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CYTOLOGICAL PARAMETERS OF DIFFERENT NHL VARIANTS AT CHILDREN

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✓ *Resume*

The article presents cytological study of 122 (96.8%) patients. The retrospective analysis of case histories at 122 patients with verified NHL, the accounting and reporting documentation on registration of malignant neoplasms, form 7-SSV from 2011 to 2015, epidemiological analysis, molecular genetical, immunologic and morpho-chemical, cytomorphological and morphogenetic research methods were carried out.

The results of study showed the necessity of morphological and immunological studies in order to make correct diagnosis which has the various variants of T- and B-cell NHL. The features of clinical NHL course at children was shown and researched according to the cytological, histological and immunological characteristics of tumor.

Key words: cytology, NHL, children, malignant tumors.

BOLALARDA NHLNING TURLI VARIANTLARIDAGI SITOLOGIK PARAMETRLAR

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✓ *Rezyume*

Maqolada 122 (96,8%) bemorning sitologik ma'lumotlari keltirilgan. NHL bilan tasdiqlangan 122 bemorning kasallik tarixini retrospektiv tahlil qilish, malign neoplazmalarni ro'yxatga olish uchun buxgalteriya hisobi va hisobot hujjatlari - 2011-2015 yillar uchun 7-SSV shakli, epidemiologik tahlil, molekulyar genetik, immunomorfokimyoviy, sitomorfologik va morfogenetik tadqiqot usullari.

Tadqiqot natijalari T- va B hujayrali NHL ning mavjud turli xil variantlarini to'g'ri tashxislash uchun morfologik va immunologik tadqiqotlar zarurligini ko'rsatdi. Bolalarda NHL klinik kursining xususiyatlari o'simtaning sitologik, gistologik va immunologik xususiyatlariga qarab ko'rsatiladi va o'rganiladi.

Kalit so'zlar: Sitologiya, NHL, bolalar, xavfli o'smalar.

ЦИТОЛОГИЧЕСКИЕ ПАРАМЕТРЫ РАЗЛИЧНЫХ ВАРИАНТОВ НХЛ У ДЕТЕЙ

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✓ *Резюме*

В статье представлены цитологические данные 122 (96,8%) больных. Проведен ретроспективный анализ историй болезни 122 больных с верифицированным НХЛ, учетно-отчетная документация по регистрации злокачественных новообразований - форма 7-SSV за 2011-2015гг., эпидемиологический анализ, молекулярно-генетический, иммуноморфохимический, цитоморфологический и морфогенетический методы исследования.

Результаты исследования показали необходимость проведения морфологического и иммунологических исследований с целью правильной постановки диагноза существующих различных вариантов Т- и В-клеточных НХЛ. Показаны и изучены особенности клинического течения НХЛ у детей в зависимости от цитологических, гистологических и иммунологических характеристик опухоли.

Ключевые слова: Цитология, НХЛ, дети, злокачественные образования.

Relevance

Historically, the process of study malignant lymphomas took place long ago, when in 1871 Billrot offered to call the term “malignant lymphoma»[1,2]. Afterwards, with development of microscopy the widely spread had the works by N.B.Shustov and H.H.Vlados, later by Robb-Smith, who researched cellular substrate of Non-Hodgkin lymphoma (NHL) and revealed changes in lymphatic nodes at cellular structure; the next works had definitions of lymphomas into follicular, lymphocytic, lymphoblast, and, also, reticular round and cellular sarcoma from 2011 to 2015, the rough index of morbidity was 0,4⁰/₀₀₀ in 2011, and, in 2015 it was 0,7⁰/₀₀₀[4]. For all that, to the present there is no information on prevalence of disease by territorial, age and sex, which may be connected with absence of children oncology departments in many regional oncological offices and problems on differentiated diagnosis of diseases with other hemoblastosis[5,6]. In childhood there are more often diagnosed lymphoblast lymphomas from cells of precursors LBL, and from mature cellular NHL was lymphoma of Berkitt (LB), anaplastic large and cellular lymphoma (ALCL) and diffuse B – large and cellular lymphoma DBLCL [7].

