CLINICAL ASSESMENT OF DAMAGE MARKERS OF BLOOD–AIR BARRIER IN CHILDREN WITH ACUTE LEUKEMIA

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Blood–air barrier (BAB) is a functional part of the lungs with epithelial, interstitial and endothelial components. Determination of its damage markers will allow studding of pulmonary complications in children with acute leukaemia (AL).

The purpose is to assess the level and clinical significance of damage markers of epithelial (IL-6), interstitial (TGF-β) and endothelial (VEGF) components of BAB in children with AL.

Materials and methods. We examined 51 children aged 6-18 years with AL at Kharkiv City Children's Hospital№16 and 15 healthy children for control group. Children with AL were divided into 2 groups: 1 group –during induction phase of chemotherapy (n = 24), 2 group – in remission (n= 27). The level of IL-6 and TGF-β in exhaled breath condensate (EBC), VEGF in blood serum were investigated by ELISA. We used STATISTICA 7.0 for data processing.

The results. Pulmonary complications were diagnosed in 84.31% of children with AL: acute bronchitis (58.82%), wheezing (19.60%), bronchial asthma (5.88%), pneumonia (47.06% (24/51), interstitial pneumonia - in 1.96%, pleurisy (3.92%), pneumothorax (3.92%), pulmonary fibrosis (1.96%), leukemic infiltration (1.96%). 29.63% of children had pulmonary complications during the period of remission. In children of group 1, the level of IL-6 was 52.71 (48.28; 60.71) pg/ml, TGF-β 30.46 (22.90; 40.65) pg/ml, VEGF - 164.12 (150.18; 197.08) pg/ml, in children of 2 groups: IL-6 - 20.98 (18.57; 24.64) pg/ml, TGF-β – 18.55 (14.91; 22.14) pg/ml, VEGF – 169.11 (132.15; 198.66) pg/ml, in children of the control group: IL-6 8.12 (7.02; 9.45) pg/ml, TGF-β – 15.22 (13.88; 16.00) pg/ml, VEGF 130.65 (129.45; 132.15) pg/ml. The levels of all studied markers were higher in both AL groups than in control group ($p_{1\text{-}K}<0.05$, $p_{2\text{-}K}<0.05$). The level of VEGF in children of groups 1 and 2 had no significant difference($p>0.05$). The level of IL-6 and TGF-β was significantly higher in 1st group than in 2nd group ($p1\text{-}2<0.05$).

Conclusions. Children with AL have significant increased levels of IL-6, TGF-β and VEGF and high incidence of lung complications (84.31%). Even during remission, damage markers of BAB are increased. Therefore, children with AL, including remission, can be classified as a group of high risk at developing lung complications.

Leukaemia, children, lungs, pulmonary complications, blood–air barrier