

EVALUATION OF THE IMMUNOLOGICAL EFFECTS OF MEDICAL EXPOSSURE STAFF

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Purpose: to identify the reaction of the MEDICAL EXPOSSURE STAFF immune system to radiation stress factor.

● **Methods**

The immunity state at specialists constantly and long time working with *gamma* and *x-ray* radiation sources in radiological diagnostic and radiological therapeutic departments of the Oncology Institute (80 person) was studied using the panel of monoclonal antibodies to antigens CD3, CD4, CD5, CD8, CD16, CD19, CD HLA DR ("Sorbent", Russia). The general blood analysis have been investigated using classical methods. The annual accumulated doses have been determinate using Harshow 6500 equipment.

Results: General blood analysis of medical exposure stuff

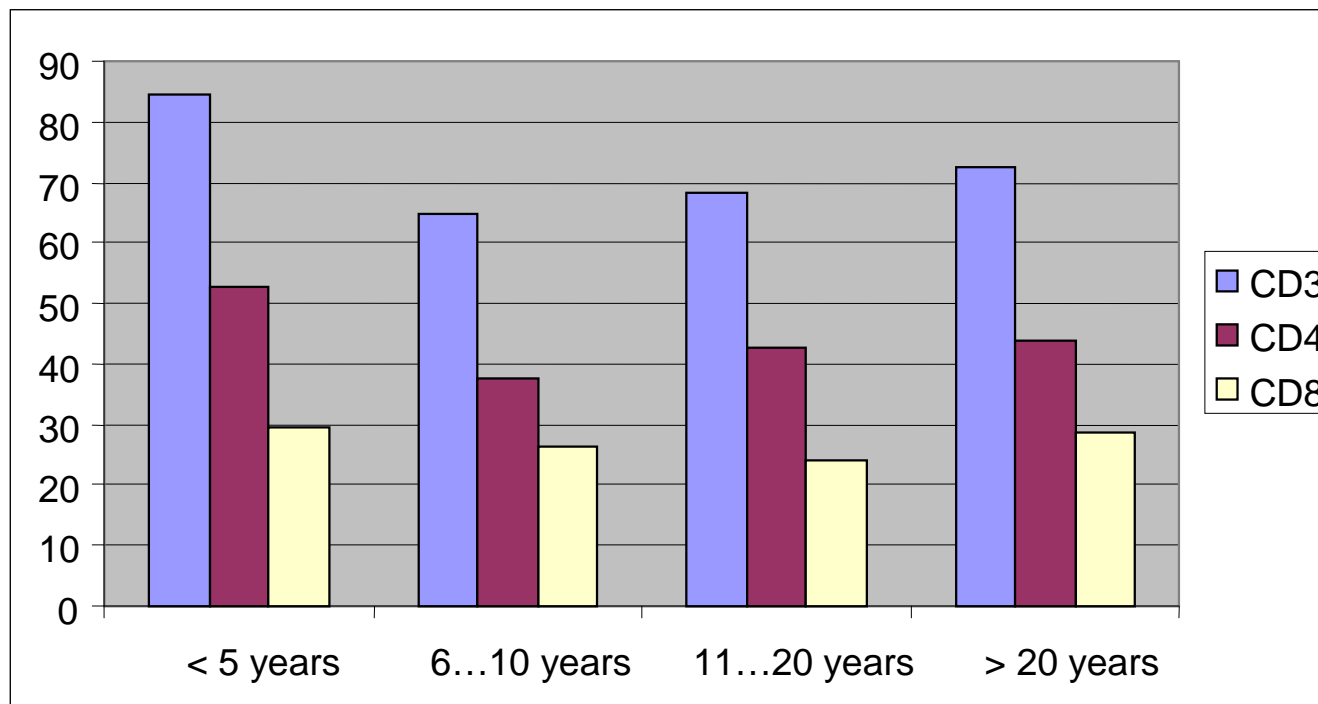
Nr.	Investigated parameters	2006		2007		2008	
		X ± mx	σ	X ± mx	σ	X ± mx	σ
1	Hemoglobin	132,65 ± 10,35	107,14	133,1 ± 10,39	107,98	130,0 ± 11,71	137,34
2	Erythrocyte	4,31 ± 0,19	0,03	4,42 ± 0,49	0,24	5,29 ± 7,63	58,28
3	Color indices	0,92 ± 0,04	0,002	0,86 ± 0,17	0,02	0,87 ± 0,07	0,005
4	Non-segmented neutrophils	1,81 ± 1,14	1,31	2,58 ± 2,08	4,33	2,88 ± 1,67	2,82
5	Segmented neutrophils	59,82 ± 5,98	35,82	56,91 ± 7,46	55,67	54,03 ± 7,38	54,58
6	<i>Eosinophils</i>	3,0 ± 1,74	3,02	2,39 ± 1,46	2,13	2,41 ± 1,31	1,74
7	Reticulocytes	4,16 ± 2,69	7,24	7,46 ± 5,9	34,8	5,69 ± 2,84	8,11
8	Trombocyte	248,26 ± 33,67	1134,04	255,93 ± 51,19	2621,14	282,01 ± 45,96	2112,75
9	Leukocyte	5,48 ± 1,17	1,38	5,9 ± 1,45	2,11	5,7 ± 1,5	2,27
10	Lymphocyte	29,97 ± 7,31	53,47	33,09 ± 7,5	56,37	34,49 ± 8,88	78,91
11	Monocytes	5,98 ± 3,48	12,17	5,4 ± 2,29	5,27	5,83 ± 2,78	7,77

