Conclusion: All included studies have shown some limitations: most of them were retrospective and all were non-comparative; many of them were carried out in absence of a rigorous methodology and only few reported a measure of variability for the primary endpoint. Despite these limitations, we can conclude that SRS appears safe and effective treatment for intracranial meningioma.

PO-0642
Radiosurgery without whole brain radiotherapy in brain metastases from non-small cell lung cancer
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Purpose or Objective: patients (pts) with 1-4 brain metastases (BM) from non-small cell lung cancer (NSCLC) submitted to radiosurgery (SRS) alone were retrospectively evaluated.

Material and Methods: 130 pts with 207 BM were identified. Pts were treated with a 5-MV linear accelerator fitted with a commercial dynamic μMLC. Doses were prescribed to isocentre so that at least the 90% isodose line encompassed the target volume. Doses were chosen according to maximum diameter of the tumor as suggested by RTOG Protocol 90-05. Male/female ratio was 90/40, median age was 64 years (range, 31-86). Median KPS was 100% (range, 70-100). 42/130 (32%) pts had extracranial metastases, 83 (64%) pts had a controlled systemic disease, and 47 (36%) progressive disease. Neurologic functional score was generally good (NFS = 0), and only 15 (11.5%) pts had an NFS = 3 or 4. Relapse was defined “in-field” when more than 95% of the recurrence volume was within the original 50% isodose, and “out-field” in the other cases.

Results: In 82 (63%) pts there was only one BM, in remaining 48 (37%) 2-4 BM with a median volume of 0.8cc (range, 0.09-25) Median prescribed dose was 23 Gy (range, 12-25). At a median follow-up of 67 months (range, 24-110), 123 (95%) pts with 197 (95%) BM were evaluable. Local control, evaluated 3 months after SRS, was obtained in 95% of lesions: there were complete remission in 50 (25%), partial remission in 77 (39%), stable disease in 62 (31%), and progression in 13 (5%) BM. During follow up, 63 (51%) pts had no brain progression of disease, 11 (9%) had in-field relapse, 40 (33%) out-field relapse, and 9 (7%) in- and out-field relapse. Of 60 (49%) relapsing pts, 37 (62%) were retreated: 19 with SRS, 15 with whole brain radiotherapy (WBRT), 2 with fractionated stereotactic radiotherapy, and 1 with surgery and WBRT. No SRS-induced late toxicity was registered. At the time of analysis, 119/123 patients (97%) had died, 40 (34%) for brain progression, 72 (60%) for systemic progression and 7 (6%) for non-oncological causes. The median overall survival was 13 months, deaths from brain progression occurred after a median time of 51 months, while from systemic progression after 19 months.

Conclusion: SRS without upfront WBRT is an effective treatment of BM from NSCLC. Since that our results are similar to the best published data on SRS plus WBRT, SRS alone could be considered the treatment of choice in this setting.

PO-0643
Stereotactic hypofractionation in combination with radiosurgery in the treatment of brain metastases
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Purpose or Objective: To estimate the clinical results of hypofractionated stereotactic radiotherapy (HSR) alone or in combination with stereotactic radiosurgery (SRS) for the treatment of brain metastases using different radiation devices, which provide precise delivery of a high radiation dose to the target.

Material and Methods: Between November 2010 and July 2015, 257 patients with brain metastases were treated by HSR alone or simultaneous application of two stereotactic radiation techniques (SRS plus HSR) at the Radiosurgical Centre of IIBS (Saint Petersburg, Russia). Radiation treatment was performed with Gamma Knife 4C and Perfusion (Elekta AB, Stockholm, Sweden), Cyber Knife (Accuray, Sunnyvale, CA, USA) and linear accelerator TrueBeam STX (Varian Medical Systems, Palo Alto, CA) equipped with the BrainLAB Exac Trac system. The indications for HSR were determined by the presence of large volume lesions or proximity to critical brain structures. Patients with multiple brain metastases were subjected to a combination of HSR and SRS. Radiation schemes were selected depending on the number of metastases, size, location, proximity to critical brain structures, histological type of primary cancer and the patient’s general condition. SRS was performed with the marginal dose of 18-24 Gy at 40-90% isodose and HSR was performed with the total dose of 24, 27 or 30 Gy in 3 fractions. Following treatment the patients underwent control MR examination with standard protocols (2 mm T2 and 1 mm T1 with double contrast enhancement) at 8 weeks and then every 3 months. The median follow-up period was 6 months.

Results: The study revealed that the application of hypofractionated stereotactic radiotherapy for the treatment of large volume or critically located brain metastases provides a high level of local control (12-month local control rate was 83%). Complications in the form of radiation necrosis occurred in 15% of patients at a median of 6 months after treatment. The median overall survival for the entire patient cohort was 9 months. There was no statistically significant difference in the median survival of the patients receiving HSR alone and those receiving HSR plus SRS. The best results were obtained in patients belonging to the first RPA-class who achieved two-year survival in 70% of the cases. The advantage of combining SRS and HSR is the possibility to deliver high radiation doses to large volume lesions, without exceeding the brain’s tolerance. HSR allows one to achieve a rapid shrinkage of large volume tumors, which considerably improves the patient’s neurological condition.

Conclusion: High-dose stereotactic radiation is a safe and effective method for controlling brain metastases. A combined application of SRS and HSR is a viable treatment strategy for patients with multiple brain metastases who have at least one large lesion or a lesion located in/near critical brain structures.

PO-0644
Hippocampal sparing brain radiotherapy using VMAT to the primary brain tumour
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Purpose or Objective: We hypothesized that hippocampal-sparing radiotherapy using volumetric modulated arc therapy (VMAT) could preserve cognitive function of the patients with primary brain tumor treated with brain radiotherapy.

Material and Methods: We prospectively collected patients who were diagnosed with primary brain tumor and treated with brain radiotherapy between March 2014 to April 2015. VMAT radiotherapy was delivered using VMAT planning technique with inclined field. Optimization criteria for the