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✓ *Resume*

Objective: to study clinical and hemodynamic changes during vasopressor therapy in acute myocardial infarction complicated by cardiogenic shock. **Materials and methods:** In 2018-2020, 78 patients treated with "acute myocardial infarction complicated by cardiogenic shock" in Bukhara took part in our study. branch of the Republican Scientific Center for Emergency Medicine. To assess the effectiveness of norepinephrine and dopamine, patients were divided into 2 groups: 30 patients of group 1 were prescribed norepinephrine (norepinephrine 0.2% - 8 mg 4.0 ml) intravenously as an infusion of 3-5 $\mu\text{g} / \text{kg} / \text{min}$ for 24 hours); In 48 patients of the 2nd group, dopamine (dopamine 40 mg / ml - 4% -5.0 ml) was injected intravenously at an initial dose of 2-10 $\mu\text{g} / \text{kg} / \text{min}$ for 24 hours, starting with blood pressure (A / B) ... , ventricular systole (YQS), pulse controlled infusion.

Results: deviation of the QT interval was within the normal range ($91 \pm 15 \text{ ms}$) in 12 patients before infusion, while in the rest of the patients it was 60 cm ($48 \pm 10 \text{ ms}$). After infusion, they were $42 \pm 10 \text{ ms}$ in 18 patients and $82 \pm 18 \text{ ms}$ in 12 patients. QT length remained virtually unchanged after norepinephrine infusion, but QT interval variance decreased from $73.8 \pm 8.5 \text{ ms}$ to $65.7 \pm 5.05 \text{ ms}$.

Conclusion. In acute myocardial infarction complicated by cardiogenic shock, vasopressor therapy should be started immediately in case of relief of shock. This, in turn, prevents an increase in mortality among patients.

Key words: Cardiogenic shock, Acute heart failure, acute myocardial infarction

ОСОБЕННОСТИ ЛЕЧЕНИЯ ОСТРОЙ СЕРДЕЧНОЙ НЕДОСТАТОЧНОСТИ

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✓ *Резюме*

Цель: изучить клинико-гемодинамические изменения на фоне вазопрессорной терапии при остром инфаркте миокарда, осложненном кардиогенным шоком. **Материалы и методы:** В 2018-2020 гг. В нашем исследовании приняли участие 78 пациентов, пролеченных с «острым инфарктом миокарда, осложненным кардиогенным шоком» в Бухаре. филиал Республиканского научного центра экстренной медицины. Для оценки эффективности норадреналина и дофамина пациенты были разделены на 2 группы: 30 пациентам 1-й группы назначен норадреналин (норадреналин 0,2% - 8 мг 4,0 мл) внутривенно в виде инфузии 3-5 мкг / кг / мин в течение 24 часов.); У 48 пациентов 2-й группы дофамин (дофамин 40 мг / мл - 4% - 5,0 мл) вводили внутривенно в начальной дозе 2-10 мкг / кг / мин в течение 24 часов, начиная с артериального давления (А/В) ..., систола желудочков (YQS), инфузия с пульсом.

Результаты: у 12 пациентов до инфузии отклонение интервала QT было в пределах нормы ($91 \pm 15 \text{ ms}$), у остальных - 60 см ($48 \pm 10 \text{ ms}$). После инфузии они составили $42 \pm 10 \text{ ms}$ у 18 пациентов и $82 \pm 18 \text{ ms}$ у 12 пациентов. Длина QT практически не изменилась после инфузии норадреналина, но дисперсия интервала QT уменьшилась с $73,8 \pm 8,5 \text{ ms}$ до $65,7 \pm 5,05 \text{ ms}$.

Заключение. При остром инфаркте миокарда, осложненном кардиогенным шоком, вазопрессорную терапию следует начинать немедленно, в случае купирования шока. Это, в свою очередь, предотвращает рост смертности среди пациентов.

Ключевые слова: кардиогенный шок, острая сердечная недостаточность, острый инфаркт миокарда.