Expression of CD3, CD4 and CD8 antigens on the peripheral blood lymphocytes

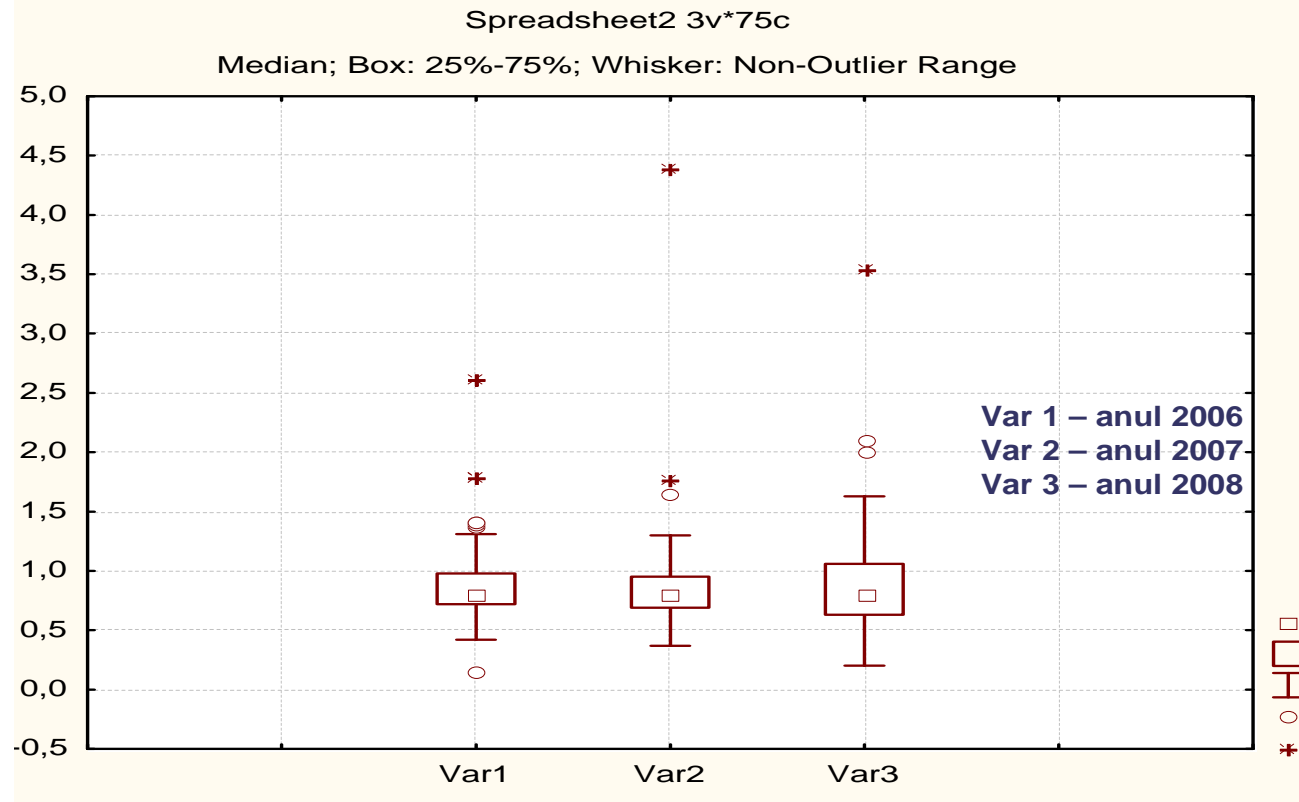
In addition to the standard criteria, the ratio of CD4+, CD8+ and CD3+ cells with different variants noted earlier at studying of the Chernobyl accident consequences clean-up participants health has been used. Thus, three types of expression of antigens: insufficient, strained and balanced has been elucidated.

