

EFFECT OF γ H2AX AND ACTIVATED NK CELL TO APOPTOSIS IN ADULT ACUTE LEUKEMIA PATIENTS

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ABSTRACT

Introduction. Apoptosis is programme cell death which can inhibit cell proliferation of acute leukemia. Phosphorylated H2AX (γ H2AX), is a response to DNA damage, that can lead to the activation of p53 protein and simultaneously activates NK cells to induce apoptosis in patients with acute leukemia. This study aimed to assess the effect of γ H2AX and activated NK cells to apoptosis in patients with acute leukemia.

Methods and materials. This is a cross-sectional observational study design. Subjects consisted of 21 newly diagnosed acute leukemia patients who were treated at the Department of Internal Medicine, Dr. Soetomo Hospital-Surabaya from December 2016 - March 2017. γ H2AX and apoptosis (89-kDa fragment PARP) is being tested using specimens from peripheral blood mononuclear cells (PBMC), while NK cell activity by using whole blood specimens. Examinations were done by flowcytometry (BD FACSCalibur™). The results were statistically analyzed using path analysis with linear regression techniques.

Results. The mean of γ H2AX, the percentage of activated NK cells and the degree of apoptosis in patients with acute leukemia was $2.27\% \pm 1.63\%$, $2.99\% \pm 1.88\%$, and $2.52\% \pm 1.73\%$. Respectively, these results showed significant differences with normal adults. There were no influences of γ H2AX for NK cells activation ($p = 0.851$), γ H2AX to apoptosis ($p = 0.591$), and activated NK cells to apoptosis ($p = 0.432$).

Conclusions. γ H2AX expression and percentage of activated NK cells were increased in patients with acute leukemia, but were not able to raise the apoptotic response. The mechanism which inhibits the intrinsic pathway and the extrinsic pathway of apoptosis cascade in patients with acute leukemia needs to be further investigated.

Keywords: γ H2AX, activated NK cell, apoptosis, acute leukemia.