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The analysis of trombolisis therapies application at a pre-hospital stage in Yakutsk

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The articles present the analysis of results of patients treatment from acute coronary syndrome at a pre-hospital stage has been made: the group of patients received TLT and not received was compared. Positive dynamics in group with TLT on electrocardiography attributes was found at 63 %, to clinical attributes at 84 % of the patients; in distinction from patients who did not received TLT: positive electrocardiography dynamics in 38%, clinical dynamics in 59%. Technique TLT is effective and safe and can be spent by any emergency brigade.

Key words: acute coronary syndrome, trombolysis therapy

Despite of huge efforts of scientific and practising doctors lethal outcomes from cardiovascular diseases in the Russian Federation remains high. [5] In many respects it is caused by difficulties at introduction intravascular methods of treatment of a acute coronary syndrome. Even in the capital of Russian Federation Moscow these methods are used at 5-10 % of patients. [7] In Republic of Sakha (Yakutia)-territorial dissociation of settlements and remote transport schemes do not allow to deliver the patient to an operational table in recommended time period -90 minutes from the beginning of occurrence by a symptom of acute coronary syndrome. Therefore

trombolysis therapy (TLT) for today is leading strategy. On the data presented by 2007 year, TLT it is spent in a megapolis to 13 %, in average cities in 19 %, in a countryside in 9 %. [8,9] and in a Yakutsk in 9,9 % from quantity of possible procedures TLT [1]. So little percent of TLT is caused by that procedure is carried out only by specialized emergency brigades, despite of recommendations to spend TLT to medical assistant's and linear emergency medical brigades [6]. Besides at a pre-hospital stage the ambulance doctor for diagnostics of acute coronary syndrome uses the poor analysis, clinical and the electrocardiogram results and doesn't always apply biochemical markers a myocardium. In this connection, the TLT can be not effective . However by good organization of process and desire of organizers of public health services, doctors, medical assistants of first aid it is possible to introduce this technique, including regional hospitals and ambulance stations and to increase quantity of the lead procedures.

The purpose of research: To carry out the comparative analysis of results of treatment of patients from acute coronary syndrome at a pre-hospital stage.

Materials and methods: 327 patients are included in research from acute coronary syndrome addressed for medical aid on first aid Station of Yakutsk in 2009-2010. Depending on tactics of treatment patients are divided into 2 groups: the first group included 127 patients at whom along with standard medicamentous therapy it was spent TLT. Indications to carrying out of TLT were: rise of a segment ST an electrocardiogram on 0,1 мВ and more not less in 2 adjacent assignments, or for the first time the diagnosed blockade of the left leg of His bunch, which were accompanied by a corresponding clinical picture of acute coronary syndrome [3]. The second were 91 patients of acute coronary syndrome for whom they did not spend TLT and intravascular by the various reasons medical interventions (refusal of the patient, presence of contra-indications, absence angiography services). In compared groups the significant distinctions was not found (p = 0,09-0,777;> 0,05) (table 1).

Table 1. Initial data of the surveyed patients

parameter	1 group (n=127)	2 group (n=91)	p
age, years	56,6=7±8,2	57,1±10,3	
male	101(79,5%)	72(79,1%)	p>0,05
arterial hypertension	112(88,1%)	79(86,8%)	p>0,05
smoking	46(36,2%)	31(34,0%)	p>0,05
diabetes	11(8,7%)	8(8,8%)	p>0,05
hypercholesterolemia	50(39,4%)	37(40,7%)	p>0,05

angina pectoris	71(55,9%)	50(54,9%)	p>0,05
Symptom-needle* up to 6 hours	88(69,3%)	64(70,3%)	p>0,05
Symptom-needle* up to 12 hours	111(87,4%)	80(87,9%)	p>0,05

*-time from the beginning of an attack till the moment of medicamentous treatment by a emergency brigade of first aid.

Investigated groups were comparable. All patients according to the report received the treatment including therapy by nitrates, β-adrenoblockers, antithrombotics, analgetics. It was spent monitoring of an electrocardiogram, arterial presser, frequency of intimate reductions for patients. With the purpose of the further treatment patients have been delivered to Yakutsk State clinical Hospital . The statistical analysis was spent by means of the software package Statistica 6,0: the Fisher's criterion was aplied, distinctions was considered as significant at p <0,05.

Results:

Patients of advanced age were studied. Middle age in 1 group: 56,6=7±8,2, in the 2 group - 57,1±10,3. By analysis of electrocardiogram of localization of defeat of a myocardium in investigated group prevailed defeat anterior - septal area : In 1 group – anterior- septal -55(43,3%), posterior-inferior 46(36,2%), anterior – 9(7,1%), lateral -9(7,1%), circular-apex - 6(4,7%), posterior -2(1,6%); In 2 group - anterior - septal -45(49,5%), posterior - inferior 32(35,2%), anterior – 7(7,7%), lateral -2(2,2%), circular - apex - 4(4.4%), posterior -1(1,1%).

