Effect of TNF and Interferon to the Expression of GFAP, S-100 and C-FOS in neuroglia
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In recent years the anti-tumor action of tumor necrosis factor (TNF) and interferon (IFN) has become a much concerned investigation field. This paper studied the effect of TNF and IFN to glial fibrillary acid protein (GFAP), S-100 protein and C-FOS protooncogene product expression in glioma cells. The experiment used 24 nude mice of age 5-6 weeks, they were divided into three groups; control group, TNF and TNF combined IFN treatment group. SWO-38 human astrogloma cell line (67 generation) (10^6, 10^7/μl) was injected into left cerebral cortex of nude mice. 36 hours after operation, animals were given an intraperitoneal injection of 5000 units of TNF or TNF + IFN (10,000 units) once/day, continuously for 6 days. For control group equivalent amount of normal saline was injected intraperitoneally. The survival and reaction of the mice were observed. The animals were killed when they were almost death, the brain was removed and fixed, and sectioned. Sections were reacted separately with antibodies of above antigens using immunocytochemical methods and H&E staining. The results indicated that all the transplanted cells in the brain of nude mice survived and formed tumors. In the control group only a few dissociated cells in the tumor showed GFAP, S-100 and C-FOS immunopositive staining. The reaction color was rather light. In the TNF and TNF + IFN treatment groups, GFAP, S-100 and C-FOS positive cells obviously increased in number, deeply stained, which was especially obvious in TNF + IFN group. Positive labeled cells had relatively smaller cell bodies, loose and sparsely distributed. In the adjacent H&E sections, their staining color was quite light, mostly distributed at the peripheral marginal area of degenerating or dying tumor. Furthermore, in the two treatment groups, in the matrix of the tumor some strongly stained S-100 positive cells could be seen. In the tumor, GFAP and C-FOS positive cells had approximately identical distributions, the number of S-100 positive cells was fewer than GFAP and C-FOS cells, there was partial overlapping in distributions. It was known following the increase in tumor proliferation, GFAP and S-100 reactions diminished. There was close relation between C-FOS expression and tumor growth and differentiation. The above result indicated that TNF and IFN treatment could increase expression of GFAP, S-100 and C-FOS in astrogloma cells. This is related to the regulation of astrogloma growth and differentiation by the TNF and IFN.