O'TKIR YURAK ETISHMOVCHILIGINI DAVOLASH TAHLILLARI

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Buxoro davlat tibbiyot instituti

✓ Rezyume

Maqsad: kardiogen shok bilan murakkablashgan o'tkir miokard infarktida vazopressor terapiyasi paytida klinik va gemodinamik o'zgarishlarni o'rganish. **Materiallar va usullar:** 2018-2020 yillarda bizning tadqiqotimizda Buxoroda "kardiogen shok bilan murakkablashgan o'tkir miokard infarkti" bilan davolangan 78 bemor ishtirok etdi. Respublika shoshilinch tibbiy yordam ilmiy markazi filiali. Norepinefrin va dofamin samaradorligini baholash uchun bemorlar 2 guruhga bo'lingan: 1-guruhdagi 30 bemorga norepinefrin (norepinefrin 0,2% - 8 mg 4,0 ml) vena ichiga 24 soat davomida 3-5 mg / kg / min infuziya shaklida buyurilgan.); 2-guruhdagi 48 bemorda dopamin (dopamin 40 mg / ml - 4% -5.0 ml) qon bosimi (A / B) dan boshlab 24 soat davomida 2-10 mg / kg / min boshlang'ich dozada vena ichiga yuborildi.) ..., qorincha sistolasi (YQS), puls bilan boshqariladigan infuziya.

Natijalar: infuzionidan oldin 12 bemorda QT oralig'ining og'ishi odatdagi diapazonda (91 ± 15 ms), qolgan bemorlarda esa 60 sm (48 ± 10 ms). Infuzionidan so'ng ular 18 bemorda 42 ± 10 ms, 12 bemorda 82 ± 18 ms. Norepinefrin bilan infuzionidan so'ng QT uzunligi deyarli o'zgarmadi, ammo QT oralig'i dispersiyasi $73,8 \pm 8,5$ msdan $65,7 \pm 5,05$ msgacha kamaydi.

Xulosa. Kardiogen shok bilan murakkablashgan o'tkir miokard infarktida shok yengillashganda darhol vazopressor terapiyasini boshlash kerak. Bu, o'z navbatida, bemorlar orasida o'limning ko'payishiga yo'l qo'ymaydi.

Kalit so'zlar: Kardiogen shok, O'tkir yurak etishmovchiligi, o'tkir miokard infarkti

Relevance

Today, despite the development of the medical field and the rapid growth of the pharmaceutical industry, one of the most serious complications of acute myocardial infarction is mortality after cardiogenic shock. Moderate acute myocardial infarction (OMI) is complicated by cardiogenic shock (CS) in 20-30% of cases [3,4].

It is known from scientific sources that the death rate from KS has reached 30-40%. This is now one of the global problems of the health care system [3].

The main objectives of treatment of such patients are to achieve the most optimal and long-term stability, ie to reduce stagnation in the small circulation, improve tissue perfusion, stop the progression of heart failure, reduce clinical symptoms, prevent heart failure, increase physical tolerance, prevent target organ complications, hospitalization aimed at reducing place-days and reducing mortality among these patients [4].

Therefore, shock treatment should focus on the choice of vasopressor, infusion therapies, and organ preservation. With this in mind, the right choice of vasopressor therapy in the treatment of shock dramatically reduces mortality [2].

Purpose: To study the clinical and hemodynamic changes in the background of vasopressor therapy in acute myocardial infarction complicated by cardiogenic shock.

Materials and methods

Our research involved 78 patients treated with a diagnosis of "acute myocardial infarction complicated by cardiogenic shock" in the Bukhara branch of the Republican Scientific Center of Emergency Medicine in 2018-2020. All patients

were prescribed additional vasopressor therapy in addition to standard therapy (anticoagulants, antiaggregants, nitrates, glucocorticosteroids, diuretics, and thrombolytics as directed).

