

## RESEARCH OUTPUTS / RÉSULTATS DE RECHERCHE

### **P03.03 Dynamics of brain metastasis cavities between resection and adjuvant stereotactic radiotherapy and impact of the delay on local control**

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**Background** There is a body of evidence that the risk of leptomeningeal dissemination (LMD) is increased in the postoperative stereotactic radiotherapy (SRT) of brain metastases (BM) compared to adjuvant whole brain radiotherapy (WBRT). The proposed mechanism is an iatrogenic tumor dissemination into the cerebrospinal fluid at time of surgery. Including a wider volume of meningeal wall and the entire surgical track in the definition of the postoperative SRT clinical target volume (CTV) to decrease LMD is still controversial. The aim of this study was to retrospectively analyze the outcome of adjuvant SRT targeted at resection cavities of BM without previous WBRT. **MATERIAL / METHODS:** We reviewed 70 patients treated with postoperative SRT for BM. Stereotactic planning computed tomography and planning MRI were imported into iPlan RT image software for image registration and TV delineation. The CTV consisted of any residual enhancement and all resected cavity including a safety margin of 1 to 2 mm. Only in cases of superficial initial tumor with meningeal contact was the CTV enlarged to the adjacent meningeal wall, but never included edema or the entire surgical track. Patients underwent regular follow-up MRI. The cumulative incidence rates of LMD was retrospectively calculated as well as patterns of failure. **RESULTS:** The most common histological type was non small cell lung cancer in 61.4%. There were 38.6% infratentorial locations and 37.2% superficial lesions. *En bloc* resection was achieved in 60% and compete resection in 75.7%. After a median imaging follow up time of 16.7 months, 54.3% of patients experienced distant brain failure. LMD occurred in 9 of 70 patients (12.9%) at a median time of 10.7 months. Survival without LMD was 88% at 1 year (IC<sub>95%</sub> 79%-97%) and 82% at 2 years (IC<sub>95%</sub> 72%-94%). In three quarter of cases, LMD interested superficial lesions. In univariate analysis, survival rates without LMD at 1 year for superficial and deep lesions were 88% and 94%, respectively (p=0.49). We report only one recurrence in the surgical track (1.42%). **CONCLUSION:** The risk of LMD was comparable to the literature (11–17%). Superficial lesions were slightly more likely to relapse in the meninges, but it was non-significant. The risk of recurrence in the surgical track is negligible. Our results do not support the current guidelines recommending the systematic inclusion of the surgical track and the related meninges in the CTV.

#### P03.03 DYNAMICS OF BRAIN METASTASIS CAVITIES BETWEEN RESECTION AND ADJUVANT STEREOTACTIC RADIOTHERAPY AND IMPACT OF THE DELAY ON LOCAL CONTROL

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**BACKGROUND:** Adjuvant stereotactic radiotherapy (SRT) to the surgical cavity of brain metastases (BM) improves the local control. An early post-operative irradiation is desirable to limit the risk of recurrence while delaying it might reduce the risk of radionecrosis by reducing the size of the target volume (TV) thanks to the cavity constriction. The purpose of our study was to examine cavity dynamics after resection to determine if delaying SRT influences cavity size as well as local progression (LP). **MATERIAL AND METHODS:** We reviewed 70 BM resection cavities treated with adjuvant SRT. A preoperative, immediate postoperative and at the time of SRT, 3D T1-weighted MRI, were available for all patients. The volumes were retrospectively calculated with the PACS software Telemis® version 4 and the iPlan RT image software. For all cavities, the TV was obtained by expanding the cavity by a median margin of 2mm to account for microscopic spread. The surgical track and edema areas were not included in the TV. The dynamic evolution of cavities and LP according to the delay of SRT were analyzed. **RESULTS:** The median time from surgery to SRT was 27 days (3–99). The median preoperative and SRT cavity volumes were 7.2 cc (ranges: 0.5–29.5) and 8 cc (ranges: 0.8–31), respectively. After margin expansion, the TV was increased to a median of 14.8 cc. The volumetric cavity changes were an increase by 2 cc in 35%, whereas only 22.5% decreased by 2 cc and 42.5% cavities were stable (defined as a change ≤2 cc). We noted that 11% of volume change were attributable to the delay (r<sup>2</sup> = 0.11). forty-seven patients were treated within a delay of 30 days and experienced early LP in 10.6% against 20% beyond 30 days (p= 0.6). **CONCLUSION:** In the interval between surgery and SRT, BM cavities dynamics are inconstant and unpredictable in function of time. Furthermore, delaying SRT may compromise local control, though the difference was not statistically significant due to the small size of our population. A preopera-

tive SRT strategy looks more promising by alleviating the problem of time and reducing the volume of irradiated brain.

