identified changes in the clinical picture, neurological status. Persons of Russian nationality had more pronounced changes in the clinical picture of neurological symptoms.

At the same time, according to the symptoms, high numbers of GFR are observed in elderly Evens, except for primitive oral reflexes (POR). Yakuts have low GFR, except for extrapyramidal syndrome, ataxia and changes in muscle tone. Russians have a high GFR with POR, a low with extrapyramidal syndrome, ataxia.

Among the senile, the Evens have a more favorable clinical picture, with the exception of POR, pathological reflex, vestibular-ataxic disorders (VAD), changes in muscle tone. Renal dysfunction is expressed in Russians, apart from extrapyramidal syndrome, POR, pathological reflexes, VAD. Late elderly Yakuts occupy an intermediate position, except for the extrapyramidal syndrome, POR, pathological reflexes, VAD, where there are lower rates of GFR.

An interesting fact is that in the elderly the low rate of GFR is observed in representatives of all nationalities with POR and pathological reflexes, which explains the parallelism of the stages of CKD and CCI.

In the senile Evens, GFR is reduced with all objective symptoms of CCI, except for the extrapyramidal syndrome, it is mild cognitive impairment (MCI), pyramidal syndrome, and sensory disorders. A more pronounced decrease in GFR is also observed in representatives of all nations with POR, pathological reflexes, in addition, in Evens, with the changes of the muscle tone, in Yakuts with extrapyramidal syndrome, ataxia, in Russians with vestibulopathy, CCF (craniocerebral failure), MCI, ataxia, pyramidal syndrome, and sensitive disorders, change in muscle tone.

Thus, the presence of chronic kidney disease was associated with the most pronounced cognitive and neurological disorders, and a worsening of symptoms with the severity of CCI was noted.

Conclusion. Based on our study, it can be stated that in the studied elderly and senile age patients, the development and progression of chronic cerebral ischemia occurs in parallel with the progression of chronic kidney disease. At the same time, more severe neurological symptoms were discovered in the representatives of the non-indigenous population due to structural changes in the cerebral vascular bed due to arterial hypertension and atherosclerosis, as well as severe renal dysfunction. The Evens, the indigenous inhabitants of the northern regions of Yakutia, who retained a calmer, more traditional lifestyle and nutrition of the peoples of Yakutia, had lighter clinical symptoms of chronic cerebral ischemia and lower renal abnormalities.

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I.P. Gouriev

DISTRIBUTION OF CARRIERS OF "INDO-EUROPEAN" HAPLOTYPES OF HLA SYSTEM ON THE TERRITORY OF EURASIA

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The age of the "Indo-European" haplotypes HLA-A1/B17 and HLA-A1/B8 is calculated for different populations of Eurasia. The obtained data are compared with historical events. The results show that the most ancient carriers of the HLA-A1/B17 haplotype are Latvians, and the HLA-A1/B8 haplotype are the Turks. The distribution of the HLA-A1/B17 haplotype in populations is consistent with the migration patterns of Indo-European tribes. This is not observed for HLA-A1/B8; therefore, it has been suggested that the majority of Indo-European tribes did not have this haplotype.

A definition of allele frequencies is proposed by directly counting the number of haplotypes by alleles without using the Bernstein formula.

Keywords: Inlo-Europeans, HLA system, haplotype, population, founder effect.

Since the 70-s of the last century, antigens of the HLA system have been widely used for genetic characterization of populations along with other polymorphic systems. On the basis of allele frequencies, similarities or differences between individual populations were identified, and phylogenetic trees were constructed. At the end of the 20th century, a new approach to the study of population genetics appeared, called genetic archeology. The new approach pays great attention to the study of haplotypes, since it can provide more specific information about some population events.

For the new approach, the HLA system with highly polymorphic and closely linked loci is a very convenient tool for studying the genetic history of populations. From the literature data on the frequencies of alleles and haplotypes of the HLA system from different populations, one can determine the critical moments in their history, the age of expansion of those or other haplotypes, and associate them with a specific historical event.

