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Specifics of infectious complications among patients with hemoblastosis in the Far North in comparison with the central region

Abstract. The epidemiologic evidence of infections complications in patients with hematologic malignancies of Khanty-Mansiysk' and Ulyanovsk' regions is analyzed in the article. It was set the prevalence of localized forms of the infections over generalized. The pneumonia was determined as more often complication at the hematologic patients of Khanty-Mansiysk' region, especially it was set in the cases of non-Hodgkin lymphoma and chronic lympholeukemia. The frequency of gynecological infections at the patients with hemoblastosises was reliably higher in Ulyanovsk' region, but stomatitis had been verified in Khanty-Mansiysk. The prevalence of urological infections was higher in patients with multiple myeloma and gastrointestinal infections were more often complications in the case of non-Hodgkin lymphomas.

Key words: hemoblastosises, infections complications, Khanty-Mansiysk' region, Ulyanovsk' region.

Opportunistic infections among patients with hemoblastosis continue to be relevant problems of modern hematology as such patients much more often expose to pyoinflammatory complications than patients who are not affected by tumorous diseases; 80-85% of such patients have infectious processes and it is a menacing and negative complication [6,7,10]. At that in many cases the infections are of a nosocomial ("hospital") kind, they proceed extremely hard and badly yield to therapy owing to high resistance of the causative agents [4,8].

Oncologic patients' infections are running rather intricately due to progression of bacterial-bacterial and fungal-bacterial infections [1,9]. The analysis of causes of death among oncologic patients showed that infectious complications were the cause of death of more than 1/3 of oncologic patients [2,3,5].

Therefore oncologic patients constitute the high-risk group as for progression of opportunistic infections; that is why the study of territorial features of infectious complications among patients with hemoblastosis is the urgent problem of clinical medicine.

Objectives of the research. The research tasks included the analysis of localized and generalized forms of infectious complications, estimation of occurrence frequency of complications of various localization (respiratory and urinary system, gastro-intestinal tract, vaginitis and vulvovaginitis) along with chronic lymphocytic leukemia, multiple myeloma, Hodgkin's and non-Hodgkin's lymphomas among patients living in Khanty-Mansi Autonomous District in comparison with the Ulyanovsk region.

Data and methods. 1770 case-records (Khanty-Mansi Autonomous District – 1010, the Ulyanovsk region – 760) from 2004 to 2010 were used for the data of the research. The valuation of difference of infectious complications frequency rates of different allocation was carried out under criterion χ^2 and considered statistically-valid when $p < 0,05$.

Results and discussions. From 1770 case-records analyzed non-Hodgkin's lymphomas (NHL) constituted 35,1% (622 per.), chronic lymphocytic leukemia (CLL) – 29,3% (519 per.), multiple myeloma (MM) – 17,2% (304 per.), Hodgkin's granuloma (HG) – 18,4% (325 per.).

In estimating the total numbers of infectious complications among all the hospital records under analysis 1715 cases were registered. Among them: Khanty-Mansi Autonomous District – 888(51,8%); Ulyanovsk region – 827 (48,2%), with authenticity under criterion χ^2 - $p < 0,05$.

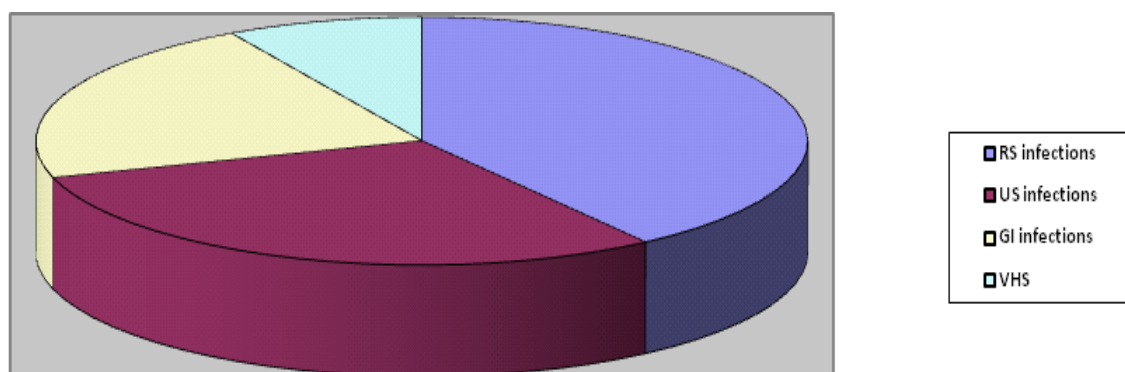
Of all the infectious complications the localized forms have constituted the major part – 97,3%. See picture 1. Thereafter, the generalized forms have constituted 2,7%.