#### P03.04 SIGNALING QUESTIONS ASSESSING BRAIN TUMOR PATIENTS' DISTRESS IN CLINICAL ROUTINE - A FEASIBILITY STUDY

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**BACKGROUND:** Approximately 20%-35% of patients with intracranial tumors show depressive symptoms and distress. Assessment in these patients remains challenging due to cognitive and/or neurological deficits. We developed 3 signaling questions in order to assess patients during patient-doctor consultation. The aim is to implement them in clinical routine and to compare the results with patient reported outcome measures (PROMs) along disease trajectory. **MATERIAL AND METHODS:** Patients were prospectively examined in a structured interview applying the 3 following questions: 1), „Has your mood worsened? (I)“; 2), „Are you strained by physical changes? (II)“; 3), „Has your faculty of thought decreased? (III)“. Simultaneously, patients filled in the Distress Thermometer (DT) and the EORTC QLQ-C30 + BN20. The first patient group was assessed twice pre- and postoperatively in the very early disease trajectory (A), the second patient group once in the outpatient setting during adjuvant therapy or follow-up (B). The results of the 3 signaling questions were compared to the results of the PROMs. **RESULTS:** A total of n=62 patients gave informed consent and n= 61 were assessed so far. In general, the signaling questions were feasible to answer for all patients. However, patients frequently needed more detailed examples for symptoms emphasizing the intention of the question.

In group A (n= 20), patients had a mean age of 59 years, n= 12 (60%) were male. Main diagnoses were glioblastomas, meningiomas and metastases. The results of the signaling questions did not reflect the screening by DT: N= 11 (55%) reported that their mood has worsened (I) prior to the operation, which then improved to n= 5 (31%) patients afterwards. The same applied to physical changes (II, 10 (50%) vs. 7 (44%)), as well as lower cognition (III, 7 (35%) vs. 4 (25%) respectively). In contrast, mean DT (5.7 vs. 6 after) as well as the mean number of positive responses to the problem lists on the DT was similar pre- and postoperatively (8.7 pre-op vs. 9.4 post-op).

Group B, (n= 41) consisted of patients harboring malignant gliomas, n= 27 (66%) were male. Patients had a mean DT score = 6.8, n= 22 (53%) named a worse mood (I), n= 23 (56%) patients reported physical changes (II) and n= 22 (54%) patients reported lower cognition (III), global health scale (GHS) according to the EORTC instrument was 60 (0–100). The majority of patients with a DT ≥6 also reported strain in the signaling questions and had a lower mean GHS = 54.8. DT ≥ 6 was linked to worse mood (I, Fishers exact, p=0.02). **CONCLUSION:** According to our preliminary data, the signaling questions seem to be more useful in the outpatient setting in glioma patients than perioperatively. “Has your mood worsened” was associated with higher burden according to DT. Screening in brain tumor patients could probably complemented by direct questions in order to avoid missing patients who are not able to fill in questionnaires.

#### P03.05 COULD SUSPECTED GLIOBLASTOMAS BE TREATED WITHOUT HISTOLOGICAL DIAGNOSIS?

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**BACKGROUND:** Probable unresectable Glioblastomas (GB) diagnosed by imaging techniques without anatomopathological (ap) confirmation could be treated under standard treatment. We reported the outcomes from this strategy in our center after tumor board evaluation. **MATERIAL AND METHODS:** From January/10 to September/16, 303 patients (pt) with GB were assessed by tumor board, during the same period 66 patients were consecutive analyzed with suspected GB by radiological criteria without histological diagnosis. We focus in the last group and analyzed the demographic/radiological data, non-biopsy causes, treatment type (concomitant Radio-Chemotherapy (RT/Ch), exclusive RT or Ch or Best supportive care