According to V.V. Fefelova [23] L. Degos and J. Dausset believed that the *HLA-A1* and *HLA-B8* genes, also HLA-A1/B8 haplotype are Indo-European, since they appeared in Europe together with Indo-European tribes. At the time, Indo-Europeans in Siberia distributed the haplotype HLA-A1/B17. Therefore, this paper discusses the distribution of haplotypes HLA-A1/B17 and HLA-A1/B8 over the territory Eurasia.

To calculate the age of the haplotype in population, the formula according to [3] is used:

$S_{1/2} = 1 - p^{1/n}$,

where S is the genetic distance between the loci under study, p is the level stability (the proportion of chromosomes

GURYEV Innokenty Pavlovich - Candidate of Agricultural Sciences, gourievip@mail.ru

that preserve the founder chromosome), n is the number of generations between the founder chromosome and modern chromosomes.

The genetic distance (S) between the HLA-A and HLA-B loci is 0,8 cM. To determine the level stability (p) of the haplotype under consideration, one should first find out its initial (maximum) equal to the square root of its theoretically alive frequency, that is $h_1 = (h_A h_B)^{1/2}$, where h_A is the allele frequency, component of the haplotype from locus A, h_B is the frequency of allele, component of the haplotype from locus B. The value of h_1 can also be calculated using the linkage disequilibrium value of the haplotype *D* as follows: $h_1 = (h_2 - D)^{1/2}$, where h_2 is modern, that is, the observed frequency of the haplotype, D is the delta value or magnitude of the linkage disequilibrium. The level of stability (p) will be equal to the fraction of the modern, that is, the observed frequency of the haplotype h_2 from its initial frequency h_1. The ages of the studied haplotypes calculated in this way in a number of populations are shown in Table 1.

As can be seen Table 1, of the population examined here, the first haplotype HLA-A1/B17 began to split from the ancestors of Latvians about 9200 years ago and from them fell to the ancestors of Russians and Ukrainians and further spread to other peoples. The haplotype HLA-A1/B8 first appeared among the ancestors of the Turks 7846 years ago and spread exclusively throughout Europeans. The Mongoloids and Pakistanis do not have this haplotype, and Latvians began to multiply only 40 generation ago. Buryats and Sherpas have no HLA-B8 allele.

According to current calculation, the haplotype HLA-A1/B8 in Latvians began to multiple about 1000 years ago. In the history it is just noted that at the end of the first millennium AD as a result of the wars between the stronger western and eastern neighbors of the Latvians, very little remained, and their number began to increase after partial assimilation by the Belarusians and the Russians.

At the end of the I millennium AD major changes took place in the life of the ancient Latvian tribes: feudalism, a new socio-economic formation, began to take shape, while the territory of Latvia became the crossroads of trade routes. Russian merchants walked along the Daugava up to its lower reaches and by land from Pskov and Novgorod. Consequently, it is quite legitimate to assume that the impetus for an increase in numbers after a strong decline was their acquisition of the HLA-A1 / B8 haplotype from Russian merchants as a result of the development of trade.

HLA antigens in Turks were studied by two group of authors. Albert et al. [22] investigated 162 Turkish workers and students working in Germany, and as a control group – 442 Germans. The group of Turks was from different regions of Turkey, most of them were from rural areas. The persons included in study of A. Svejgaard were also from different places in Turkey, but from urban areas. In total there were 119 samples, of which 117 were not relatives.

At first glance, the results of the two groups of authors seemed to differ, but due to the small samples analyzed, these differences turned out to be unreliable. According Albert et al. HLA-A1/B17 haplotype is estimated to be 4020±870 years old, and according to A.Svejgaard et al. 3600±900; HLA-A1/B8 age – like 7800±1900 and 5870±1400 years ago, respectively.

The splitting of the HLA-A1/B17 haplotype in the ancestors of Belorusians, Komi, Germans, Pakistanis and Turks coincides with the movements of the first nomads of Europe – Indo-European tribes in III millennium BC. Iranian tribes went to Iran, Afghanistan, Indo-Arians went to India, the Hittites invaded Asia Minor, and the Celts moved to Western Europe [4].