The data indicate that the level of ST-segment elevation in the studied groups was the most up to 5mm. AT 1 group 1-3мм −20(15,7%); 3-5мм -85(66,9%) ;5-7мм -18(14,2%); 7 and above -4 (3,2%). In 2 group : 1-3мм −12(13,2%); 3-5мм -62(68,1%) ;5-7мм -16(17,6%); 7 and above -1 (1,1%). Restoration of blood circulation was estimated on approach to or normalization of a segment ST on 90 and 180 minutes from the beginning of treatment. In 1 group: on 90 minute – decrease ST on 50 % and more at 23 (18,1%), normalization ST is at 10 (7,9%%) patients; decrease ST less than 50 % at 38(29,9%) without dynamics ST at 66(52%) patients; on 180 minute : - decrease ST on 50 % and more at 58 (45,7%) is from normalization ST at 40 (31,5%); decrease ST less than 50 % 22(17,3%); without dynamics ST at 47(37%). In 2 group : on 90 minute – decrease ST on 50 % and more at 8 (8,8%) normalization ST at 3 (3,3%) (p<0,05); decrease ST less than 50 % at -18(19,8%); without dynamics ST at - 65(71,4%)

(p<0,01); on 180 minute decrease ST on 50 % and more at 13 (14,3%)(p<0,01) is from normalization ST at 7 (7,7%)(p<0,01); y decrease ST less than 50 % at 21 (23%); without dynamics ST at 57(62,6%)(p<0,01).

The given significant distinctions show that is more restoration of blood circulation is effectively reached at use of TLT already on 90 minute and increases by 180 minute.

In the first group of patients complications as acute coronary syndrome, and TLT were observed: at 11(8,7%) patients has developed cardiac shock , at 14(11%) fibrillation ventricular , at 5(3,9%) supraventricular tachicardia, at 12(9,4%) ventricular tachicardia , at 5(3,9%) cardiogenic shock , at 6(4,7%) atrio-ventricular block, at 5(3.9%) blockade of the bundle of His, at 1(0,8%) the moderate bleeding, at 2 (1,6%) the big bleeding by criteria GUSTO . In the second group following complications of acute coronary syndrome were observed: at 19 (20,9%) patients has developed cardiac shock , fibrillation ventricular at 17 (18,7%)

Clinical dynamics was shown by decrease in intensity of a painful syndrome, from the beginning of treatment for 90 minute. Decrease in intensity of a painful syndrome in a thorax at patients with acute coronary syndrome occurred as follows: : in 1 group the beginning of treatment 16,5% fill discomfort , middle pain 25,2% and strong pain 58,3% . During 90 minuets 35 (27,6%) patients with pain cropped completely at 6 (4,7%) was severe pain at 14 (11%) and average intensity of pain at 72 (56,7 %) retained a sense of discomfort. In patients of 2 groups : the pain a strong character in 45% , they felt discomfort 22% , the average intensity of pain at 33%, 90 minutes from start of treatment is completely cropped only 12 (13,2%) , severe pain was at 21 (23%) , the pain of medium intensity 16(17,6 %) and feeling of discomfort 42(46,2 %).

At a pre-hospital stage positive dynamics on electrocardiogram attributes was observed at 63 % patients of 1 group and 38 % by patients of 2 groups (p <0,01), positive clinical dynamics at 84,3 % patients of 1 group and 59,4% 2 groups (p <0,01). Thus, with the big share of confidence it is possible to approve, that current of acute coronary syndrome at the patients who have received TLT pre-hospital more favorable.

During supervision over patients at a stationary stage for 30 day we observed the following picture of disease presented in table 2.

Table 2. Results of supervision over patients of acute coronary syndrome for 30 day

parameter	1 group (n=156)	2 group (n=171)	p
interrupted heart attack of a myocardium	5(3,9%)	2(2,2%)	-
Development Q-miocardial infarction	107(84,3%)	86(94,5%)	p<0,01
Relapse not fatal miocardial infarction	2(1,6%)	14(15,4%)	p<0,01
Incompetence circulation Killip I-II	77(60,6%)	53(58,2%)	-
Incompetence circulation Killip III-IV	26(20,5%)	22(24,2%)	-
lethality from all reasons	8(9,6%)	17(18,7%)	p<0,01
lethality from cardiac reasons	7(7,1%)	13(14,3%)	p<0,01

Development of Incompetence circulation Killip I-II (φ=0,349; p>0,05) and Incompetence circulation Killip Ш-1V(φ=0.648; p>0,05), interrupted heart attack of a myocardium (φ=0.728; p>0,05) is statistically not significant, that is development of insufficiency of blood circulation TJIT did not influence.

