Label-free Mass Spectromebry Based Quantitative Proteomic Analysis of Adult and Childhood Medulloblastoma

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INTRODUCTION. Medulloblastoma (MB), a primitive neuro-ectodermal tumor of the cerebellum, is the most common malignant brain tumor in children. MB is classified as grade IV tumor due to its aggressive behavior. Studies have identified differences between child and adult medulloblastoma regarding tumor cell differentiation, tumor location, pathological characteristics, genetic differences, response therapies, frequency and location of metastatic disease.. **OBJECTIVE:** The present study aims investigating the proteome profiling of clinical samples from children and adult classic medulloblastoma, and a comprehensive proteome of DAOY cell line. **MATERIAL/ METHODS:** We performed a label-free LC-MS/MS based shotgun proteomics, using an electrospray Q-Exactive mass spectrometer to identify and quantify proteins among samples of childhood (pool1, 2-10 years old, n=4), adult classic MB tumors (pool2, 17-29 years old, n=3) and DAOY. **DISCUSSION/RESULTS**: Rigorous quantitative proteomic analysis provided an interesting number of proteins differentially expressed. Among them, Ub2l3 protein identified in both groups of infant tumors and DAOY cell line regulates the stabilization of proteins involved in the biology of medulloblastoma e.g. p53. Overexpressed proteins in samples of infant tumors are related to protein folding, unfolded proteins response and biosynthesis of N-glycans: GRP78, endoplasmin, calreticulin, PDIs, glucosidase II, cyclophilin B and RPN1. Overexpressed proteins in the adult tumors group include microtubule-associated proteins (MAPs) and proteins involved in differentiation process and neural development: TAU, MAP2, NCAM1 and CRMP-2. **CONCLUSION:** Label free quantitation by mass spectrometry was used to investigate direct comparison between two sets of tumor samples of medulloblastoma and a comprehensive protein profile in DAOY cell line to be used for functional assays, allowing a better understanding of the biology of this type of cancer.

Palavra chave: Medulloblastoma, cancer, proteomics, mass spectrometry
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