A Multidisciplinary Central Nervous System Clinic Model for Radiation Oncology and NeuroSurgery (RADIANS)

Three-Year Experience for Brain and Skull Base Lesions in a Community Hospital Setting

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Nothing To Disclose
Outline

• Background
• Patient Characteristics
• Malignant vs. Benign Lesions
• Treatment Allocation
• Treatment Outcomes
• Summary
RADIANS Background

• Formed in Fall 2016
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• Community Hospital Setting (Portland, OR)
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- Community Hospital Setting
  - patient-centric approach
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  • optimize patient/physician time
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  - simultaneous evaluation with radiation oncologist and neurosurgeon

Voong et al., *Clinical Lung Cancer* 2019
Friedman et al., *J Multidiscip Health* 2016
Pawlik et al., *Ann Surg Oncol* 2008
Gardener et al., *J Onc Prac* 2010
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- Community Hospital Setting
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- Medical Oncology (most common)
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  • simultaneous evaluation with radiation oncologist and neurosurgeon
• Medical Oncology (most common)
• Patient Satisfaction Score = 4.77/5 (McClelland 3rd, 2019)
Who did we treat?
Patient Characteristics (n=67)

• Mean Age = 61.0yrs; Range = 24 – 92yrs
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  - COPD \( (n=23, 34.3\%) \)
  - HTN \( (n=19, 28.4\%) \)
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- Obesity Class I (BMI = 30-34.9) = 11, 22.9%
- Obesity Class II (BMI $\geq$ 35.0) = 5, 10.4%
CNS Histologic Types
Malignant n=43

- Lung n=22, 51.19%
- Glioblastoma n=7, 16.2%
- Breast n=7, 16.2%
- Kidney n=3, 6.9%
- Other n=2, 4.7%

Benign n=24

- Meningioma n=15, 62.5%
- Metastatic Brain and Spine = 6
- Metastatic Brain = 28
- Primary Brain = 9
- Other n=2, 4.7%
- Pituitary Microadenoma n=1, 4.1%
- Glioma n=2, 8.3%
- Hematoma n=2, 8.3%
- Pineal Cyst n=1, 4.1%
- Cavernoma n=1, 4.1%
- Multiple Sclerosis n=1, 4.1%
- Cranial Bone Lesion n=1, 4.1%
- Astrocytoma n=2, 4.2%
- Glioblastoma n=7, 16.2%
How did we treat?
Radiation Therapy Delivered \( n(\%) \)
- Fractionated Stereotactic Radiosurgery = 21, (67.7)
- Conventional Fractionated RT = 10, (32.3)
- Tumor Treating Fields (GBM)= 2/7, (28.6)
  - Conventional Fractionated RT and TTF
- 1 Patient Received WBRT and SBRT to the Spine

Neurosurgery Performed \( n(\%) \)
- Craniotomy w/
Tumor Resection = 27, (40.3)
## Treatment Outcomes $n=43$

<table>
<thead>
<tr>
<th>RT Only $n=16$</th>
<th>NS Only $n=12$</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 Patients Followed-Up with Med Onc for Systemic Disease Treatment or Deceased Prior to Follow-Up with RADIANS</td>
<td>Neurologic Deficits $= 0% \ (0/12)$</td>
</tr>
<tr>
<td>11 Patients with 3 Month Repeat Imaging:</td>
<td>At 3 Month Repeat Imaging:</td>
</tr>
<tr>
<td>• Radiation Necrosis $= 0% \ (0/11)$</td>
<td>• Local Control $= 100% \ (12/12)$</td>
</tr>
<tr>
<td>• Local Control* $= 54.4% \ (6/11)$</td>
<td>• CNS Disease Progression $= 8.3% \ (1/12)$</td>
</tr>
<tr>
<td>• CNS Disease Progression* $= 45.5% \ (5/11)$</td>
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<tr>
<td>*treated w/ palliative intent; Stage IV</td>
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</table>

*[Treated with palliative intent; Stage IV]*
Treatment Outcomes  n=43

Both RT/NS  n=15

Surgical Resection Followed by Post-Op Radiation Therapy to Tumor Cavity + Unresected Lesions

Neurologic Deficits = 0% (0/15)

At 3 Month Repeat Imaging:
- Radiation Necrosis = 6.6% (1/15)
- Local Control = 93.3% (14/15)
- CNS Disease Progression = 26.6% (4/15)
Treatment Outcomes

• Active Follow-Up = 37
• Transfer of Care = 7 (RT treatment closer to residence; NS at university hospital)
• Hospice Care = 6
• Declined Treatment = 2
• Deceased = 15 (12/15 Stage IV)
What did we learn?
Summary

• Unique **Community-Hospital Based** CNS Clinic Model
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• Analyzing Cost-Benefit, CNS Morbidity/Mortality Rates, Early Detection Rate, Elderly Adult Patient Outcomes, and Caregiver Impact
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Thank You!

Questions?