8,0%

21,0%

29,2%

39,1%



Picture 1. The structure of infectious complications depending on the process localization.

Notes: RS – respiratory system, US – urogenital system, GI – gastro-intestinal tract, VHS – virus hepatitis.

Further the analysis of peculiarities of infectious complications among patients with hemoblastosis in Khanty-Mansi Autonomous District and Ulyanovsk region was carried out. The data received is presented in Table 1.

Table 1

The structure of infectious complications among patients with hemoblastosis in Khanty-Mansi Autonomous District and Ulyanovsk region in 2004-2010

	Khanty-Mansi Autonomous District n=888	Ulyanovsk region n=827	p
<i>Respiratory system infections</i>			
Bronchitis/tracheitis	153 (17,2%)	119 (14,5%)	p=0,1
Pneumonia	87 (9,8%)	35 (4,2%)	p<0,05
Pharyngitis	75 (8,4%)	112 (13,5%)	p<0,05
Sinusitis	41 (4,6%)	48 (5,8%)	p>0,05
RS infections in all	356 (40,1%)	314 (38,0%)	p>0,05
<i>Urogenital system infections</i>			
Pyelonephritis	49 (5,5%)	44 (5,3%)	p>0,05
Cystitis/urethritis	84 (9,5%)	62 (7,5%)	p>0,05
Vaginitis/vulvovaginitis	91 (10,2%)	171 (20,7%)	p<0,05
US infections in all	224 (25,2%)	277 (33,5%)	p<0,05
<i>Infections of gastro-intestinal tract</i>			
Stomatitis	148 (16,7%)	92 (11,2%)	p<0,05
Enteritis	47 (5,3%)	39 (4,7%)	p>0,05
Ulcerous-necrotic colitis	19 (2,1%)	15 (1,8%)	p>0,05
GI infections in all	214 (24,1%)	146 (17,7%)	p<0,05
Virus hepatitis B	65 (7,3%)	72 (8,7%)	p>0,05
<i>Generalized forms</i>			
Sepsis (According to criteria ACCP/SCCM, 1992.)	29 (3,3%)	17 (2,1%)	p>0,05

p – distinction veracity according to F-ratio test (unilateral).

According to the data submitted the distinctions by prevalence of infectious complications of respiratory system among patients with hemoblastosis living in the northern districts in comparison with the central districts, all-in-all, did not authentically differ and compiled 356 (40,1%) against 314 (37,9%), p>0,05. At that time we should notice some distinctions in clinical entities of infectious complications: prevalence of pneumonias in Khanty-Mansi Autonomous District in opposition to the Ulyanovsk region (9,8% and 4,2%, p<0,05), and opposite changes in pharyngitis prevalence (8,4% and 13,5%, p<0,05). See Table 1. As for urinary and genital systems there was authentically identified rather a large number of complications in the central

region (35,6%), in comparison with the northern one (28,5%, $p<0,05$), primarily owing to gynecological infections ($p<0,05$, Table 1).

The analytical data of infectious complications occurrence among patients with different forms of hemoblastosis are presented in Tables 2 and 3.