The classification of WHO from 2008 classification based on immunological, cytogenetical, molecular and biological changes of tissue, NHL, clinical picture, is used now. For all that more than 60 variants of NHL, and, the more typical for children are: T- and B - lymphoblast lymphomas (T- and B-LBL), lymphoma by Berkitt (LB), diffuse B – large and cellular lymphoma (DBLCL), primary mediastinum B – large and cellular lymphoma (MBLCL) and anaplastic large cellular lymphoma (ALCL). As well there are lymphomas which occur rarely (MALT, NK/T) [5,7]. Thus the taken analysis shows the actuality of diagnosis and treatment NHL at children.

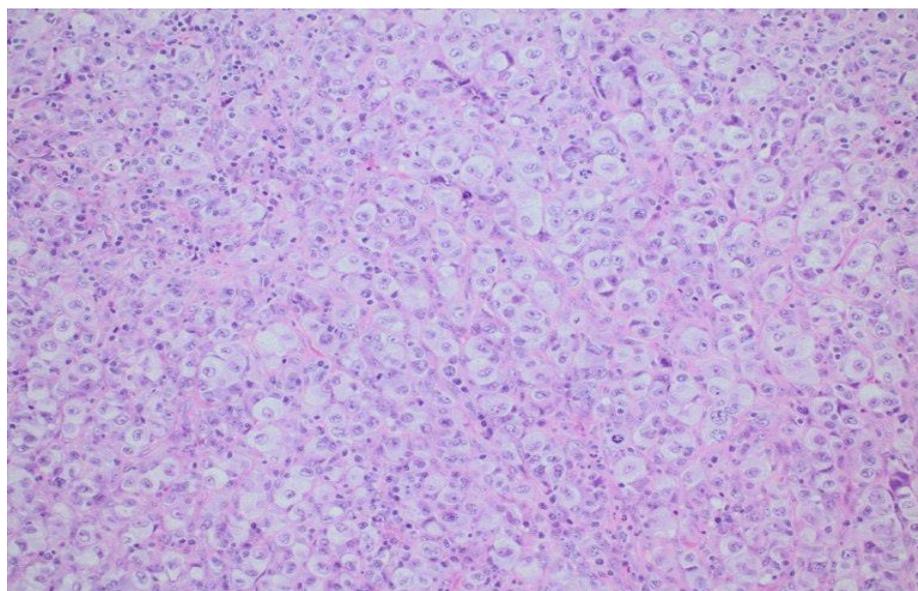
The aim of study. To research cytological parameters different variants of NHL at children.

Materials and methods

Coming from classification with the purpose of determination lipoma variant the cytological data of 122 (96,8%) patients were examined. The retrospective analysis of 122 patients with verified NHL, the accounting and reporting documentation on registration of malignant neoplasms, form 7-SSV from 2011 to 2015, epidemiological analysis, molecular genetical, immune and morpho-chemical, cytomorphological and morphogenetic research methods were carried out.

