



<https://www.revistaneurocirugia.com>

P099 - Extracellular vesicles from glioblastoma can cross an intact blood-brain barrier

J. Carrión-Navarro¹, R. Prat-Acín², N. García-Romero^{1,3}, S. Esteban-Rubio^{1,4}, C. Fernández-Carballal⁵, C. Belda-Iniesta^{1,3} and Á. Ayuso-Sacido^{1,3}

¹Fundación de Investigación HM Hospitales, Madrid. ²Hospital Universitario La Fe, Valencia. ³IMDEA Nanoscience, Madrid. ⁴Universidad San Pablo-Ceu, Madrid. ⁵Hospital General Universitario Gregorio Marañón, Madrid.

Resumen

Objectives: Recently, it was discovered that cancer initiating cells (CICs) from glioblastoma produce extracellular vesicles (EVs). These EVs contain proteins, different types of RNA and even genomic DNA. Additionally some authors have reported that EVs are able to cross the leaky blood-brain barrier (BBB) typically found in GBM, and travel through the peripheral blood. As such, EVs can be used as biomarkers in order to better diagnose and stratify patients and evaluate their response to treatment.

Material and methods: CICs derived from two patients with GBM (GBM 18 and 38) were subcultured and injected intracranially in athymic nude mice. 12 weeks after the xenotransplants the mice were perfused and the brains extracted. In order to obtain these EVs, we extracted blood and isolated the EVs through a series of differential centrifugations. Genomic DNA isolation was performed.

Results: GBM 38 has a leaky blood-brain barrier. GBM 18 has no sign of Albumin staining throughout the tissue indicating the blood-brain barrier remains intact. EVs were observed by electron microscopy in both mice peripheral blood.

Conclusions: We prove that extracellular vesicles from GBM can cross an intact blood-brain barrier. This model also lets us study the presence of biomarkers in EVs originated from the tumor in a less invasive manner.