



# Understanding Prolonged Survival in Advanced Colorectal Cancer Using Genomics - A Case Series



Kanak Parmar<sup>1</sup>, Kalas M A<sup>2</sup>, Khatab Y<sup>2</sup>, Deb A<sup>1</sup>, Elharabi Z<sup>1</sup>, Alexander Philipovskiy<sup>3</sup>

<sup>1</sup>Department of Internal Medicine, Texas Tech University Health Sciences Center, Lubbock, TX, U.S.A.

<sup>2</sup>Department of Internal Medicine, Texas Tech University Health Sciences Center, El Paso, TX, U.S.A.

<sup>3</sup>Department of Hematology Oncology, Texas Tech University Health Sciences Center, Lubbock, TX, U.S.A.

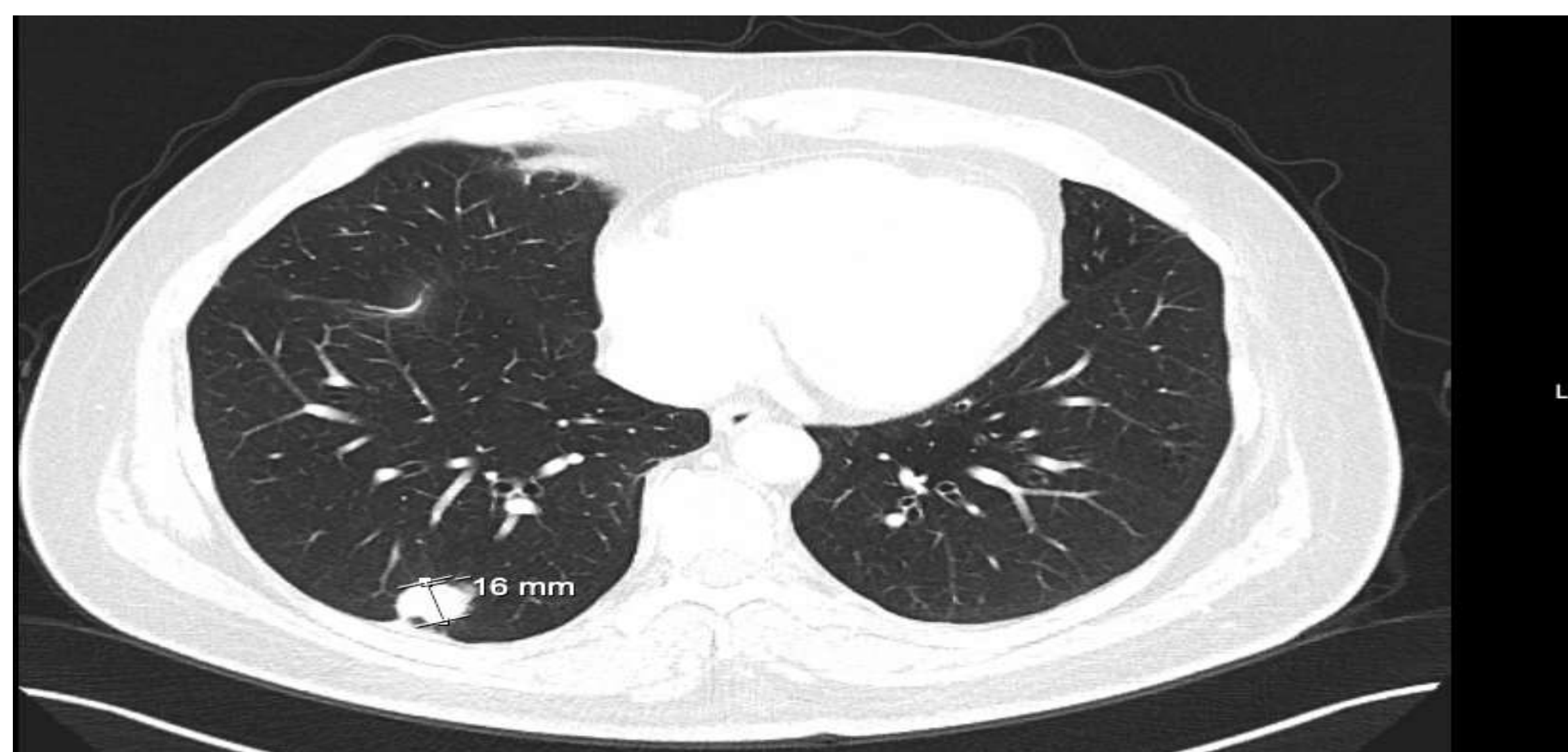
## Background

Recent progress in molecular biology and cancer genome research had opened a new venue for clinical research and changed treatment paradigm for metastatic colorectal cancer.

### Case Presentation

#### Case 1:

- 61-year-old Hispanic male underwent colonoscopy which revealed a mass in the proximal ascending colon with biopsy showing moderately differentiated adenocarcinoma. He underwent a right hemicolectomy in 2012.
- He subsequently completed chemotherapy with mFOLFOX-6. Further treatment was declined by patient.
- Chest CT scan in April 2018 showed progression of pulmonary nodules.
- Patient was put on FOLFIRI/bevacizumab chemotherapy.
- NGS study showed following results; MS stable; TMB 4 mutations/Mb (low); APC R1450, BRAF D594N, FAM 123B K761, SOX9 G225fs, and TP53 R175H.
- The patient has stable disease on follow up.



#### Case 2:

- 73-year-old Hispanic male underwent colonoscopy showing a obstructing mass in the sigmoid colon.
- Biopsy showed moderately differentiated adenocarcinoma in December 2013. Patient underwent sigmoidectomy.
- Liver masses were found on repeat CT abdomen.