The arrival of theHLA-A1/B8 haplotype in ancestors of Germans in the VII century AD due to the seizure of land by the Slavs east of Elbe with the partial assimilation of German population. This was facilitated by the great migration of peoples. This is the name of the combination of ethnic movements in Europe in the IV – VII centuries, caused mainly by the general cooling of the climate. People from areas with continental climate rushed to areas with a milder climate. Wars, frequent floods, crop failures, famine epidemics greatly reduced the population of Western Europe in VI, VII centuries.

The studied I.G. Udina and G.S. Rautian three Komi groups here are combined into one population. As a result, the Komi haplotype ages turned out to be very close with the corresponding haplotype age in Belorusians. This suggest that the Komi and Belorusians have common ancestors 3-4 thousand years ago.

According to historical data, the first Indo-European tribes invaded the territory of modern Pakistan in the late II and early I Millennium BC, therefore the studied population is Caucasian. Therefore B.G. Solheim et al. [20] were surprised by the absence of haplotype HLA-A1/B8 in Caucasian population and highest frequency of non-Caucasian haplotype HLA-A10/B8 with a very high D-value.

Table 1

Age of haplotypes HLA-A1/B17 и HLA-A1/B8 in different populations of Eurasia

Population	A1/B17		A1/B8		A source
	n	years ago	n	years ago	
Latvians	368	9196	40	995	[14]
Russians (Moscow)	341	8525	78	1950	[15]
Russians (Nizhny Novgorod)	247	6187	78	1950	[10]
Ukrains (southeast)	283	7064	206	5140	[9]
Germans (Munich)	185	4625	54	1350	[22]
Belorusians (Minsk)	174	4350	117	2933	[5]
Komi	173	4325	114	2854	[16]
Turks a)	161	4020	314	7820	[22]
b)	144	3600	235	5870	[18]
Buryats	156	3900	no B8 allele		[23]. [11]
Spanish	147	3675	-	-	[23]
Tofs	129	3225	-	-	[23]
Turkмen	128	3200	-	-	[23]
French People	126	3150	89	2215	[13]
Pakistanis	108	2696	no A1/B8		[20]
Ashkenazi Jews	106	2650	-	-	[23]. [19]
Sherpa	104	2606	no B8 allele		[21]
Indiaan Hindu	82	2050	-	-	[23]
Yakuts а)	63	1572	no A1/B8		[12]
б)	59	1489	no A1/B8		[23]
Basque	40	1000	-	-	[23]
Khanty	34	850	no A1/B8		[7]

Calculation from the data of B.G. Solheim et al. [20] showed that with the invasion of the Indo-Europeans in Pakistan, the haplotypes HLA-A1/B5 (since 980 BC) and HLA-A1B17 (since 724 BC) spread, and haplotype began to multiply later, since 312 BC. At the time, Pakistan was ruled by Persian Sassanid dynasty, which ruled from Asia Minor to Central Asia. At the end of III, beginning of the IV century a number of regions in East dis appeared from the Empire. These territories were conquered during the reign of Shapur II in 309-372 BC. Therefore, due to coincidence of time, Shapur II is supposed to be founder in Pakistan of the chromosome with the haplotype HLA-A10/B8.

From the data of Table 1 it is seen that the first Indo – European influence of the Siberian peoples were the Buryats - at the beginning of the II Millennium BC. Probably the ancestors of the Buryats gained haplotype HLA-A1/B17 with penetrated into Western Mongolia Indo-Europeans who inhabited this region in D. E. Eremeev [4] at the turn of III-II Millennium BC, the ancestors of Turkmens Tofs and this haplotype came seven centuries after drilled.

The emergence of the haplotype HLA-A1 / B17 in Western Europe – 3675 years ago in Spain and 3150 years ago in France, in all probability, due to the Celts. They caused a great genetic change in Spain – with their conquest, the men before them in the Iberian Peninsula completely disappeared from the gene pool, as can be seen from the Y-chromosome ["New Scientist"].

The Celts were called Gauls by the Romans. Apparently, they gave the French the haplotype HLA-A1/B8 – 236 BC during the first Millennium BC the Greeks, Romans and Carthaginians had established colonies on the Mediterranean coast and coastal Islands. The Roman Empire captured the southern part of Gaul and turned it into a province called Norbonne Gaul.at the end of the II century BC.