In order to evaluate the effectiveness of norepinephrine and dopamine, patients were divided into 2 groups:

Of the 30 patients in group 1, 18 were males, mean age 72.4 ± 3.5 . Patients in this group were treated for an average of 9.8 ± 3.1 days. This group of patients was prescribed norepinephrine (Norepin 0.2% - 8 mg 4.0 ml) intravenously in a 3-5 mcg / kg / min infusion for 24 hours);

The clinical and demographic symptoms of patients in group 2 were as follows: 44 had a history of arterial hypertension (AG), 29 had a history of QD type 2, 25 had a history of post-infarction cardiosclerosis, 10 had a history of atrial fibrillation, and 45 had chronic heart failure (CHF). made. In all patients, total cholesterol in the blood was higher than 6.2 mm / l. In 48 patients in group 2 with anterior wall and 36 patients with posterior wall OMI, the initial dose of dopamine (dopamine 40 mg / ml - 4% -5.0 ml) was administered intravenously at a dose of 2-10 mcg / kg / min. Blood pressure (A / B), ventricular systole (SVS), and pulse-controlled infusion were administered for 24 h.

Biochemical analysis of blood was performed on the basis of lipid spectrum (low density lipoprotein, high density lipoprotein, triglycerides, total cholesterol), glucose, urea, creatinine in all patients and renal glomerular filtration rate ml / min / 1.73 m2 MDRD formula in all patients:

- for men $186 \times (\text{amount [mg / dl]} 1,154) \times (\text{age});$

- for women $186 \times (\text{creatinine in the blood [mg / dl]} \times (\text{age}) \times 0.742$.

Renal insufficiency Kidney ball filtration rate $<90 \text{ ml / min / } 1.73 \text{ m}^2$ was calculated.

The mean age of the 78 patients involved in the study was 66 ± 4.5 years. Of these, 52 are male and 26 are female.

Result and discussion

Of these, 64 (82%) cases had a history of arterial hypertension, type 2 diabetes mellitus 43 (55%), harmful habits - smoking 40 (51%), hypercholesterolemia 58 (74%) cases (Table 1). All patients were monitored during treatment. The mean day spent in the hospital was 10 ± 3.4 days.

Patients in the group were not given b-blockers and APF-inhibitors because they further reduced renal function in a state of shock. In all other patients, nitrates, diuretics, a group of inotropic drugs, anticoagulants, antiplatelet agents, statins, hormones, and vasopressors were recommended as directed. Thrombolytic therapy (TLT) was performed in 14 patients (17%) with streptokinase.

Signs of ectopic activity remained virtually unchanged before and after infusion. No arrhythmias were recorded before and after the infusion according to their statistically significant nature and severity. The QT interval variance exceeded 100 ms.

Table 1

Indicators of comorbidities and harmful habits of the studied patients, n = 78

Indicators	Absolutely	%
Arterial hypertension	64	82%
Type 2 diabetes	43	55%
Smoking	40	51%
Hypercholesterolemia	58	74%

Patient buirak koptokchallari faitatsiosining tezligaigan and Kana creatinine noted oshmanling. A group of 35% of patients 3 kunlik belinnik bilan, 28% and 2 rublik, 37% and 1 kunlik inherited nasavat kilgan. The left Lynch Otilish faction (FV) analyzed the FV<35% from Holland, FV 35% dan 50% annual bulgani 16% cases and FV>51% bolgani 6% cases of the Kan mark.

The patient is a blocker of lar and an ACE inhibitor of berylmagan, because ular shiktagtagazy buirakada funciycini Jan pasaytadi. The Barbara grappa stratiotlag template is mainly nitratlar, diureticlar, inotrope dori shortalar group, anticoaguantlar, antiagantlar, statinlar, gorno-badakhshar and vasaprosorlar recommended by Kan.

The fact that the renal capillary filtration rate ($<48 \text{ mL/min/1.73 M}^2$) was lower was due to the high content of creatinine in the blood, which led

No deepening of ischemia in the myocardium was observed during and after the infusion.

