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Morbidity, mortality and lethality from acute myocardial infarction in Yakutsk in 25-64 age group (the WHO program « Register of acute myocardial infarction»)

Summary

The indices of morbidity, mortality and lethality from acute myocardial infarction in population of Yakutsk in the age group of 25 – 64 years in dependence of gender and national identity in the period 2004-2006 are investigated.

It is revealed that morbidity, mortality and lethality from acute myocardial infarction with ageing become higher, males suffer this disease significantly more often than females ($p < 0,001$). Morbidity and mortality from MI are significantly higher in the non-indigenous males than in the indigenous ones throughout all the period of investigation. In the females of young age group there are no significant distinctions in the MI morbidity, in the senior age groups the tendency to morbidity increasing among non-indigenous women is noted.

Keywords: myocardial infarction, morbidity, mortality, lethality, age.

Preamble

The myocardial infarction is a disease that may result in ultimate recovery without any medical aid, and vice versa, may end with the patient's death in spite of all the medical efforts. However, there is a great amount of sick people between these extremes whose lives depends to a large extent on the well-timed medical intervention and on the physician's knowledge, competence and potential. According the American Association of Heart data approximately 1,5 million people have MI annually. Moreover, the economic consequences connected with MI are quite serious. According the data published in 1996 the damage caused by IHD is more than \$60 billions p.a., and it being known that about the half of this sum is due to AMI. The medical treatment annual cost of the patient who has had MI is \$12 000.[2,12,16,18,20]. In Russia 36% of men and 40,5% of women die from the Cardiovascular Disease at the age of 25-64. The comparison of the mortality rate in this age group in different countries of Europe shows that it is higher in 2,5 for the Russian men and women than that of Europe on the average and almost in 3-4 times higher than that of our neighbour Finland [3,5,6,7,8,9,10,11,12,14,15,17,19]. The clinical and

epidemiological investigations made on the Cardiovascular Diseases in the Republic of Sakha (Yakutia) also indicate the increase of the diseases of the circulatory system in recent years.

Research objective: the investigation of the morbidity, the death and the lethality rates from the acute myocardial infarction among the residents of the town of Yakutsk in the 25 – 64 age cohort with adjustment for age, sex, and national identity on the base of the WHO standard programme “Acute myocardial infarction register”.

Subject and methods of investigation: The investigation according to the WHO programme “Acute myocardial infarction register” in the period from 01.01.2004 till 31.12.2006 among the population of Yakutsk in the 25 – 64 age cohort. All the cases of MI incidence, event rates and sudden cardiac deaths have been included in the investigation. For the reason of the clinical presentations, the series of the electrocardiographic findings, the content of blood serum enzymes, and also the autopsy results, if they were, the choice of the diagnostic category “definite” MI (DMI) or “probable” MI (PMI) was made. On the basis of the criteria aforesaid the following was detected: 799 cases of MI incidence (men 74,7%, women 25,3%), it is 151 (18,9%) for the native population and it is 648 (81,1%) for the nonindigenous people, and 271 case fatality, it is 45 (16,6%) for the native population and it is 226 (83,4%) for the nonindigenous people. The statistical data manipulation is being made with the usage of the criteria in the standard statistical software package «SAS», «SPSS 9». The differences of rates on the significance level were considered to be reliable ($p < 0,05$).

Results and discussion of the investigation:

The MI incidence study (chart 1) all over the years of investigation among the residents of Yakutsk has ascertained that the MI incidence is reliably significant for the indigenous women in the 45 – 54 age cohort in 2006 in comparison of that in 2005 0,9 and 0,1 per 1 000 respectively ($p < 0,05$). In whole the MI incidence in the 25-64 age cohort of both sexes is on one and the same level over a period of investigation irrespective of the national identity in 2004-2006 1,9;2,2;2,1, both for the native population 0,9;0,9;0,9 and for the non-indigenous people 2,7;3,2;3 per 1 000 respectively.

The age-adjusted MI incidence study has brought to light that the case of MI is reliably increasing with age and considerably in the 55 - 64 age cohort irrespective of sex and the ethnical identity ($p < 0,001$). The reliably significant increase of MI incidence for the non-indigenous men was ascertained in the 35 – 44 age cohort ($p < 0,001$), and for the native men in the age of 45 – 54 years old ($p < 0,05$). The MI incidence increase among the women was found

in the 45 – 54 age cohort regardless of the national identity both for the native women ($p < 0,05$), and for the non-indigenous women ($p < 0,001$).

