Filling a Void: The Center for Brain & Spine Metastasis

DUKE CONSORTIUM FOR INFLAMMATORY BREAST CANCER February 28, 2018



John Kirkpatrick, MD, PhD & Peter Fecci, MD, PhD The Center for Brain & Spine Metastases Duke Cancer Institute

Epidemiology

- >170,000 cases per year in US
 - Increasing incidence (improved systemic therapy? imaging?)
- Brain metastases occur in 20-40% of cancer cases

Primary tumor	Percent of all BM cases
Lung	50
Breast	15
Melanoma	10
Colon	5
Other	20

- OS highly variable, but typically < 1 year
- Minimal increase over past 20 years



DUKE CENTER FOR BRAIN AND SPINE METASTASIS

Vision and Strategy

Building a Center

- Formalized Joint Effort between Neurosurgery, DCI & Radiation Oncology
 - Co-Directors: Peter Fecci (NSU), Kim Blackwell (DCI), John Kirkpatrick (Rad Onc)
 - Rory Goodwin and Sergio Mendoza Lattes heading spine efforts
 - Financial investments DCI, NSU, and TDHI
- Support from Hospital Leadership
 - 1 of 5 Chancellor's Translating Duke Health Initiatives

• Other key contributors thus far:

- Thoracic Oncology: Jeff Clarke
- Melanoma: April Salama
- Radiation Oncology: Scott Floyd, Jordan Torok
- Ortho Spine: Sergio Mendoza Lattes
- Neurosurgery: John Sampson, Rory Goodwin



SC<u>R</u>IPT: <u>R</u>esearch 2017 RFA

- Fall 2017 RFA for research focused on diagnosis, modeling, and/or treatment of brain and spine metastasis
- 2 1-year \$50K awards with opportunity for renewal
- 17 applications received
- Identifies groups doing this research across campus
- Has already instigated collaborations
- Future goal: Foster PO1 or SPORE and investigator-initiated trials

2017 Awardees

<u>Anne Marie Pendergast</u>

"Identification of actionable signaling networks that promote breast cancer metastasis to the brain"

- Peter Fecci
 - "Awakening the anti-tumor immune response: Countering T cell exhaustion among intracranial metastases"

Potential Opportunities

- BBB disruption
 - Improve chemotherapy delivery
 - Various immune-based modalities DO suffer access issues
 - Antibodies / targeted toxins / BiTEs
 - Immune checkpoint: Anti-PD-L1 (expressed on tumor)
 - Not clear re: anti-PD-1, anti-CTLA-4
- Inflammatory Milieu of cell stress/death and improved tumor visibility
 - Proper timing of immunotherapies? Radiotherapy?
 - Choice of specific rational modalities to combine
- Methods for improving the uniformity, tumor-specificity, and range of the local hyperthermia conferred by LITT
 - Nanotechnologies: SYMPHONY
 - Murine / Canine Models**

Optimizing Clinical Outcomes in Brain Mets

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