prevent adverse effects such as polyneuropathy while improving tumour response to chemotherapy. Further studies are needed to verify these effects, e.g. in animal models.

BRAIN AND SPINE 2 (2022) 101190 101527

TUMOR TREATING FIELDS (TTFIELDS) THERAPY IN GLIOBLASTOMA PATIENTS WITH VENTRICULOPERITONEAL SHUNTS: REAL-WORLD SAFETY AND FEASIBILITY EVIDENCE

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Background: Ventriculoperitoneal (VP) shunt may be needed for glioblastoma (GBM) patients with hydrocephalus. Tumor Treating Fields (TTFields 200 kHz) are a locoregional, noninvasive, anti-mitotic therapy that is FDA- and CE-approved for newly diagnosed (nd) and recurrent (r) GBM. However, there are insufficient data on TTFields use in patients with VP-shunts. Safety and feasibility data for TTFields in adult patients with VP shunts are needed.
Materials/methods: Unsolicited post-marketing surveillance data (published literature and patient/caregiver/prescriber reports) from the USA, Europe, Middle East, Africa, and Japan were retrospectively screened and analyzed. Adverse events (AEs) were assessed using MedDRA version 24.0.
Results: Of >18,000 adult (≥18 years of ages) patients with ndGBM or rGBM who received TTFields November 2012–April 2021, 156 with VP shunts (<1% of the screened TTFields/GBM population) were identified. Of these, 47 were programmable shunts, 12 were non-programmable, and 97 were unknown. 77% reported ≥1 AE (83% ndGBM, 69% rGBM) vs 70% in the non-shunt population (72% ndGBM, 65% rGBM). The most commonly reported TTFields-related AEs were non-serious and localized beneath arrays (skin reaction [43%], electric (tingling) and heat (warm) sensation [13% and 11%, respectively]). The incidence and type of AEs in the VP-shunt population were comparable to those in the non-shunt population. Seven serious AEs related to device use were reported by 6 patients; complications with the shunt scar (n=2)/site (n=2) and skin erosion at the shunt site (n=3). No shunt malfunction was deemed related to concomitant TTFields use.
Conclusions: TTFields in adult ndGBM or rGBM patients with a VP shunt demonstrated a favorable safety profile, with similar tolerability to patients without a VP-shunt. There were no new safety concerns, and no evidence that TTFields disrupted VP shunt effectiveness. TTFields therapy is a feasible and safe alternative for GBM patients with programmable and non-programmable VP-shunts.

3.5 Genetics and Molecular Biology

BRAIN AND SPINE 2 (2022) 101190 101528

GLYCATED HEMOGLOBIN IN PATIENTS WITH INTRACRANIAL MENINGIOMAS

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Background: Meningiomas are among the most common primary neoplasms of the central nervous system, causing significant morbidity. Today it is clear that the current
WHO classification of meningiomas is insufficient and often lacks the predictive power to reliably differentiate between dormant and aggressive lesions. Novel markers are therefore needed which would reliably predict the future behavior of the tumor. The fact that WHO G 1 and WHO G 2 meningiomas can be reliably discerned by comparing their glucose metabolism is known for decades. However, this knowledge still hasn't found its routine clinical application.
Methods: The aim of this study was to compare the patient's levels of hbA1c with their meningioma WHO grade. HbA1c is a reliable and routine marker of the glycemia levels up to three months before the measurement. We analyzed 42 patients with intracranial meningiomas and compared their preoperative HbA1c values with the meningioma WHO grade.
Results: Our results show a significant difference in the HbA1c values between patients with grade 1 and grade 2 meningiomas (U=91, p<0.01). We also show that a large percentage of patients with grade 2 meningiomas have significantly elevated HbA1c, indicating a possible chronic hyperglycemia, thus harboring all the risk that such a condition entails.
Conclusion: We argue that HbA1c measurement is currently an overlooked asset in neuro-oncology and propose that other neurosurgical units add it to their preoperative testing. Further research could lead to a better understanding of this pathology and could have a significant future role in prevention, diagnostics and treatment of patients with meningiomas.

BRAIN AND SPINE 2 (2022) 101190 101529

THE CLINICAL AND PROGNOSTIC ROLE OF S100B EXPRESSION IN MENINGIOMAS

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Background: The prognostic assessment in meningiomas is of high importance to detect patients at risk of recurrence as early as possible. Recently, an integrative molecular classification of meningiomas with prognostic impact has been described. There is first evidence that S100 may be a marker associated with a favorable clinical course.
Methods: We therefore assessed the immunohistochemical expression of S100 in our meningioma cohort of 1664 paraffin-embedded and formalin-fixated tumor tissue samples. A semi-quantitative scoring system was applied. Correlations with clinical parameters were done (gender, age, NF2, prior radiotherapy, histological subtype, WHO grade, proliferation activity and time to tumor recurrence).
Results: A strong expression of S100 was seen in 195 meningiomas (11.7%). A higher rate of cases with high expression was seen with female gender (p= 0.0004), NF2 (p< 0.0001), spinal and convexity/falx location (p< 0.0001) and WHO grade I (p= 0.0073). Kaplan-Meier Analysis showed a favorable disease course for meningiomas showing a strong expression of S100 (p= 0.0099) but multivariate analysis did not confirm a prognostic effect for S100.
Conclusions: Strong immunohistochemical expression of S100 is associated with benign meningiomas but is not an independent prognostic marker.

BRAIN AND SPINE 2 (2022) 101190 101530

IMMUNOREGULATORY EFFECTS OF GLIOMA-ASSOCIATED STEM CELLS ON THE GLIOBLASTOMA PERITUMORAL MICROENVIRONMENT: A DIFFERENTIAL PD-L1 EXPRESSION FROM CORE TO PERIPHERY?

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Background: Glioma-associated stem cells (GASCs) have been indicated as possible players in supporting growth and recurrence in glioblastoma. However, their role in modulating immune response in the peritumoral area has not yet been described. In this study, the authors aimed to investigate programmed death-ligand 1 (PD-L1) differential expression at the protein level in GASCs derived from different tumor areas (core, periphery, and surrounding healthy brain).
Methods: Samples were collected from patients who underwent surgery for a histopathologically confirmed diagnosis of glioblastoma. Sampling sites were confirmed via neuronavigation and categorized on 5-aminolevulinic acid (5-ALA) fluorescence as bright (ALA+), pale (ALA PALE), or negative (ALA−), which corresponds to the tumor mass, infiltrated peritumoral area, and healthy brain, respectively, during surgery. GASCs were isolated from the 3 regions and analyzed; Western blot analysis was used to evaluate the level of PD-L1 expression in the GASCs.
Results: 7 patients were included in the study. Mean values ± SD of PD-L1 expression in GASCs for ALA+, ALA PALE, and ALA− were 1.12 ± 1.14, 0.89 ± 0.63, and 0.57 ± 0.18, respectively. The differentially expressed values of PD-L1 in GASCs sampled from the 3 areas were found to be significant (p < 0.05) for 3