The MI incidence analyses made among the ethnical group have revealed the reliably significant predominance of the non-indigenous men over the native men during the years of the investigation between 2004 and 2006 4,3;5,0;4,7 and 1,7;1,7;1,4 per 1 000 respectively ($p < 0,001$). The reliably significant difference in MI incidence was not found among the women of a younger age cohort. The tendency of predominance of the non-indigenous women over the native women could be seen in the older age cohorts.

The sex-adjusted MI incidence analysis has exposed the men's reliably significant predominance over the women over the time of investigation in 2004-2006 3,2; 3,6; 3,4 and 0,8; 1,1; 1,0 per 1 000 respectively ($p < 0,0001$).

The MI case fatality rate study in the 25-64 age cohort of the town of Yakutsk (chart 2) has elicited that the MI case fatality rate of both sexes remains approximately stable over a period of investigation regardless of sex and ethnical identity in 2004-2006 64,6;74,4;72, both for the native population 19,7;31;30,3, and for the non-indigenous residents 99;109;103,4 per 100 000 respectively. Among the men 119;119,4;134, native men 33,2;50,5;61,7 and non-indigenous men 179;170,4;183,6 and among the women 18,6;36,5;20, native women 9,5;16,1;6,3 and non-indigenous women 26,2;53,3;31,1 per 100 000 respectively.

The age-based MI case fatality rate analyses have exposed the reliably significant increase of MI case fatality rate with age in the 55 - 64 age cohort irrespective of sex and ethnical identity both in men ($p < 0,001$), and in women ($p < 0,05$) in 2005.

The ethnicity-based MI case fatality rate analysis have revealed the reliably significant predominance of the non-indigenous patients over the native patients regardless of sex, both in men during the years of investigation between 2004 and 2006 179;170,4;183,6 and 33,2;50,5;61,7 per 100 000 respectively ($p < 0,001$), and in women 53,3 and 16,1 per 100 000 respectively ($p < 0,05$) in 2005.

The MI lethality rates of both sexes in the town of Yakutsk (chart 3) were 33,5;33,2;34,7 in 2004-2006, among the native patients 21,2;33,2;35,4 and among the non-indigenous patients 36,7;33,2;34,5% respectively. The MI lethality rates among the men were 37,2;32,8;39,7 in 2004-2006, for the native men 19,5;30;44,1 and 42,2;33,5;38,8 for the non-indigenous men, among the women 21,7;34;20,3, for the native women 27,3;45,5;14,3 and 20,4;33,3;21,8% for the non-indigenous women respectively.

The MI lethality rates analyses per years of investigation among the native men in 45 – 54 age cohort have revealed the reliably significant increase of the MI lethality rates in 2006 in

comparison of that in 2004 55,6 and 13,3% respectively ($p<0,05$). Among the non-indigenous men in the 45 - 54 age cohort the reliably significant decrease of the MI lethality rates has been revealed in 2005 in comparison of that in 2004 16,4 and 40,3% respectively ($p<0,01$) and the reliably significant increase in 2006 in comparison of that in 2005 33,3 and 16,7% respectively ($p<0,05$). The MI lethality rates analyses per age cohorts over a period of investigation have elicited the reliably significant increase of the MI lethality rates with age and its peak value is in 55 - 64 age cohort irrespective of sex and ethnical identity, both for the nonindigenous population of both sexes in 2005-2006 ($p<0,05$, $p<0,01$), and for the native population of both sexes in 2005 ($p<0,05$).

The ethnicity-adjusted MI lethality rates analyses have brought to light that MI lethality rate is significantly higher among the non-indigenous men than that of among the native men in 2004 42,2 and 19,5% respectively ($p<0,01$). In women the MI lethality rate shows one and the same level both for the native and for the non-indigenous.