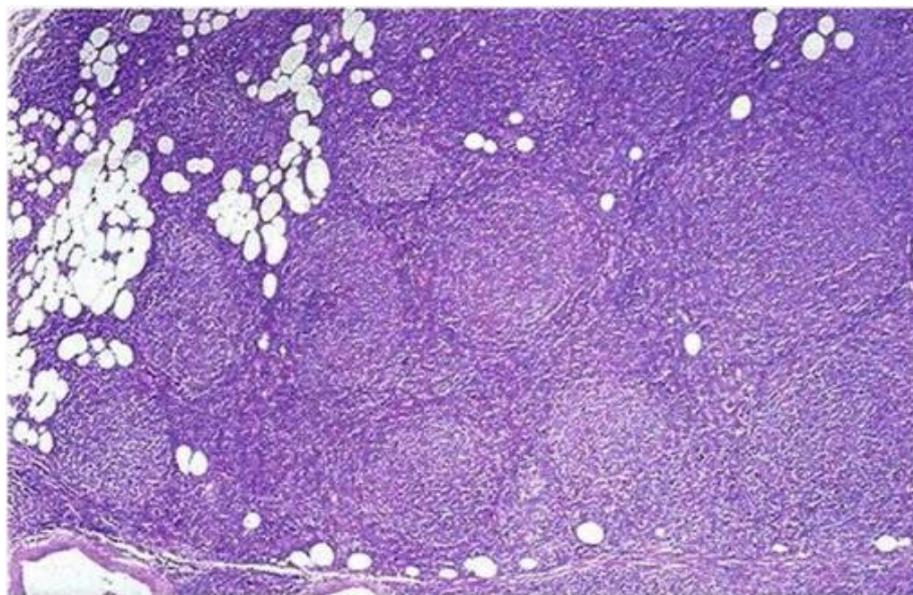
Results and discussion

The results of study showed that the number of T-B- and LBL patients were 41 (32,5%), who cytologically revealed blast cells of lymphoid nature which had different sizes with high nuclear cytoplasmic index,



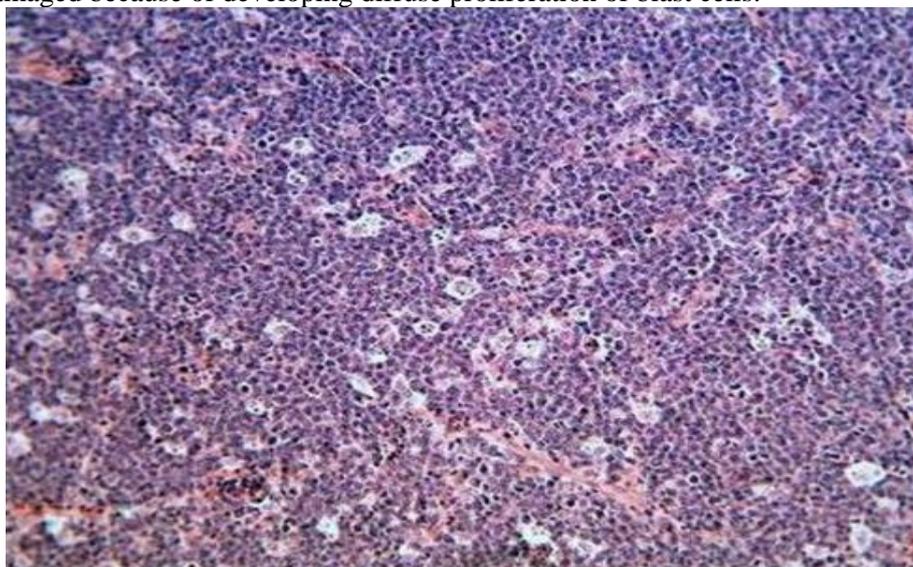
Picture 1. Cytological study tumor focus at LBL. Lymphoblast type L-1.color by Romanovsy-Gimze.

The location of nuclei was central and eccentric, by shape they were round or oval with basophil cytoplasm and netting chromatin of nucleus. By FAB classification according to construction and shape they were looked like lymphoblasts of type L-1 – 75% or L-2 – 25% (pictures 1 and 2).



Picture 2. Cytological study tumor focus at LBL lymphoblast type L-2, color by Romanovsky-Gimze.

At 11 (26,8%) patients at histological study the disorder of normal lymph node tissue structure were damaged because of developing diffuse proliferation of blast cells.



