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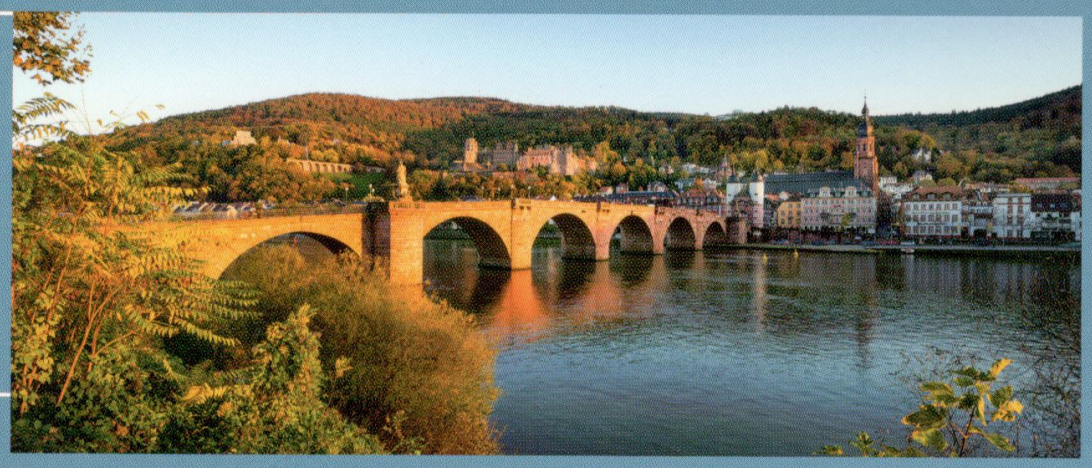

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histology over the entire cohort of diffuse glioma (p<0.0001). Sequencing analysis of 17/24 of the gemistocytic astrocytoma revealed IDH1R132H mutations in all, TP53 mutations in 15/17, ATRX mutations in 10/17 and NF1 mutations in 2/17 samples. The previously reported associations with PTEN mutations and epigenetic alterations of ERCC and RRAS were not detectable in our cohort.

The finding of CCND2 gain could also provide the basis for novel therapeutic approaches: Up-regulation of CCND2 is already used as inclusion criterion for treatment with palbociclib in several clinical trials.

Collectively, we provide evidence for a significant association of a particular genetic event, CCND2 gain or amplification, with the histologically defined variant gemistocytic astrocytoma, potentially allowing for a novel treatment approach.

### P09.10 CLINICAL FMRI IN LOW GRADE GLIOMA PATIENTS: IMPACT ON SURGICAL DECISION MAKING AND PATIENT OUTCOMES

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BACKGROUND: This study aims to evaluate the impact of preoperative functional magnetic resonance imaging (fMRI) on low grade glioma (LGG) patients' outcomes and surgical planning.

METHODS: In this retrospective matched cohort study of a single surgeon's patients, we are comparing two groups of LGG patients (WHO grade II) based on exposure to fMRI. Sixteen LGG patients who underwent fMRI were selected, and 32 control (non-fMRI exposed) patients are being selected through propensity score matching from a pool of 764 brain tumour patients. Outcomes being compared include time between clinical presentation and surgery, adverse surgical outcomes, extent of tumour resection, preoperative and postoperative functional status, and overall mortality. To assess the impact of fMRI data on clinicians' decision making process, neurosurgeons within a single centre are completing questionnaires regarding treatment options for each LGG fMRI patient based on clinical data and structural imaging before and after fMRI. The questionnaire includes questions regarding expectations of the tumours' eloquence, preferred treatment option, expected extent of resection, and degree of confidence that the preferred treatment option is optimal.

RESULTS: Within the group of 16 LGG patients who have undergone fMRI studies over a 12-year period, mean age was 40 years, and most presented with seizures (81%). Most lesions were left-sided (81%), and the lobes most commonly involved were frontal (75%) and temporal (31%). Patients underwent either craniotomy (50%), stereotactic biopsy (25%) or nonsurgical management (25%). Nine patients had 1p/19q analysis performed, and three (33%) showed 1p/19q codeletion. Mean time between clinical presentation and fMRI was 3.3 ± 1.9 weeks. In patients who were initially managed surgically, mean time between fMRI and surgery was 3.8 ± 2.0 weeks. Surgical complications or post-operative neurological deficits were seen in four patients who underwent craniotomy (50%) and one patient who underwent biopsy (25%). All complications were mild and/or temporary. In surgical patients, between pre-operative assessment and eight week post-operative follow-up, mean modified Rankin scale improved from 1.80 ± 0.79 to 1.50 ± 0.97. In our cohort, 5-year mortality was 12.5% (mean follow-up duration 5.46 years).

CONCLUSIONS: Data analysis is ongoing with plans to compare relevant demographics and outcomes of brain tumour patients based on exposure to fMRI, and to analyse questionnaires to elucidate how surgeons incorporate fMRI data into their therapeutic approach.

### P09.11 ROLE OF PET [18F]-FDOPA IN THE EVALUATION OF LOW GRADE GLIOMAS

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BACKGROUND: FDOPA is brought into tumor cells via amino acid transporters and recent studies have established the diagnostic value of PET [18F]-FDOPA in heterogeneous population affected by LGG and high-grade gliomas. The aim of the present longitudinal study was to evaluate the prognostic value of 3,4-dihydroxy-6-[18F]fluoro-L-phenylalanine ([18F]-FDOPA) positron-emission tomography (PET) in predicting the risk of radiological progression of disease in patients affected by low-grade glioma.