In whole the reliably significant decrease of the MI lethality rates of both sexes has been ascertained in the 35 – 44 age cohort among the non-indigenous residents in 2006 in comparison of that in 24,0 and 52,6% ($p<0,05$). The reliably significant increase of MI lethality rate has been ascertained in the 45 – 54 age cohort in 2005 in comparison of that in 2004 among the native residents 43,7 and 11,1% respectively ($p<0,05$) and the reliably significant decrease of the MI lethality rates has been ascertained in 2005 among the non-indigenous residents in comparison of that in 2004 19,8 and 35,4% ($p<0,05$).

Conclusion:

According to the “AMIR” data the MI incidence rates among the inhabitants of the town of Yakutsk for men of 25 – 64 age cohort are 3,2 – 3,6 per 1 000 inhabitants and are characterized as a mean value in comparison with those of in Russia and in Europe. The MI incidence rate in women of Yakutsk is high and is 0,8 – 1,1 per 1 000 inhabitants, it is higher in Moscow only. The MI morbidity has been significantly higher among the non-indigenous population over a period of investigation in 2004-2006 2,7;3,2;3 and 0,9;0,9;0,9 irrespective of sex both in men 4,3;5,4;7 and 1,7;1,7;1,4, and in women 1,3;1,7;1,4 and 0,3;0,35;0,4 per 1 000 respectively ($p<0,001$). According to the MI incidence registers both of other cities of Russia [1,3,19] and of our findings the case of MI morbidity is significantly increasing with age and especially in 55 – 64 age cohort irrespective of national identity ($p<0,001$). The increase of MI incidence rate has been detected in non-indigenous men in 35 – 44 age cohort, and in native men in 45 – 54. The significant increase of MI incidence rate in women has been detected in 45 – 54 age cohort of the non-indigenous women, and in native women of 55 – 64 age cohort, i.e. the native women

were ten years behind. The findings were made that the men had MI incidence significantly more often than women during the years of investigation in 2004-2006 3,2;3,6;3,4 and 0,8;1,1;1 per 1 000 respectively ($p<0,0001$).

1. The MI case fatality rates among the residents of the town of Yakutsk in 25 - 64 age cohort are 119 – 134 in men and 18,6 – 36,5 in women per 100 000 inhabitants and are characterized as high in comparison with the similar investigations made in other cities of Russia and Europe, higher than in the city of Novosibirsk and in women it is higher in Moscow. The age-standardized MI case fatality analysis has revealed the significant increase of MI mortality with age and especially in 55 - 64 age cohort irrespective of sex and ethnical identity both in men ($p<0,001$), and in women ($p<0,05$) in 2005. The ethnicity-standardized MI case fatality analysis has revealed the reliably significant predominance of the non-indigenous population over the native residents irrespective of the sex both in men 179;170,4;183,6 and 33,2;50,5;61,7 per 100 000 respectively ($p<0,001$) in 2004-2006, and in women 53,3 and 16,1 per 100 000, ($p<0,05$) in 2005. The sex-standardized MI case fatality analysis has revealed the fact that the men die significantly more often from the MI than women over a period of investigation irrespective of the national identity both in native patients 33,2;50,5;61,7 and 9,5;16,1;6,3, and in non-indigenous patients 179;170,4;183,6 and 26,2;53,3;31,1 per 100 000 respectively ($p<0,0001$) in 2004-2006.
2. The MI lethality rate in the town of Yakutsk in 25 – 64 age cohort of both sexes remained stable on one and the same level over a period of investigation irrespective of the national identity and was 33,5;33,2;34,7, among the native population it was 21,2;33,3;35,4 and among the non-indigenous population it was 36,7;33,2;34,5% respectively in 2004-2006. The reliably significant decrease of the MI lethality rates have been ascertained in 35 – 44 age cohort in non-indigenous residents of both sexes in 2006 in comparison of that in 2004 24,0 and 52,6% respectively ($p<0,05$). Also in 45 – 54 age cohort in 2005 in comparison of that in 2004 19, 8 and 35, 4% ($p<0,05$). The reliably significant MI lethality rates increase have been revealed for the native inhabitants in 45 – 54 age cohort in 2005 in comparison of that in 2004 43,7 and 11,1% respectively ($p<0,05$).