So in Khanty-Mansi Autonomous District the frequency of occurrence of infectious complications of respiratory system was the highest upon NHL and CLL (13,4%, accordingly 119 cases). See Table 2. There are more cases of bronchitis/tracheitis and pneumonia in these groups. Spread of pharyngitis and sinusitis among patients with different forms of hemoblastosis did not differ much. Occurrence of urologic and gynecologic infections was the highest upon MM - 76 cases, 8,6%; then - CLL - 56 cases, 6,3%; further - NHL (52 cases, 5,8%) and HG (40 cases, 4,5%). See Table 2. Of all GI infections the most accounted for NHL - 92 patients, 10,4%. Generalized infections in the northern region constituted 3,3% cases from their total number (29 patients), the frequency due to NHL was the highest - 14 patients, 1,6%.

Table 2

**Localization of infectious complications among patients with hemoblastosis in
Khanty-Mansi Autonomous District over the period of 2006-2010**

Infectious complications n=888	Clinical entities of hemoblastosis			
	NHL	HG	CLL	MM
<i>Respiratory system infections</i>				
Bronchitis/tracheitis n=153	51 (5,7%)	24 (2,7%)	60 (6,7%)	18 (2,0%)
Pneumonia n=87	36 (4,1%)	18 (2,0%)	20 (2,3%)	13 (1,5%)
Pharyngitis n=75	21 (2,4%)	14 (1,6%)	25 (2,8%)	15 (1,7%)
Sinusitis n=41	11 (1,2%)	9 (1,0%)	14 (1,6%)	7 (0,8%)
RS infections in all n=356 (40,1%)	119 (13,4%)	65 (7,3%)	119 (13,4%)	53 (6,0%)
<i>Urogenital system infections</i>				
Pyelonephritis n=49	8 (0,9%)	13 (1,5%)	7 (0,8%)	21 (2,4%)
Cystitis/urethritis n=84	26 (2,9%)	12 (1,3%)	18 (2,0%)	28 (3,2%)
Vaginitis/vulvovaginitis n=91	18 (2,0%)	15 (1,7%)	31 (3,5%)	27 (3,0%)
US infections in all n=224 (25,2%)	52 (5,8%)	40 (4,5%)	56 (6,3%)	76 (8,6%)
<i>Infections of gastro-intestinal tract</i>				
Stomatitis n=148	68 (7,7%)	32 (3,6%)	30 (3,4%)	18 (2,0%)
Enteritis n=47	17 (1,9%)	13 (1,4%)	12 (1,3%)	5 (0,6%)
Ulcerous-necrotic colitis n=19	7 (0,8%)	6 (0,7%)	4 (0,5%)	2 (0,2%)
GI infections in all n=214	92 (10,4%)	51 (5,7%)	46 (5,2%)	25 (2,8%)
Virus hepatitis B n=65	21 (2,3%)	15 (1,7%)	23 (2,6%)	6 (0,7%)
<i>Generalized forms</i>				
Sepsis (According to criteria ACCP/SCCM, 1992.) n=29	14 (1,6%)	6 (0,7%)	7 (0,8%)	2 (0,2%)

% - percent ratio of generalized and localized infectious complications among patients with hemoblastosis of total number of infections.

The retrospective analysis of case records of patients with hemoblastosis in the Ulyanovsk region (Table 3) showed that prevalence of respiratory system infections was the highest among patients with NHL (106 cases, 12,8%) and CLL (84 cases, 10,2%), less – with HG (75 cases, 9,1%), minimum with MM (49 cases, 5,9%). In accord with nosological structure bronchitis/tracheitis and pharyngitis constituted the major part among infectious complications of respiratory system: NHL – 4,7% and 4,6%, HG - 3,3% and 3,5%, CLL – 4,1% and 3,3%, MM – 2,3% и 2,2% of total number of cases. There was the minimum number of cases of pneumonia in the region. Infectious complications of urogenital system were most often registered in case of CLL (86 cases, 10,4%) and MM (78 cases, 9,4%). Among all the infections of this localization in the Ulyanovsk region dominated gynecological complications (vaginitis and vulvovaginitis) in case of NHL - 4,8%, HG - 3,5%, CLL - 7,9%, MM - 4,4% of total number of cases. Your attention is specifically drawn to the largest number of gynecological complications among patients with CLL.