1 type insufficient	CD4+CD8 < CD3	indices < 0,86
2 type strained	CD4+CD8 > CD3	indices > 1,1
3 type balanced	CD4+CD8 = CD3	indices 0,86-1,1

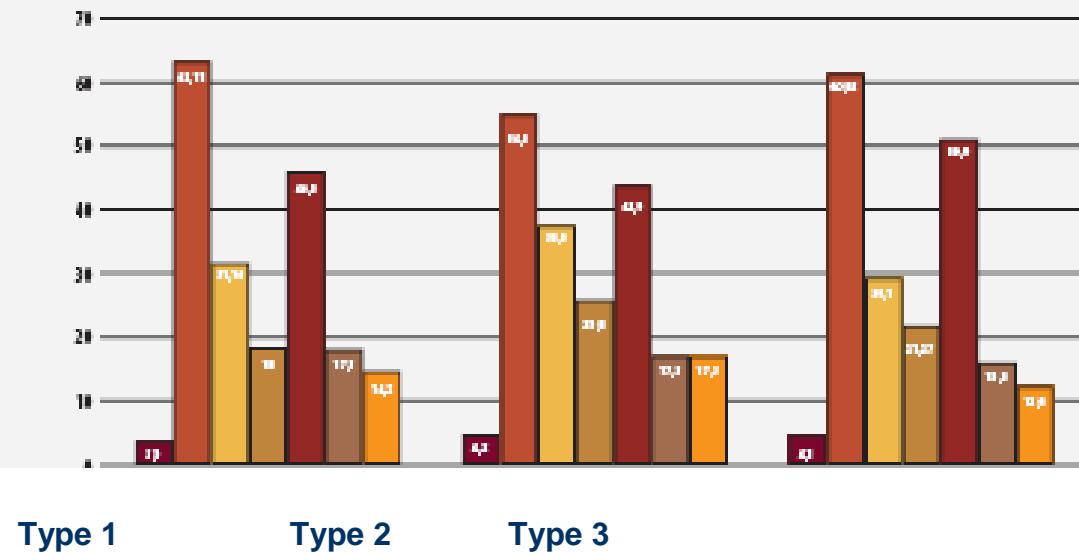
Characterization of the immunological parameter of the medical exposure stuff in function of the engaged ages



Accumulated annual doses of medical exposure stuff during the 2006-2008 years, mSv/an



Immunological response type and lymphocytes subpopulation CD19, CD3, CD4, CD8, CD5, CD16, CDHLA DR of the medical exposure stuff



CD19 CD3 CD4 CD8 CD5 CD16 CDHLA DR

Engaged ages, annual accumulated doses, blood lymphocytes and reticulocytes of the medical exposure stuff

Indices	immunological response type		
	1	2	3
Age	48,15±6,2	57,0±4,6	47,42±6,8
engaged ages	16,84±3,2	29,6±1,92*	15,84±2,34
Accumulated annual doses	0,66±0,02	0,98±0,06*	0,71±0,1
Lymphocytes 1x10	1,67±0,8	2,07±0,6	1,53±0,6
Reticulocytes 0/00	13,2±3,2	25,0±4,8*	11,04±2,4

* p < 0,05

Conclusions

The increase of the strained immunological response at the medical exposure stuff which has a more higher engaged ages and are older have been detected.

Thank you !!!