

# **Impact of additional resection on new ischemic lesions and their clinical relevance after intraoperative 3 Tesla MRI in neuro-oncological surgery**

*Stefanos Voglis<sup>1\*</sup> MD, Timothy Müller<sup>1</sup> BSc, Christiaan H B van Niftrik<sup>1</sup> MD, Lazar Tasic<sup>1</sup> MD, Marian Christoph Neidert<sup>1,2</sup> MD, Luca Regli<sup>1</sup> MD, Oliver Bozinov<sup>1,2\*</sup> MD*

*<sup>1</sup> Department of Neurosurgery and Clinical Neuroscience Center, University Hospital and University of Zurich, Frauenklinikstrasse 10, 8091 Zurich, Switzerland*

*<sup>2</sup> Department of Neurosurgery, Kantonsspital St. Gallen, Medical School St. Gallen, Rorschacher Strasse 95, 9007 St. Gallen, Switzerland*

## **\*Corresponding author:**

Stefanos Voglis, MD – [stefanos.voglis@usz.ch](mailto:stefanos.voglis@usz.ch)

Department of Neurosurgery and Clinical Neuroscience Center

University Hospital and University of Zurich

Frauenklinikstrasse 10

8091 Zurich

Switzerland

| <b>Metastases<br/>primary tumor</b> | <b>No.</b> |
|-------------------------------------|------------|
| Lung carcinoma                      | 6          |
| Germ cell testicular tumor          | 1          |
| Mamma carcinoma                     | 1          |
| Malignant melanoma                  | 1          |
| <b>Others</b>                       |            |
| Epidermoid cyst                     | 3          |
| Central neurocytoma                 | 2          |
| Schwannoma                          | 2          |
| Meningioma                          | 2          |
| Chordoma                            | 2          |
| Glioneural tumor                    | 2          |
| Cavernoma                           | 2          |
| Radionecrosis                       | 2          |
| DNT                                 | 1          |
| Echinococcus cyst                   | 1          |
| Myxoma                              | 1          |
| Neurinoma                           | 1          |
| PNET                                | 1          |
| Reactive gliosis                    | 1          |

### **Supplementary Table 1 – Histopathological characteristics**

DNT = dysembryoplastic neuroepithelial tumor; PNET = primitive neuroectodermal tumor (diagnosis before 2016 WHO classification of CNS tumor update)

|                                               |     |              | poMRI new infarct<br>compared to ioMRI |            |         |
|-----------------------------------------------|-----|--------------|----------------------------------------|------------|---------|
| Characteristics                               | No. | Distribution | yes                                    | no         | p-value |
| <b>ioNM usage</b>                             |     |              |                                        |            |         |
| yes                                           | 107 | 60.5%        | 68 (64%)                               | 39 (36%)   | .283    |
| no                                            | 70  | 39.5%        | 38 (54%)                               | 32 (46%)   |         |
| <b>Worsening of ioNM</b>                      |     |              |                                        |            |         |
| yes                                           | 23  | 21.5%        | 13 (56.5%)                             | 10 (43.5%) | .585    |
| no                                            | 84  | 78.5%        | 55 (65.5%)                             | 29 (34.5%) |         |
| <b>Resection stopped b/c<br/>ioNM decline</b> |     |              |                                        |            |         |
| yes                                           | 18  | 17%          | 12 (67%)                               | 6 (33%)    | .974    |
| no                                            | 89  | 83%          | 56 (63%)                               | 33 (37%)   |         |

### Supplementary Table 2 – Intraoperative neuromonitoring

Study population characteristics regarding usage and decline of intraoperative neuromonitoring. Significance levels were calculated using Pearson's chi-squared test. ioMRI = intraoperative MRI; poMRI = postoperative MRI; ioNM = intraoperative neuromonitoring; b/c = because; No. = number