Galactin 3 Binding Protein (LGALS3BP) as a potential biomarker in Glioma diagnosis

Introduction

Gliomas, the most common malignant brain tumors, pose a formidable challenge in early diagnosis and treatment. With survival rates averaging 7-15 months, there is an urgent need for innovative solutions. In this study, we explored the potential of extracellular vesicles (EVs) to shed light on glioma progression. EVs were isolated from the plasma of patients with varying glioma grades and healthy controls. By subjecting these EVs to LC-MS/MS analysis, we unveiled LGALS3BP as a promising biomarker for early glioma detection. Our findings offer a glimmer of hope for improving survival outcomes and provide crucial insights into monitoring tumor grades.

Who Glioma Grading 2021

- Grade I: Infantile Gliomas
- Grade II: Low-grade Astrocytoma, Pilocytic Astrocytoma
- Grade III: Anaplastic Astrocytoma, Glioblastoma Multiforme
- Grade IV: Malignant Gliomas

Methodology

Isolation of EVs from Blood plasma

Characterization of EVs

LC-MS/MS Analysis

Mass Spectrometry and Bioinformatics Analysis

- Proteomic Analysis by iTRAQ
- Venn diagram indicating the proteins identified in our study and those reported in Vesiclepedia
- Venn diagram indicating proteins identified in our study and those previously reported in Vesiclepedia from exosomes in glioma
- pLSDA analysis of replicate runs of each pooled sample

Results

Pathways that were found to be enriched among the identified proteins

Molecular Dynamics

Validation by ELISA

- Gal3BP as a potential blood based biomarker for early detection of glioma.
- Inhibitors of Gal3BP can be a potential therapeutics target to stop glioma progression.

Summary

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