The Novel Negative Checkpoint Regulator VISTA: A Promising New Target For Human Brain Tumors

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Purpose:
Many cancer cells suppress the immune system in order to develop. Immune checkpoint molecules are expressed by immune cells and are involved in immune suppression. Previous studies have shown that CTLA-4 and PDL1 are involved in the suppression of immunity against glioblastoma. More recently, a new negative checkpoint regulator has surfaced. It is called V-domain immunoglobulin (Ig)-containing suppressor of T-cell activation (VISTA). The aim of this study was to investigate the expression and role of VISTA in brain tumor tissues.

Materials and Methods:
A total of 234 brain tumor tissues and 5 non-cancerous tissus were recruited. Total RNA was extracted with TRizol Reagent from 60 samples: 55 gliomas, and 5 non-cancerous brain tissues. The mRNA expression level was normalized to β-actin. Real time RT-PCR was performed using the 7500 SoftwerV2.0.6 Real-Tim PCR System. Data were analyzed using the 2 - $\Delta\Delta$Ct method.

Results:
Our preliminary data showed that VISTA transcripts were significantly upregulated in glioma patients relative to non-cancerous tissus. However, VISTA expression was higher in patients presenting with glioma grade IV (Glioblastoma) compared to non-cancerous tissus. Interestingly, our data suggested a correlation between VISTA expression and glioma progression from grade I/II to grade III/IV, with significantly higher expression of VISTA in advanced stages.

Conclusion:
Our preliminary results suggested that VISTA may be involved in glioma progression and pinpoint VISTA as a possible new therapeutic target especially in advanced stages of glioma.