Brain tumor case series

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Thirty patients with brain tumors underwent 7 Tesla magnetic resonance imaging and 3 Tesla magnetic resonance imaging. The performance and diagnostic confidence of 7- and 3-T MRI in the visualization of tumor details such as internal structure and feeding artery were evaluated by radiologists. Contrast-enhanced region performance and tumor detail diagnostic confidence score (DCS) were calculated and compared between 7 and 3T using the Wilcoxon rank sum test.

In 19 with obvious enhancement and 11 cases without obvious enhancement, 7- and 3-T MRI showed similar performance. The tumors' internal structure and feeding artery were more clearly depicted by 7-T MRI (62.2% and 54.4%, respectively) than by 3-T MRI (2.2% and 6.7%, respectively). Furthermore, the mean DCSs of both internal structure and feeding artery was higher at 7T than at 3T (internal structure: 16.29 ± 9.67 vs. -5.79 ± 4.12, p = 0.028; feeding artery: 21.96 ± 6.93 vs. 4.46 ± 7.07, p = 0.028). The DCS was more significantly improved in the senior radiologist group.

Better visualization of brain tumor details and higher tumor detail diagnostic confidence can be obtained with 7 Tesla magnetic resonance imaging [1].

The South Korean national registration cohort database was used as the data source. This study includes all adult patients who underwent craniotomy for brain tumor resection from January 1, 2011, to December 31, 2017. G47.0 and F51.0 (International Statistical Classification of Diseases and Related Health Problems 10th Revision codes) were used to identify insomnia disorders.

In total, 4,851 patients were included. Among them, 913 (18.8%) and 447 (9.2%) patients were assigned to the preoperative and postoperative insomnia groups, respectively. After modeling using multivariable logistic regression, older age (odds ratio (OR) 1.02, 95% confidence interval (CI) 1.01-1.03; P < 0.001), reoperation within 1 year (OR 2.12, 95% CI 1.47-3.06; P < 0.001), and newly acquired brain disability (OR 1.32, 95% CI 1.01-1.71; P = 0.043) were associated with an increased prevalence of newly developed postoperative insomnia disorder. After modeling using multivariable Cox regression, the preoperative and postoperative insomnia disorder groups showed a 1.17-fold (hazard ratio (HR) 1.17, 95% CI 1.02-1.34; P = 0.021) and a 1.85-fold (HR 1.85, 95% CI 1.59-2.15, P < 0.001) increased 2-year all-cause mortality risk compared to the control group, respectively.

In South Korea, 9.2% of the patients with brain tumors were newly diagnosed with an insomnia disorder following craniotomy for brain tumor resection, which was associated with an increased risk of 2-year mortality [2].

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Brain tumors obtained from 19 patients were sampled on-site using solid-phase microextraction (SPME) immediately following excision. Analytes were desorbed and then analyzed via liquid chromatography-high-resolution mass spectrometry. The results showed that SPME enabled the extraction of carnitine and 22 acylcarnitines. An analysis of the correlation factor revealed the presence of two separate clusters: short-chain and long-chain carnitine esters. Slightly higher

carnitine and acylcarnitine concentrations were observed in the higher-malignancy tumor samples (high vs. low grade) and in those samples with worse projected clinical outcomes (without vs. with IDH mutation; without vs. with 1p/19q co-deletion). Thus, the proposed chemical biopsy approach offers a simple solution for on-site sampling that enables sample preservation, thus supporting comprehensive multi-method analyses [3].

[1]

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[2]

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[3]

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