PATIENTS AND METHODS: Patients affected by grade II glioma were consecutively enrolled in a prospective observational study at the Department of Neurology of Regina Elena National Cancer Institute in Rome, Italy. At enrolment, all patients underwent PET [18F]-FDOPA and Magnetic Resonance Imaging (MRI), and clinical and radiological assessments with MRI every six months to evaluate the progression of disease. Results: A total of 73 patients affected by grade II glioma (42 males and 31 females) were included in the study. The majority of patients were affected by oligodendroglioma. In 34 patients PET study was performed during chemotherapy treatment; in 38 patients was performed during follow up. The multivariate analysis showed that standardized uptake value greater than 1.75 and disease duration were independent predictors of disease progression. Conclusion: these findings confirm the important role of PET [18F]-FDOPA as a prognostic markers in evaluation of low-grade glioma.

### P09.12 SURGICAL TREATMENT OF EPILEPTOGENIC SUPRATENTORIAL LOW-GRADE GLIAL TUMORS

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OBJECTIVE: To determine the seizure outcome of patients with epileptogenic supratentorial low-grade glial tumors after surgical intervention based on the extent of resection and tumor type.

METHODS: 42 patients with epileptogenic supratentorial low-grade glial tumors operated in Uzhhorod Regional Centre of Neurosurgery and Neurology from January, 2011 till December, 2015 were retrospectively analyzed. 20 (47.6%) patients were male, and 22 (52.4%) - female. Mean age of the patients was 32.9 years (from 11 to 62 years). Tumor was confined to one lobe in 29 patients (69%), the involvement of two lobes was seen in 7 patients (16.7%) and three lobes of one hemisphere were affected by the tumor in 4 cases (9.5%).

In 2 cases tutor was multifocal and involved both hemispheres (4.8%). Seizure outcome was examined according to Engel scale on last follow-up visit. Histologic results: diffuse astrocytoma - 18 patients (42.9%), oligodendroglioma - 10 patients (23.8%), ganglioglioma - 8 patients (19%), oligoastrocytoma - 3 patients (7.1%), pleomorphic xantoastrocytoma - 3 patients (7.1%).

RESULTS: Gross total resection (GTR) of the tumor was performed in 21 cases (50%). The resection was subtotal (7 patients, 16.7%) and partial (8 cases, 19%) when tumor involved eloquent areas of the brain (motor or sensory cortex, Broca or Wernicke areas). Biopsy was performed in 6 patients (14.3%) - when lesion involved three lobes of the brain (4 cases) and in multifocal lesions with involvement of both hemispheres (2 cases).

Seizure outcome of the whole group was: Engel I - 26 patients (61.9%), Engel II - 8 patients (19%), Engel III - 7 patients (16.7%), Engel IV - 1 patient (2.4%). The subgroup analysis showed that in group of GTR 20 patients were Engel I (95.2%). All patients in group of subtotal resection improved, but 4 majority (57.1%) were Engel II on last follow-up. Two patients (25%) from group of partial removal were Engel III and IV. All patients with biopsy of the tumor were Engel III. Best result was achieved in patients with gangliogliomas: Engel I - 87.5%, Engel II - 12.5%. Patients with diffuse astrocytomas (Engel I - 66.7%, Engel II - 27.8%, Engel III - 5.6%) and pleomorphic xantoastrocytomas (Engel I - 66.7, Engel II - 33.3%) did relatively well. Worst outcome was in histological subgroup of oligodendrogliomas (Engel I - 60%, Engel III - 30%, Engel IV - 10%) and oligoastrocytomas (Engel II -33.3%, Engel III - 66.7%).

CONCLUSION: Seizure outcome after surgical treatment of epileptogenic supratentorial low-grade glial tumors is good in majority of cases (Engel I and II - 80.9%). The outcome is better when gross total resection of the lesion can be achieved (Engel I - 95.2%) and the tumor is a ganglioglioma (Engel I - 87.5%). The worst prognostic factor is extensive growth of the lesion (three or more lobes of one hemisphere or multifocal tumor in both hemispheres) when only a biopsy can be performed (0% of patients Engel I and II).

### P09.13 CLEAR CELL RENAL CARCINOMA (CCRC) AFTER DIAGNOSIS OF OLIGODENDROGLIOMA; REAL OR FALSE ASSOCIATION?

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ABSTRACT: Oligodendrogliomas are more common in the 35–44 age group while the average age at diagnosis of CCRC is 60–64 years. However, around 7% of sporadic CCRC are diagnosed in patients younger than 40 years.

There are a high proportion of colorrectal cancer and nervous system cancers across all subtypes but no prior studies has established the relationship between CCRC and Oligodendrogliomas.

Between January 1997 and January 2016 we retrospectively identified 3 patients with Oligodendroglioma who developed CCRC. Inherited syndromes such as NF I and II, tuberous sclerosis, Li-Fraumeni, Turcot and Cowden syndrome were ruled out by imagen and clinical evaluation.

Patient 1: Male. Oligodendroglioma´s diagnosis at 38y. IDH1+ Codeletion 1p19q. He was treated with surgery alone without adjuvant treatment. At