The population of Ashkenazi Jews passed through the "bottleneck" of a small number 106 generations ago, after which the haplotype HLA-A1/B17 began to multiply. At this time, the Kingdom of Israel was greatly weakened by the division into two kingdoms – Jewish and Israeli, and by rivalry between them. This was not slow to take advantage of the neighbors.

First, the Egyptian Pharaoh Sheshonk II raided Judea, took Jerusalim and robbed many other cities of the country. In 722 BC, the capital of the Northern Kingdom of Israel – Samaria-was defeated by the warriors of Assyria, and its population was resettled by the Assyrians in media and there was lost among the surrounding peoples. In 586 BC the Babylonians conquered the Kingdom of Judah, destroyed the temple of Jerusalem, and took the color of its population to Babylon (the Babylonian captivity). 70 years later, due to the generous Cyrus of Persia, who broke the power of Babylon, the Jews were able to return to their land and build a new Temple in Jerusalem, which helped to restore the number of Jews.

In 1972, the Sherpas had a population of approximately 13,000 living in solu Khumbu in the Eastern Nepal region. Sherpas come from a small group of families who, according to historical documents, came from the city of Salmo Ganges in the Eastern Tibetan province of Han and who migrated West to settle in the high valleys near Everest. This migration occurred around 1530 A.D. the Sherpas ' Single families established so-called tribal villages where only members of the clan's family, not foreigners, are allowed to live. Clans of Sherpas was established in strictly patrilineal fashion, which in the genealogies record the names of only through the male line. Sherpas marry only members of other Sherpas clans, but do not mix with other populations. The rule of exogamy is very strictly enforced. Therefore, inbreeding does not occur in the Sherpa population [21]. As can be seen from table1, Caucasian haplotype HLA-A1/B17 introduced Sherpa 104 generations ago in 624 BC, that is, in the Eastern Tibetan.

The expansion of the haplotype HLA-A1 / B17 in Hindus (2050 years ago) historically coincides with the formation of the Indo-Saka state, which began with king Maues. According to numismatic data, beginning his rule applies no later than the middle of the I century BC. After Maues there were five kings in this dynasty [2].

Previously it was published that the Yakuts have mainly Mongoloid antigen frequencies of the HLA system, and the Indo-European haplotype HLA-A1/B17 began to split them 70 generations ago. This result was obtained from the work of V. V. Fefelova [23] by calculating the frequency of genes from the frequency of antigens according to the formula $h = 1 - \sqrt{1 - f}$. But in the Table 3 in Fefelova there is no blank graph and the sum of haplotype frequencies by alleles. Because of this, it is impossible to understand whether the number of chromosomes corresponds to the number of people in alleles. The article shows that the antigen A1 was found in 97 people and B17-in 96, and the sum of chromosomes with such alleles turned out only 92. It is clear that 5 people have haplotype A1/Bx and 4 people – Ax / B17. In the same way, it can be understood that 12 people are carriers of the haplotype Ax/B27 (Table 2)

Layout by haplotypes shows that the actual frequency of alleles in the work of V. V. Fefelova other than that specified in article, for example, the frequency of A1 is 01414, not 0,1531, frequency B17 – 0,1399, not 0,1514. With the correction of data, the age of the haplotype HLA-A1/B17 in Yakuts changes from 70 generations to 59. From this we can conclude that in such works a more accurate result will come out when the frequencies of alleles and haplotypes will be derived by direct counting after the layout of haplotypes in the lattice, without the use of Bernstein's formula $h = 1 - \sqrt{1 - f}$.

In the paper "About the Yakuts origin…" (Genetics, 2004), we hypothesized that the haplotype HLA-A1/B17 fell to the Yakuts, as well as to the Indians, from the Saks. You can still add the hypothesis that the introduction of this haplotype with the Huns. When comparing the English language belonging to the German group of languages and the Yakut language belonging to the Turkic group, the matches of the words of the compared languages in sound and meaning were revealed. Therefore, linguists express the ancient historical connection of the Huns (Turkic-speaking tribes) with the Germanic tribes. It is known that the Huns in the 70s of the IV century, subordinated a number of Germanic tribes. Among turkologists there is an opinion that the direct descendants of the Hun substrate of those times are modern Yakuts, as part of the Huns migrated to the East, to Central Asia and further [17].