Lower renal glomerular filtration rate ($<48 \text{ ml / min / } 1.73 \text{ m}^2$) led to higher creatinine in the blood, which made the clinical course more severe. Lethality was also reported in 17% of cases below renal glomerular filtration rate $<48 \text{ ml / min / } 1.73 \text{ m}^2$.

QT interval variance was within normal values ($91 \pm 15 \text{ ms}$) in twelve patients prior to infusion, while in the remaining patients they were 60 ms ($48 \pm 10 \text{ ms}$). After infusion, they were $42 \pm 10 \text{ ms}$ in 18 patients and $82 \pm 18 \text{ ms}$ in 12 patients. QT length remained almost unchanged after norepinephrine infusion, but QT interval variance decreased from $73.8 \pm 8.5 \text{ ms}$ to $65.7 \pm 5.05 \text{ ms}$.

Proarrhythmic feature: 6 patients had nocturnal left ventricular potential before norepinephrine administration, no condition was observed after infusion.

No differences in clinical-dermographic age, sex, harmful habits, and obesity were identified among the groups undergoing vasopressor therapy. General blood analysis, biochemical analysis, blood clotting time, blood coagulation system, and general urine analysis were performed.

to a more severe course of the clinic. Lethality was also noted in 48% of cases of renal capillary filtration below $<1,73 \text{ mL/min/1.7 m}^2$.

Differences between clinically-dermographic age, gender, harmful habits, and obesity were not identified among the groups undergoing vasopressor therapy. Conducted general blood analysis, biochemical analysis, blood clotting time, blood clotting system and general urine analysis.

Proarithmic feature: norepinephrine had the potential of the left ventricle in the evening in 6 patients before Administration, this condition was not observed after infusion.

No significant changes in heart rate and blood pressure were observed prior to infusion. An increase in the number of heart contractions during the infusion, in turn, increased the oxygen demand of the myocardium (average 10 beats /

min, arterial pressure an average of 11 mm.sim.ust.).

Against the background of the infusion in all patients diminished wheezing in the lungs was sharply reduced, blood pressure was elevated, the symptoms of shock were eliminated.

In 12 patients before infusion, QT interval dispersion was among the normal parameters (91 ± 15 MS), in the remaining patients they were 60 cm (48 ± 10 MS). In 18 patients after infusion, they consisted of 42 ± 10 MS, in 12 patients 82 ± 18 MS. The length of QT after norepinephrine infusion was almost unchanged, but the QT interval dispersion decreased from $73,8 \pm 8,5$ MS to $65,7 \pm 5,05$ MS.

Signs of combing from ectopic activity almost did not change before and after the infusion. Arrhythmias were not recorded before and after the infusion, according to their statistically significant character and the degree of severity .

During and after infusion, there was no exacerbation of ischemia in the myocardium.

Patients in this group before the infusion consisted of 40% and the last measurement in the diastole period (KDR) 5,5 CM.

Initial doses of dopamine required higher doses in 5 mcg/kg/min 36 patients, 6-7 mcg/kg/min 6 patients and 8-10 mcg/kg/min and more than 6 patients.

Before the start of the infusion, no visible changes in yuks and AB were observed. And the increase in inflammation during the infusion, in turn, increased the need for oxygen of the myocardium (on average 10 PCs/min, on average 11 mm of a/B.the SIM.top.).

Against the background of infusion, steamed wheezing in the lungs in all patients was sharply reduced, elevated A/B, shock symptoms were eliminated.

Infusion of norepinephrine reached $36,2 \pm 2,1\%$ after shock elimination, if FV was $43,1 \pm 3,2\%$ before infusion of FV. After the infusion, there were no outbreaks and relapse of the zones.

After the infusion of dopamine, FV practically did not change, it was $33,7 \pm 1,7\%$ before the infusion, while after the infusion it showed $34,3 \pm 1,9\%$ ($p=0,8$). Kengay of the ischemic zones after infusion from ExoKG were noted in 21 patients, as well as 3 cases of letalysis were noted above..

