Exosomal Hsp60 levels and related miRNA in brain tumor cells

Caruso Bavisotto C[1,2,3], Graziano F[4] *, Rappa F[1,2], Marino Gammazza A[1,2], Maugeri R[4], Conway de Macario E[5], Macario AJL[2,5], Cappello F[1,2], Iacopino DG[4], Campanella C[1,2]

1 Department of Experimental Biomedicine and Clinical Neuroscience, Section of Human Anatomy, University of Palermo, Palermo, Italy.
2 Euro-Mediterranean Institute of Science and Technology (IEMEST), Palermo, Italy.
3 Institute of Biophysics, National Research Council, Palermo, Italy
4 Department of Experimental Biomedicine and Clinical Neuroscience, Section of Neurosurgery, University of Palermo, Palermo, Italy.
5 Department of Microbiology and Immunology, School of Medicine, University of Maryland at Baltimore-Institute of Marine and Environmental Technology (IMET), Baltimore, Maryland.

One of the many pathologic conditions still without a satisfactory solution is that of brain tumors. The prognosis is poor even after surgical resection followed by post-operatory chemo- and radio-therapies[1]. It is, therefore, cogent to find innovative treatment tools. Three recent developments may provide elements to discover novel treatment strategies and means. These developments are: the discovery that molecular chaperones can be determinant factors in the process of tumorigenesis[2]; the elucidation of the role of miRNAs in gene regulation and determination of protein functions, including molecular chaperones; in the various cell compartments[3];the increasing understanding and characterization of exosomes (exo), particularly in what refers to their release by tumor cells, contents including chaperones and miRNA, and ability to travel and interact with target cells near their origin or far[4]. The aim of the current study is to research a particular molecular chaperone, the Heat Shock Protein 60 kDa (HSP60) in presence, levels, expression and distribution in tumor and peritumoral cells of primary brain tumors *in vivo*. The presence and level of HSP60 and some miRNAs involved in his regulation in exo isolated by blood samples obtained from patients with cancer before and after ablative surgery were also investigated. A total of 45 brain surgeries were performed. Blood and pathological tissue sample were taken from patient on the day of the surgery. For each patient, blood samples were collected at one week, one month and three months after surgery. Blood samples were collected from each patients and processed for plasma isolation, from which exo were isolated. The tumor and normal tissue section were used to perform the immunomorphological analyses and was assessed the valuation of HSP60 and microRNAs HSP60-related in exo obtained from blood of patients. Our work provided evidences about presence and levels of the main miRNA involved in HSP60 regulation in tumor brain, which would be useful in detecting the disease and monitoring its progression.

Keywords: molecular chaperones, HSP60, exosomes, brain tumor, new therapeutic tools

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