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**DISERTASI**

**EKSPRESI *NK – LIGAND*, *CTL – LIGAND*,  
IL-2, IFN- $\gamma$  INTRATUMORAL DAN HUBUNGANNYA  
TERHADAP AGRESIVITAS ASTROSITOMA**



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# Lembar Pengesahan

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## ABSTRACT

### The expression of NK-ligand, CTL-ligand, IL-2, IFN- $\gamma$ intratumoral and the relation to the astrocytoma aggressivity

**Background:** Astrocytoma is the most frequent neoplasm in the brain, more than two third is malignant. The malignant astrocytoma is aggressive, it invades and destroys the adjacent brain tissue which causes morbidity and mortality. The aggressivity of the tumor is different in every patient, presumably influenced by host's immune responds to the astrocytoma growth.

The purpose of this study was to describe the relation of immunosurveillance of NK cell, T cytotoxic cell, IL-2 and IFN- $\gamma$  to the aggressivity of astrocytoma which was determined based on the gradation, apoptosis and PCNA expression.

**Method:** The study design was cross sectional. 24 paraffin blocks of post operative astrocytoma patients in Dr. Soetomo Hospital Surabaya, which were 6 blocks in each grade were performed histopathologic and immunohistochemical staining. These examinations detecting the gradation of astrocytoma and expression of NK-ligand, CTL-ligand, IL-2, IFN- $\gamma$ , apoptosis and PCNA.

**Result:** By ANOVA, there were significant expression between NK-ligand, CTL-ligand, IL-2, IFN- $\gamma$  and tumor gradation ( $\alpha$ : 0.01). On Correlation test, there was significant between expressions IL-2, IFN- $\gamma$  and NK-ligand ( $\alpha$ : 0.001,  $r$ : > 0,06). On regression test, no significant expression between CTL-ligand and IFN- $\gamma$ , but IL-2 expression was significant ( $\alpha$ : 0.01,  $r$ : 0,363). PCNA and apoptosis expression were significantly correlated with tumor gradation ( $\alpha$ : 0.01,  $r$ : -0,655). Expression of IFN- $\gamma$  and NK-ligand was significantly related with apoptosis ( $\alpha$ : 0.01,  $r$ : 0,0719 and 0,450). On Correlation Pearson test, significant negative relation of apoptosis and expression of PCNA were found ( $\alpha$ : 0.01,  $r$ : -0,655) and by discriminant test, the ability to differ gradation was 83,3%. Using principle component analysis, apoptosis, PCNA expression and gradation can be used to determine the aggressivity ( $\alpha$ : 0.01,  $r$ : > 0,80). There was strong negative significant correlation between expression of NK-ligand, CTL-ligand, IFN- $\gamma$ , IL-2 and the aggressivity of the astrocytoma ( $\alpha$ : 0,01,  $r$ : > - 0,80).

**Conclusion:** The expression of NK-ligand, CTL-ligand, IL-2 and IFN- $\gamma$  intratumoral, significantly correlated with the tumor gradation. The higher the expression the lower the gradation. Apoptosis was negatively correlated with the immune effector cells. However, only IFN- $\gamma$  and NK cell that significantly correlated with apoptosis. Immunosurveillance of NK cell, T cytotoxic cell, IL-2 and IFN- $\gamma$  strong negative significantly correlated with the aggressivity, which was determined based on the gradation, apoptosis and PCNA expression.

**Key Word:** Astrocytoma Aggressivity, Immunosurveillance