Basques – a people that lives in the mountains and the Atlantic ocean between Spain and France and speaks in cryptic language eskuara. The strange thing is that the Indo-European haplotype HLA-A1/B17 was introduced to the Spaniards 3675 years ago, the French 3150 years ago, and the Basques only 1000 years ago. Indeed, in history it is noted that the Basques did not submit to any invader and kept their language and traditions, although they were pushed to the mountains and clamped to the ocean. According to the calculations of haplotype HLA-A1/B17 got to the Basque population in the period of the Reconquista. So called the process of winning the Iberian Peninsula from the yoke of Mauritania, which lasted from 718 to 1492.

In 905-925 Basque king Sancho Garc-

Table 2

Distribution of haplotypes in Yakuts (n = 343)

HLA		A1	A2	A3	A9	A10	A11	Aw19	A28	Ax	Total
	N	97	183	35	186	24	19	7	1		
B5	*37*	0	16	3	7	2	1	1	0	7	37
B7	*16*	1	10	3	4	0	0	0	0	0	18
B8	*6*	0	2	1	2	4	0	1	0	0	10
B12	*31*	4	11	11	6	0	0	0	0	0	32
B13	*21*	6	5	0	15	0	2	0	0	0	28
B15	*126*	2	59	9	37	3	9	5	1	1	126
B16	*2*	1	0	0	2	0	0	0	0	0	3
B17	*96*	60	17	1	10	2	0	1	1	4	96
Bw22	*2*	0	0	0	1	0	1	0	0	0	2
B27	*59*	3	7	2	30	1	4	0	0	12	59
B35	*53*	7	23	4	25	3	0	0	0	0	62
B40	*139*	8	59	2	67	11	5	2	0	0	154
Bx		5	0	0	0	0	0	0	0	54	59
Total		97	209	36	206	26	22	10	2	78	686

Note: the number of samples is written in italics, otherwise the number of haplotypes.

es strengthens the Kingdom of Pamplona and proclaims the Kingdom of Navarra. It was one of the outposts of the Reconquista. Under Sancho III the Great (970-1035) the Kingdom expanded the borders of their possessions in the South and distributed the authority over all of Christian Spain. At this point, the Basque haplotype HLA-A1/B17 appeared. Therefore, Sancho III the Great can be considered to have spread in the Basque studied haplotype from Spanish Christians.

V.P. Alekseev points out that the resettlement of Indo-Europeans began in the south-east of Europe rushing west, they occupied all of Europe as far as the Atlantic. Part of the Indo-European tribes that spread to the north and east did not go further than the Ural Mountains. In this regard, the age of the HLT-A1 / B17 in Khanty is only 850 years old, showing the acquisition of the haplotype in the XII century.

Since the turn of the X-XI centuries, the role of fur hunting, acquiring commercial value, has been growing. In the X-XIII centuries, Komi-Zyryan and Russian Novgorod merchants, "industrial people" (fur hunters) penetrated to the north of the Urals and Western Siberia. In this regard, it is assumed the appearance of the European haplotype HLA-A1 / B17 among the Khanty from Russian or Komi-Zyrian traders.

Perhaps, the ancestors of the Russians were Indo-Europeans or faced Indo-Europeans in the 7th millennium BC in the steppes of the Black Sea or Caspian region. They could come on horseback from the Urals, as there at that time the horse was domesticated.

The most ancient remains of a domestic horse found in the southern Urals in the Parking lots of Mullino and Davlekanovo. They are dated by C-14 by the turn of VII-VI millennia BC [6]. This is also consistent with the opinion of most scientists who consider the black sea and Caspian steppes to be the probable ancestral home of Indo-Europeans. Then, at the beginning of the VI Millennium BC Indo-Europeans could conquer Eastern Anatolia.

