Cyberknife stereotactic radiosurgery for re-irradiation of brain lesions: a single-centre experience

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Background

-Up to 15% of patients → brain mtx.

-WBRT ⇧ survival by 3-6 months.

-Recurrence rates post WBRT : 80-100% at 1 year

-SRS + WBRT in patients with multiple brain mtx improves LC rates to 65-69% at 2 years compared to WBRT alone.

-Radiosurgery: treatment of choice for single or oligo brain mtx.

Flickinger JC, Kondziolka D, Lunsford LD, Coffey RJ, Goodman ML, Shaw EG, et al : A multi-institutional experience with stereotactic radiosurgery for solitary brain metastasis. **Int J Radiat Oncol Biol Phys 28 : 797-802, 1994**

Dritschilo A, Bruckman JE, Cassady JR, Belli JA : Tolerance of brain to multiple courses of radiation therapy. I. Clinical experiences. Br J **Radiol 54 : 782-786, 1981.**

-Some reports have suggested a short-term benefit of salvage radiosurgery for recurrent brain mtx but the incidence of long-term radiation toxicity has not been investigated.

-In this study we evaluated feasibility and local control rate after reirradiation.

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Materials and Methods

Between Dec 2011 & May 2012 , 13 patients underwent SRS with Cyberknife for a previously irradiated recurrent brain lesions.

Table 1 Patient characteristics

Characteristics	No. of patients
Age	
<60	8 (61.5)
≥60	5 (38.5)
Karnofsky performance status	
<70	4 (30.7)
≥70	9 (59.3)
Time from radiotherapy to Cyberknife	
<6 m	3 (23)
≥6 m	10 (77)
Irradiation volume	
<10 cc	3 (23.1)
≥10 cc	10 (76.9)
Re-irradiation volume	
<10 cc	7 (53.8)
≥10 cc	6 (46.2)

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Methods and Materials

Disease:

- 11 MTX
- 2 High grade glioma

Radiotherapy Modalities:

11 met
- 6 patients : WBRT+ SRS → CK
- 5 Pat : SRS → CK

2 HGG
- 3DCRT → CK

Fractionation schedule CK:

- 7 patients : 1 fraction
- 2 patients : 3 fractions
- 4 patients : 5 fractions

- Mean dose: 19.5 Gy (12 – 30 Gy)

- FU with MRI and clinical evaluation at 8 wks then every 3 mo

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Results

Tumor Control (MRI images in 6 patients)

CR in 1 (17 %)
PR in 3 (50 %)
NC in 2 (33%)
PD in ZERO

Dosage of corticosteroids:

In 54.6 % of patients steroid medication was not changed.
30 % it was reduced
15% increased

Toxicity:

Only 15% (2 patients) developed Grade II toxicity resolved with corticosteroids increasing

Attention:

•1 case RI vol was large (> 40 cc)
•1 case received a high sinlge dose of 16 Gy as THIRD rt.

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Conclusions

*Our results are compatible with previous studies.

SINGLE DOSE RADIOSURGICAL TREATMENT OF RECURRENT PREVIOUSLY IRRADIATED PRIMARY BRAIN TUMORS AND BRAIN METASTASES: FINAL REPORT OF RTOG PROTOCOL 90-05

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Clinical Article

Radiosurgery for Recurrent Brain Metastases after Whole-Brain Radiotherapy : Factors Affecting Radiation-Induced Neurological Dysfunction

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*RI with CK is feasible for pre irradiated recurrent lesion without excessive acute toxicities.

*Take-Home Messages:

- Adopting >5 fx in large volumes
- Doses < 16 Gy in single fx in lesions already received 2 previous RT

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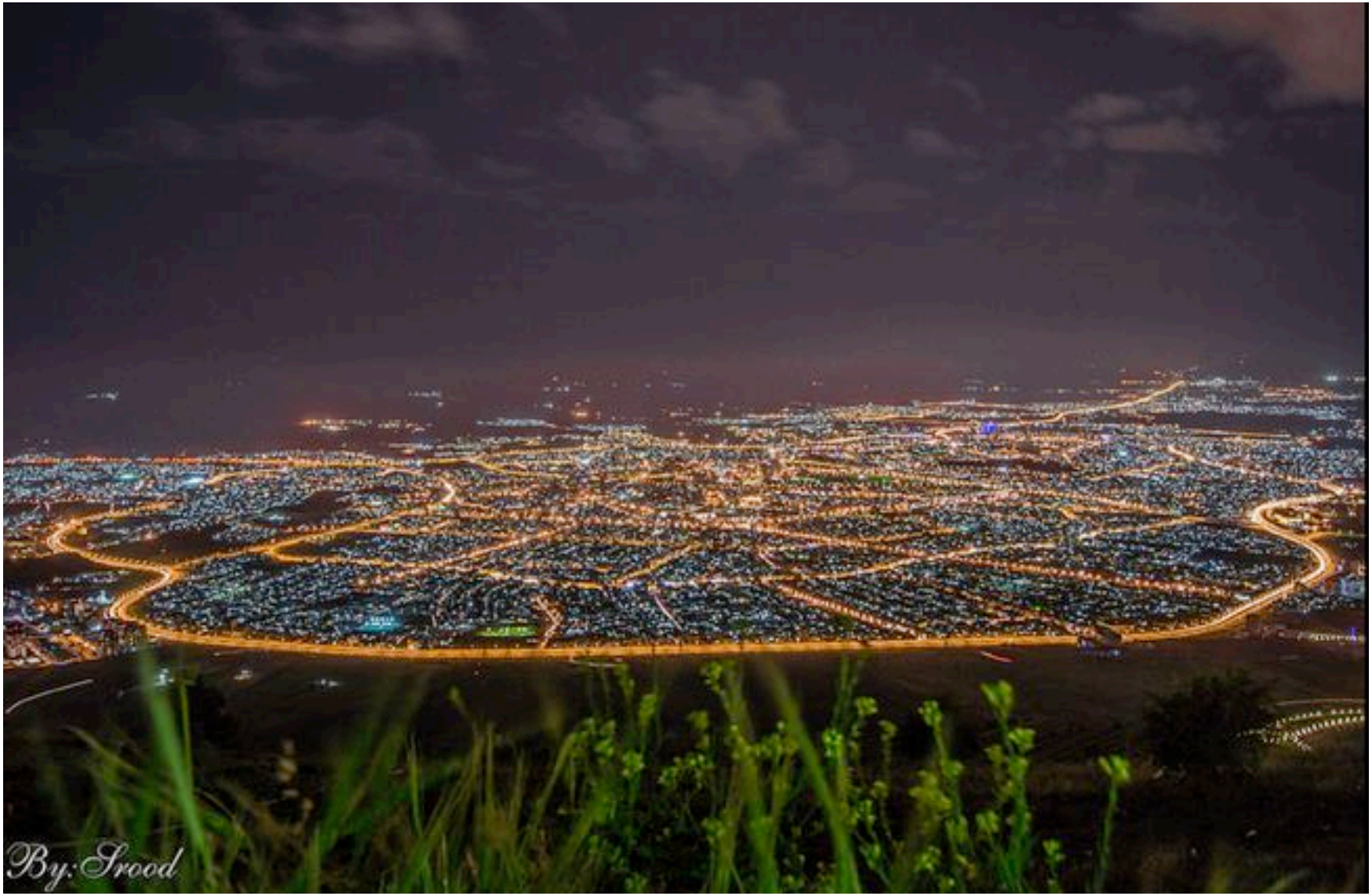

Grazie !!