PubMed

Format: Abstract

Semin Neurol. 2018 Feb;38(1):95-103. doi: 10.1055/s-0038-1627469. Epub 2018 Mar 16.

Toward Precision Medicine in Brain Metastases.

Berghoff AS[1,2], Brastianos PK[3,4,5,6].

1 Clinical Cooperation Unit Neuro-Oncology, German Cancer Research Center, Heidelberg, Germany.
2 Clinical Unit for Experimental Oncology Therapy, Thoraxklinik, University of Heidelberg, Heidelberg, Germany.
3 Division of Hematology/Oncology, Department of Medicine, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts.
4 Division of Neuro-Oncology, Department of Neurology, Stephen E. and Catherine Pappas Center for Neuro-Oncology, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts.
5 Cancer Center, Massachusetts General Hospital, Harvard Medical School, Boston, Massachusetts.
6 Broad Institute, Boston, Massachusetts.

Brain metastases (BMs) reflect an area of high clinical need, as up to 40% of patients with metastatic cancer will develop this morbid and highly fatal complication. Historically, treatment strategies have relied on local approaches including radiosurgery, whole-brain radiotherapy, and neurosurgical resection. Recently, targeted and immune-modulating therapies have shown promising responses and have been introduced in the clinical management of patients with BMs. Recent improvements in genomic technologies have enriched our understanding of BMs and have demonstrated that BMs present with significant genetic divergence from the originating primary tumor, such that potentially targetable genetic alterations are detected only in the BMs. However, this genetic divergence also results in genetic alterations associated with resistance to targeted therapies. A deeper insight on the genetic alterations of BMs and the interaction with the brain microenvironment will likely reveal new treatment targets, moving toward more precision therapies for patients with BMs.

PMID: **29548056** DOI: 10.1055/s-0038-1627469