



Thermotherapy-induced reduction in glioma invasiveness is mediated by tumor necrosis factor-alpha

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ABSTRACT. Thermotherapy has been proven to be effective for the treatment of various tumors, including glioma. We determined whether tumor necrosis factor-alpha (TNF- α) is involved in the regulation of the biological processes of glioma development. Reverse transcription-polymerase chain reaction (RT-PCR) and immunocytochemistry were used to investigate the levels of TNF- α mRNA and heat shock factor-1 (HSF1) protein, respectively, in glioma cells. Radioimmunoassay was used to dynamically monitor the contents of TNF- α in the nutrient fluid of C6 cells after thermotherapy treatment. Crystal violet staining was used to determine glioma invasiveness. The most obvious increases in HSF1 protein and TNF- α mRNA in C6 cells were observed at 30 and 60 min after thermotherapy, respectively. In addition, the radioactivity of TNF- α in the culture fluid of the C6 cells reached a peak after 120 min of thermotherapy. In addition, glioma invasiveness decreased and the concentration of TNF- α reached a maximum after 120 min of thermotherapy. Our results show that the decrease in thermotherapy-mediated glioma invasiveness is due to the

accelerated release of TNF- α , which could promote the release of HSF1 from neurospongioma cells.

Key words: Tumor necrosis factor- α ; TNF- α ; Heat shock factor-1; HSF1; Thermotherapy; Glioma invasiveness