Haplotype HLA-A1/B17 spread to all populations conquered by Indo-European tribes, and the time of its appearance coincides with historical events, but the appearance of haplotype HLA – A1/B8 - not quite often. The fact that the representatives of the Indo – Aryan people-Pakistanis this haplotype is absent, and migrated to Western Europe Celts spread there only haplotype HLA-A1/B17, indicates that neither the Arians nor the Celts haplotype HLA-A1/B8 was not.

Probably it arose by mutation only arrived in Asia Minor and the Hittites, and from them came the ancestors of the Ukrainians. The rest of the Europeans this haplotype spread much later. Probably, the frequency of HLA-B8 haplotype and the HLA-A1/B8 Europeans increased, as suggested by V. Bodmer, after the pandemics of plague, smallpox and cholera. It was later found that carriers of haplotype HLA-A1/B8/DR3 were highly resistant to infections regardless of the nature of their pathogens [8]. If this is the case, it is not the founder's effect, but the natural selection that changed the immunogenetic profile of Europeans in antiquity, the Middle Ages and the Renaissance as a result of epidemics.

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CLINICAL CASE

A. A Shevchenko, E. A Kashkarov, N. G Zhila., A.V Koshevoy

CLINICAL CASE OF SUCCESSFUL APPLICATION OF REOSTEOSYNTHESIS STERNUM IN CHRONIC POSTOPERATIVE STERNOMEDIASTINITIS

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The authors described the clinical observation of postoperative sternomediastinitis. The feasibility of a two-stage surgical treatment of this pathology was noted: the first stage is the removal of ligatures and necrectomy of the sternum, the second is the resection of the sternum with plastic replacement of the wound defect. At the integrity of the sternum, the authors propose to perform surgical intervention, including the preservation of bone tissue, sternal rheosteosynthesis.

Keywords: osteomyelitis of the sternum, sternomediastinitis.

Postoperative sternal wound infections is a severe threatening complication of open cardiac surgery and it is associated with high mortality [2, 4]. Clinical experience of postoperative sternal wound infections treatment [1, 3, 5, 6] indicates the need for two-stage treatment of this pathology, due to the severe general condition of patients in the onset of the disease, the severity of concomitant chronic pathology and the inability to perform wound plastic operation in purulent necrotic infection conditions.

According to the accepted technique of treatment in the Regional Clinical Hospital №1 in Khabarovsk [5], the first stage is the wound surgical treatment, including the removal of foreign bodies, necrectomy of infected bone fragments of the sternum. Due to the inflammatory nature of the wound, it is not sutured and open treatment is carried out by bandaging. As the wound is cleaned, which is controlled macroscopically and microbiologically, the second stage is the extensive resection of the sternum with plastic replacement of the chest wall wound defect. However, it should be noted that it does not always achieve a positive result in the form of primary healing. In this regard, in our view, this clinical case of the reosteosynthesis execution in the process of two-stage treatment of the patient with postoperative sternal wound infections with a positive outcome would be interesting to experts.

18.04.18 Patient K. aged 70, first entered the Thoracic Department of the Regional Clinical Hospital №1 in Khabarovsk. At the time of admission, he complained of pain in the lower third of the sternum, the presence of fistulas in the middle third of the scar with purulent discharge. During examination: the chest in the region of the median line had the sternotomy immature scar in the lower third of which there was a fistula sized 0.2

SHEVCHENKO Alexander Alexandrovich, candidate of medical Sciences, associate Professor of the Department of Surgery FESMU, Far Eastern State Medical University, 680000, 35 Muravyov-Amursky St, phone 8-914-770-34-77, e-mail: aleshev2@yandex.ru; **KASHKAROV Evgeniy Alexandrovich**, the head of the department of Thoracic Surgery Regional Clinical Hospital No.1, 680000, 9 Krasnodarskaya St., e-mail: kashkarovea@mail.ru; **ZHILA Nikolai Grigorievich**, doctor of medical Sciences, Professor of department of surgical diseases of childhood Saint Petersburg state pediatric medical University, 194100, Saint Petersburg, 2 Litovskaya St, e-mail: nzhila@list.ru; **KOSHEVOY Alexander Vladimirovich**, a thoracic surgeon of the department of Thoracic Surgery Regional Clinical Hospital No. 1680000, 9 Krasnodarskaya St.