References:

1. Банщиков, Г. Т. Регистр инфаркта миокарда и профилактика внезапной смерти с помощью лидокаина : автореф. дисс. ... канд. мед. наук : 14.00.06 / Банщиков Геннадий Трофимович ; Всесоюзный кардиологический

- научный центр АМН СССР. – М.: Ин-т кардиологии им. А. Л. Мясникова, 1982. – Библиогр. : С. 16.
2. Борьба с основными болезнями в Европе – актуальные проблемы и пути их решения. Факты и цифры ЕРБ ВОЗ/03/06 Копенгаген, 2006. - С. 4.
 3. Гафаров, В. В. Эпидемиология и профилактика хронических неинфекционных заболеваний в течение 2-х десятилетий и в период социально – экономического кризиса в России / В. В. Гафаров, В. А. Пак, И. В. Гагулин, А. В. Гафарова // Новосибирск. 2000. - с. 284.
 4. Государственный доклад о состоянии здоровья населения г. Якутска в 2003г. / статистические материалы // ЯМЖ №2(10). – с. 41-53.
 5. Здоровье ССС / Под инициативой по исследованиям ССЗ в развитых странах. Расширенные версии из серии «быстрым взглядом» // май. 2004.
 6. Зурабов, М. Ю. Государственный доклад о состоянии здоровья населения Российской Федерации в 2005 году / М. Ю. Зурабов, М. И. Давыдов // Здравоохранение Российской Федерации.- 2007. №5.– с. 8-15.
 7. Иванкова, Л. В. Эволюция смертности / Л. В. Иванкова // Москва. 2005. – с. 29.
 8. Иванов, К. И. Сердечно – сосудистая патология в Якутии /К. И. Иванов // Российский кардиологический журнал. – 2006. №1 (57). – с. 52- 57.
 9. Оганов, Р. Г. Демографическая ситуация и сердечно - сосудистые заболевания в России: пути решения проблем / Р. Г. Оганов, Г. Я. Масленникова // Кардиоваскулярная терапия и профилактика. 2007. №8.
 10. Погосова, Г. В. Улучшение приверженности к лечению АГ и ИБС – ключевое условие снижения СС смертности / Г. В. Погосова, И. Е. Колтунов, А. Н. Рославцева // Кардиология. 2007. - №3. – с. 79 - 83.
 11. Семенова В. Г. Обратный эпидемиологический переход России / В. Г. Семенова // Москва. ЦНИИОиИЗ. 2005. – с. 235.
 12. Стародубов, В. И. Здоровье населения России в социальном контексте 90-х годов: Проблемы и перспективы / В. И. Стародубов, Ю. В. Михайлова, А. Е. Иванова // Москва. Медицина. 2003. – с. 286-288.
 13. Сыркин, А. Л. Инфаркт миокарда / А. Л. Сыркин // Москва. МИА. 2003. – с. 466.
 14. Чазов, Е. И. Инфаркт миокарда – прошлое, настоящее и некоторые проблемы будущего / Е. И. Чазов // Сердце, 2002. - №1. – 2002. – с. 6-8.

15. Щепин, В. О. Современное состояние медико - демографических процессов в стране / В. О. Щепин // *Здравоохранение России XX век*. под редакцией Щевченко Ю. Л., Покровского В. И. Москва. Геотар - Мед. 2001г. – с. 13-39.
16. [Boersma, E.](#) Acute myocardial infarction / E. [Boersma](#), N. [Mercado](#), D. [Poldermans](#), M. [Gardien](#), J. [Vos](#), M. L. [Simoons](#) // [Lancet](#). 2003 Mar 8; 361(9360):847-58.
17. [EUROCISS Working Group](#). Coronary and cerebrovascular population-based registers in Europe: are morbidity indicators comparable? Results from the EUROCISS Project // [Eur J Public Health](#). 2003 Sep; 13(3 Suppl):55-60.
18. [López-Candales, A.](#) Cardiovascular diseases: a review of the Hispanic perspective / A. [López-Candales](#) // [AJ Med](#). 2002;33(1-4):227-45.
19. [Mieres, J. H.](#) American Heart Association's guidelines for cardiovascular disease prevention in women / J. H. [Mieres](#) // [Heart](#). - 2006. May; 92.
20. [Pedoe, H. T.](#) Coronary heart-attacks in East London / H. T. [Pedoe](#), D. [Clayton](#), J. N. [Morris](#), W. [Brigden](#), L. [McDonald](#) // [Lancet](#). 1975 Nov 1; 2(7940):833-8.