Table 3

Localization of infectious complications among patients with hemoblastosis in the Ulyanovsk region over the period of 2006-2010

Infectious complications n=827	Clinical entities of hemoblastosis			
	NHL	HG	CLL	MM
<i>Respiratory system infections</i>				
Bronchitis/tracheitis n=119	39 (4,7%)	27 (3,3%)	34 (4,1%)	19 (2,3%)
Pneumonia n=35	12 (1,5%)	9 (1,1%)	8 (1,0%)	6 (0,7%)
Pharyngitis n=112	38 (4,6%)	29 (3,5%)	27 (3,3%)	18 (2,2%)
Sinusitis n=48	17 (2,1%)	10 (1,2%)	15 (1,8%)	6 (0,7)
RS infections in all n=314	106 (12,8%)	75 (9,1%)	84 (10,2%)	49 (5,9%)
<i>Urogenital system infections</i>				
Pyelonephritis n=44	11 (1,3%)	8 (1,0%)	7 (0,8%)	18 (2,2%)
Cystitis/urethritis n=62	16 (1,9%)	9 (1,1%)	14 (1,7%)	23 (2,8%)
Vaginitis/vulvovaginitis	40 (4,8%)	29 (3,5%)	65 (7,9%)	37 (4,4%)

n=171				
US infections in all	67 (8,0%)	46 (5,6%)	86 (10,4%)	78 (9,4)%
n=277				
<i>Infections of gastro-intestinal tract</i>				
Stomatitis	34 (4,1%)	19 (2,3%)	28 (3,4%)	11 (1,3%)
n=92				
Enteritis	14 (1,7%)	12 (1,5%)	10 (1,2%)	3 (0,4%)
n=39				
Ulcerous-necrotic colitis	6 (0,7%)	5 (0,6%)	2 (0,2%)	2 (0,2%)
n=15				
GI infections in all	54 (6,5%)	36 (4,4%)	40 (4,8%)	16 (1,9%)
n=146				
Virus hepatitis B	24 (2,9%)	17 (2,1%)	22 (2,6%)	9 (1,1%)
n=72				
<i>Generalized forms</i>				
Sepsis (According to criteria ACCP/SCCM, 1992.)	8 (1,0%)	5 (0,6%)	3 (0,4%)	1 (0,1%)
n=17				

% - percent ratio of generalized and localized infectious complications among patients with hemoblastosis of total number of infections.

The number of infections of gastro-intestinal tract among patients with hemoblastosis was lower than in the northern region and constituted: for NHL - 6,5%, HG - 4,4%, CLL - 4,8%, MM – 1,9% of all the cases of infectious complications. Stomatitis dominated when nosological stricter was analyzed. According to the retrospective analysis covering a five-year period among 17 patients with hemoblastosis in the Ulyanovsk region sepsis advanced: 1,0% constituted patients with NHL, 0,6% - with HG, 0,4% - with CLL and 0,1% - with MM.

Conclusions. 1. According to the research the localized forms of infectious complications among patients with lymphoproliferative disorders and multiple myeloma dominated over generalized forms, at that of all the localized forms respiratory system infections were predominant ones, $p < 0,05$. 2. Patients with hemoblastosis living in Khanty-Mansi Autonomous District more often suffered from pneumonia in comparison with patients from the Ulyanovsk region, with domination in groups with non-Hodgkin's lymphomas and chronic lymphocytic leukemia ($p < 0,05$). 3. Gynecologic infections among patients with hemoblastosis (vaginitis and vulvovaginitis) were dominant in the Ulyanovsk region, and stomatitis - in Khanty-Mansi Autonomous District. 4. The prevalence of urologic and gynecologic infections was the highest in case of multiple myeloma and most of infections of gastro-intestinal tract occurred in case of non-Hodgkin's lymphomas.



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