Not complicated clinical current of acute coronary syndrome (without lethal cases, without relapses of a heart attack of infarct myocardium, progressing of Incompetence circulation), we have noted: in 1 group at 65 (51,2%) patients , in 2 group at 18 (19,8%) patients (p<0,01)

During supervision from 218 patients for 30 day have died 25 (11,5%), from them at20 (9,2%) the reason of death was a pathology of heart, and at5(2,3%) the other reasons. The reasons of lethality are presented in table 3.

Table 3. The reasons of death at patients in investigated groups for 30 day

parameter	1 group (n=127)	2 group (n=91)	p
cardiogenic shock Killip III-IV	5(3,9%)	9(9,9%)	p<0,05
exterior broken heart	2(1,6%)	3(3,3%)	-
ventricular fibrillation		1(1,1%)	-
onkologi		2(2,2%)	-
pulmonary thromboembolism		1(1,1%)	-
bleeding	1(0,8%)	1(1,1%)	-
total	8(6,3 %)	17(18,7%)	p<0,01

Apparently from the presented data, higher lethality was observed at patients of 2 group (18,7%) in comparison with patients of 1 group (6,3%), the same tendency has been noted at the analysis of cardiac lethality reasons (1 group-7,1 %; 2 group-14,3 %) also we have received authentic distinctions in groups at cardiogenic shock, these terrible complications oceure at the patients who have received TLT at a pre-hospital stage less often.

We carried out the comparative analysis of complications at patients of 1 group with results of clinical researches GISSI-1, ISIS-2, ASSET [2,4,10,11]. At patients after carrying out TLT following kinds of complications were observed (table 4.).

Table 4. Complications after lead TLT in comparison

complications	GISSI-1 (n=5860;SK)	ISIS-2 (n=8592;SK)	ASSET (n=2512;TAP)	1 group (n=127)
big bleeding	0,3	0,5	1,4	1,6
moderate bleeding	3,7	3,5	6,3	0,8
allergic reaction	2,3	4,4	0	0
anaphylaxis	0,1	0	0	0
hypotension	3	10	HP	6,3
stroke	1,1	0,7	1,1	0
intracranial hemorrhage	HP*	0,1	0,3	0

The note. *HP - it was not registered.

The insignificant variability of data is caused by observance of standards and use of modern preparations for TLT. In general data are comparable and testify to low risks of complications, risks of operated complications do not exceed 10 %.

In the second group of patients already at a pre-hospital stage frequent complication of treatment was arrhythmia, accompanied a heavy ischemia of a myocardium or the expressed Incompetence circulation 13,2%, despite of spent treatment there were attacks of a angina pectoris at 15,4 % not fatal relapse was observed by IM and 9.9 % have died from accrueing left ventricular insufficiency or cardiogenic shock. Thus, complications from TLT are minimal, in comparison with complications of acute coronary syndrome.

For revealing factors influencing on lethality at acute coronary syndrome we carried out the analysis of clinical, tool data: a floor, age, presence of an arterial hypertension, a diabetes, localization of defeat, relapse by IM, the used methods of treatment. By results of the analysis significant distinctions between lethality and refusal from TLT (φ=3,685 %; $p < 0,01$); localization of defeat of a myocardium of a superior wall (φ=2,764 %; $p < 0,01$); that presence of an anemia (φ=2,403 %; $p < 0,01$). Authentic distinctions on number of lethal cases and cardial complications between the patients received various trombolitics (alteplasa, tenecteplasa) it is not received.

The conclusion:

For today TLT is an effective and often applied method recanalisation at acute coronary syndrome of pre-hospital stage. The complications connected with carrying out TLT do not exceed average and do not influence the forecast. Lead TLT promoted the proved reduction of complications at acute coronary syndrome and to lethality decrease . Yielded results allow to recommend persistently TLT to wide application at acute coronary syndrome at a pre-hospital stage not only specialized brigades, but also linear and medical assistant's brigades.

Conclusions:

1. At carrying out pre-hospital trombolisis at patients with acute coronary syndrome with lifting segment ST the rekanalization on the electrocardiogram criteria is more effective on the 90th minute, than at persons receiving standard medicamentous therapy.

2. At patients with acute coronary syndrome with lifting segment ST, not received TLT at the pre-hospital stage such complications as cardiogenic shock and fibrillation of ventricles that conducts to increase in the lethality in this group more often develop.

3. Carried-out TLT in the combination to standard medicamentous therapy accelerates receiving positive clinical dynamics at patients acute coronary syndrome with lifting segment ST.

4. Carried out at the TLT pre-hospital stage reduces the hospital lethality from all reasons and from cardiological the reasons in 2 times.

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