Picture 3. Histological examination of patients with LBL., color with hemotoxin eosin, yv. x500

The tumor substrate was presented by lymphoblasts of different sizes from little to middle ones with high nuclear – plasmatic index (NPI). At presence many macrophages in histological section the picture of “starry sky can be seen» (pict. 3)

The analysis of cytological punctures for damaged organs or smears at 29 (23,0%) patients with LB showed the presence of lymphoblasts type L-3, which had middle sizes and high NCI. Cytoplasm had intensive and basophile color with presence vacuoles and diffuse and chromatinized nucleus. At pathogenetic study 33 (26,1%) patients with DBLCL revealed the giant cells the same as ALCL, moreover they were characterized with considerable atypification and polymorphynism, the cytoplasm had thin border with typical basophile color, for all that in tumor cells it was more expressed, in some cells there were marked more than two nuclei with little dispersed chromatin, sometimes the smears had cells looked like as Hodgkin ones, which had big nuclei. Histological examination patients with DBCL was carried out at 26 (78,7%) persons, where the central blast type was 19 (57,5%), for all that, there was marked the expressed

polymorphynism of cells with narrow basophile cytoplasm and oval nuclei and delicate chromatin. The number of mitosis was little, there was alone apoptosis.

The immune blast variant DVCL occurred at 2 (6,0%) cases, it was characterized with presence large cells and expressed basophile cytoplasm, round nuclei and nucleoli in the center. The expressed cellular polymorphynism being presented with immune blasts were marked. T-histocyte variant was verified at 3 (9,0%) which was characterized by T-cellular and histocyte infiltration and little number of tumor cells of various size and nucleoli presence. The anaplastic variant of tumor, the verification of that was carried out on the base of immunologic researches, occurred at 2 (16,6%) patients, the histological picture was characterized with presence large and giant cells surrounded with basal cytoplasm and pleomorphic nuclei and profuse tumor infiltration of sinuses. The cytogenetic study patients with ALCL was 12 (9,5%), it was characterized with presence of atypicalness and polymorphinism of cells having various nuclear sizes from middle to large ones, different shape: round, horse shoe-shape, paddle-shape and eccentrically located thin disperse chromatin, many nucleoli of different calibres, expressed cytoplasm with light blue color, in some cases with zones of near nuclear lumen, in 18% cases were Hodgkin and Berezovsky-Stenberge' cells. The ALCL variant oft histological study at 11 (91,6%) patients had different variants: little cellular were 2 (16,6%), which was mainly characterized with uninuclear cells, middle uninuclear cells, polymorphic nuclear with condensed chromatin. Besides with little cellular 4 (33,3%) patients had lympho-histiocyte one, for all that the typical was the presence of cells with profuse eosinophil infiltration, round nucleus alteration of many tumor cells and surrounding ones. 5 (41,6%) patients determined classical type of tumor, moreover the cellular picture was fully absent on the account of diffuse infiltration with tumor cells, in some cases there was marked their accumulation within sinuses or in paracortical layer. The tumor cells were presented with large different with nuclear shapes (horse-shoe shaped, paddle) with eccentric located thin disperse chromatin, many nucleoli, moderately expressed light cytoplasm.

Conclusions

Thus, the morphological picture of ALCL was characterized with partial or full disappearance of normal tissue structure, it has diffuse type of growth, particularly, it was presented with accumulation of tumor cells located para-cortically in sinuses with, focus of necrosis and active mitosis. It was determined the necessity of carry out morphological and immunologic researches with the aim to make correct diagnosis of different T-and B-cellular NHL. There were shown and researched features of NHL clinical course at children depending on cytological, histological and immunologic characteristics of tumor.

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Abbreviations

NHL – Non-Hodgkin lymphoma
WHO- World health organization
HL - Hodgkin lymphoma
LBL - Lymphoblast lymphoma
ALCL- Anaplastic large cellular lymphoma
DBLCL-Diffuse B-large cellular lymphoma
DBCL- Diffuse B- cellular lymphoma
LB - Lymphoma of Berkitt
NCI - Nuclear cytoplasmatic index