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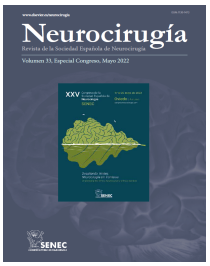

P-147 - CHANGES IN LIPID MOLECULAR SPECIES FOR AGGRESSIVE ASTROCYTOMA AND ITS EVOLUTION AFTER TEMOZOLAMIDE TREATMENT REVEALED BY MALDI-IMAGING

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Resumen

Introduction: The lipid composition is cell-type specific and changes continuously according to the cell pathophysiological state. There is a lack of knowledge on how lipids participate in the glioblastoma progression.

Results: Describe the lipid membrane composition in glioblastoma after treatment with temozolamide.

Methods: Samples were obtained from 5 patients whit glioblastoma. The healthy tissue of the resection security perimeter was used as healthy control and was compared to the tumor sample obtained from non-necrosed tumor region. After resection, healthy and tumor tissues were placed into culture medium containing TMZ (15 µg/ml) or DMSO 4h (n = 5). After incubation, tissue sections were analyzed by MALDI-IMS (50 µm of lateral resolution). The tumor proliferative zone was assessed by the comparison of the MALDI image to a consecutive tissue slice labeled for a proliferation marker (Ki67).

Results: In samples treated with the vehicle, lipidome analysis revealed multiple changes in PE plasmalogen (PE P-) species in tumor tissue compared to the healthy brain. The differential lipid signature between the healthy tissue and the proliferative zone of the tumor was the increase in PUFA-containing PE P-species at the expense of a drastic decrease in 36:2 PE P-species. A similar result was observed in PI species as 34:8 increased in detriment of 34:1 species. Treatment of the tumor for 4 hours just render a slight increase in 38:5 species at the expense of PE 38:1 species, but treatment of the healthy tissue with temozolomide induced multiple lipid changes.

Conclusions: The characterization of membrane lipid changes during cancer development and treatment could enlighten about glioblastoma new biomarkers for disease stratification and response to chemotherapy. We revealed multiple lipid changes in the glioglastoma tissue potentially usable as biomarkers, in addition to multiple effects of temozolomide treatment over healthy brain that could help in understanding and ameliorating treatment side effects.