontaneously or most frequently following treatment. There are only infrequent reports of TLS in association with non-hematological solid tumors and the majority of these describe post-therapy TLS rather than spontaneous TLS. The outlook for patients who present with spontaneous TLS due to a non-hematological solid tumor is dire but might improve if the diagnosis is made early and appropriate corrective measures introduced. Understanding that TLS can be due to solid tumors will aid correct diagnosis and cancer-specific therapy.

## References

- Howard SC, Jones DP, Pui CH. The tumor lysis syndrome. *N Engl J Med.* 2011;364(19):1844-54.
- Rostom AY, El-Hussainy G, Kandil A, Allam A. Tumor lysis syndrome following hemi-body irradiation for metastatic breast cancer. *Ann Oncol.* 2000;11(10):1349-51.
- Mirrakhimov AE, Ali AM, Khan M, Barbaryan A. Tumor lysis syndrome in solid tumors: An up to date review of the literature. *Rare Tumors.* 2014;6(2):5389.
- Kalemkerian GP, Darwish B, Varterasian ML. Tumor lysis syndrome in small cell carcinoma and other solid tumors. *Am J Med.* 1997;103(5):363-7.
- Coiffier B, Altman A, Pui C-H, Younes A, Cairo MS. Guidelines for the management of pediatric and adult tumor lysis syndrome: An evidence-based review. *J Clin Oncol.* 2008;26(16):2767-78.
- Cairo MS, Bishop M. Tumor lysis syndrome: New therapeutic strategies and classification. *British J Haematol.* 2004;127(1):3-11.
- Frestad D, Perner A, Pedersen UG. Acute onset and rapid progression of multiple organ failure in a young adult with undiagnosed disseminated colonic adenocarcinoma. *BMJ Case Rep.* 2014;2014:bcr2014205002.
- Crittenden DR, Ackerman GL. Hyperuricemic acute renal failure in disseminated carcinoma. *Arch Intern Med.* 1977;137(1):97-9.
- Woo IS, Kim JS, Park MJ, Lee MS, Cheon RW, Chang HM, et al. Spontaneous acute tumor lysis syndrome with advanced gastric cancer. *J Korean Med Sci.* 2001;16(1):115-8.
- Vodopivec DM, Rubio JE, Fornoni A, Lenz O. An unusual presentation of tumor lysis syndrome in a patient with advanced gastric adenocarcinoma: Case report and literature review. *Case Rep Med.* 2012.
- Gemicci C. Tumor lysis syndrome in solid tumors. *Clin Oncol (R Coll Radiol).* 2006;18(10):773-80.
- Vaisban E, Braester A, Mosenzon O, Kolin M, Horn Y. Spontaneous tumor lysis syndrome in solid tumors: Really a rare condition? *Am J Med Sci.* 2003;325(1):38-40.