- The NGS reported as follows; MS-Stable, TMB 1 muts/Mb(low), APC T282fs\*12/P1453fs\*20, CDK8 amplification, fms like tyrosine kinase 3 (FLT3) amplification, KRAS amplification and TP53 V147D. It also detected wild type KRAS mutations in exons 2, 3 and 4.
- The patient was started on chemotherapy with mFOLFOX. Follow-up studies show stable disease.

#### Case 3:

- 73-year-old Hispanic male underwent colonoscopy showed a completely obstructing mass in the sigmoid colon.
- Biopsy showed moderately differentiated adenocarcinoma in June 2012.
- He underwent a left hemicolectomy.
- He completed mFOLFOX6.
- PET scan was done and showed a right upper lobe mass consistent with metastatic cancer.
- He was started on FOLFIRI/ bevacizumab.
- NGS reported as follows; MS-Stable, TMB 1 muts/Mb(low), APC V1452fs\*21, and ATM S47fs\*11. The tumor cells have KRAS G12D mutation in in codon 12 of KRAS.
- Bone Scan intense uptake in the right distal tibia. MRI of the right lower extremity showed a lesion in the distal tibia.
- He was then switched to irinotecan and bevacizumab regimen.
- He has stable disease

### Conclusion

Identification of genomic signature is key to understanding the molecular mechanism of CRC and the development of novel therapeutics.

### References

- Sung H, Ferlay J, Siegel RL, Laversanne M, Soerjomataram I, Jemal A, et al. Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer J Clin.* 2021;71(3):209-49.
- Siegel RL, Miller KD, Goding Sauer A, Fedewa SA, Butterly LF, Anderson JC, et al. Colorectal cancer statistics, 2020. *CA Cancer J Clin.* 2020;70(3):145-64.
- Hawk ET, Levin B. Colorectal cancer prevention. *J Clin Oncol.* 2005;23(2):378-91.
- Xie YH, Chen YX, Fang JY. Comprehensive review of targeted therapy for colorectal cancer. *Signal Transduct Target Ther.* 2020;5(1):22.