The general condition of the patients improved: 26 patients were relatively well (+2), 8 patients were significantly better (+3), 9 patients were partially better (+1) and decreased airway intensity (+3) in 16 patients, and +2 It was

observed in 22 patients. Unfortunately, 6 lethal cases were reported.

Proarithmic feature: before and after the infusion of dopamine, the evening potency of the ventricles was not noted.

Expansion of the zones was observed in 21 patients, as well as 6 lethal cases were noted above.

Factors leading to cardiogenic shock (age, type 2 diabetes mellitus, history of myocardial infarction, bad habits, symptoms of chronic heart failure) and their atherosclerotic lesions of coronary arteries were studied, analyzed and evaluated

There was a more severe course in patients with non-clinical manifestations, harmful habits (smoking, drinking) in OMS with Type 2 QD. Another age was one of the risk factors that remained unchanged, causing a more severe course of the disease in elderly and elderly people.

In our study, lethality was studied by comparing vasopressor therapy (dopamine and norepinephrine). In the group receiving infusion of dopamine, then 3 cases of 1 capsaicin and infusion of norepinephrine were recorded, in the group receiving infusion of 1 capsaicin. Letallic dopamine is slightly higher than norepinephrine, it was interpreted as on account of deep necrosis of the myocardium. That is, it is necessary to take into account both the proarithmic and cardiotoxic effect of vasopressors, taking into account these, further examination is required.

This study aimed to improve systolic and diastolic function of the heart before infusion. This is indicated based on the results of a clinical examination. Systolic function has been shown to improve as a result of vasopressor therapy. With an increase in diastolic function with prednagruzka and a decrease in calcium in the cytoplasm, further vasodilation indicates an improvement in blood circulation in the ischemic zone of the myocardium.

After norepinephrine infusion, the visibility of the normal contraction segment increased (from 66.7% to 81.8%) and the hypo- and akinesia segments decreased. In all indicators, indicators in the middle segments were higher than in the basal segments. Such efficacy has been shown in some literature to be associated with better blood circulation in the middle segment.

Diastolic function improved in all segments after infusion. Improved myocardial contractility is associated with myocardial activity in the hibernated state. This property of norepinephrine has been reported in many studies [5, 6].

No group ventricular extrasystole or significant arrhythmias were observed during infusion. No ventricular nocturnal potential was noted in our study, which is related to the antiischemic property of norepinephrine.

The low incidence of eruption fraction in patients led to a more severe course of clinical trials. And this is due to the fact that the cause of severe exacerbations of CSH is a decrease in the function of the heart contractions, early application of patients, prevention of ischemia zone kengay, it is for this purpose that it is desirable to start vasopressor therapy more quickly. It not only raises arterial pressure, prevents ischemia, which in turn prevents lethality.

In patients undergoing Thrombolytics, the use of small doses of vasopressor therapy was sufficient, but also the cause of complications with a cardiac shock in acute myocardial infarction may be that fibrinolytic therapy was not conducted on time, but it is desirable to conduct it according to the instruction.

In our observation, high indicators of creatinine clearance have been noted for the severe course of the disease, and even in cases of death, high levels of creatinine are noted. This requires a deeper study of the interconnectedness of these.

In our study, lethality was studied by comparison of vasopressor therapy (dopamine and norepinephrine). The lethality is slightly higher than that of dopamine compared to norepinephrine, which has been interpreted as due to deep necrosis of the myocardium. That is, the proarrhythmic and cardiotoxic effects of vasopressors should also be taken into account, and further investigations should be taken into account.

The effectiveness of norepinephrine vasopressor therapy with norepinephrine in acute heart failure is evidently improved in the patient's condition. Symptoms such as heart palpitations, a sense of air deficiency, hangover in patients were not observed from 2.5 ± 1.3 days. In this group of patients, cardiac shock was eliminated on average in 3.4 ± 2.3 days. symptoms of acute heart failure after elimination of shock symptoms re-acute myocardial infarction relapse was not observed.

Conclusions

1. When eliminating shock in acute myocardial infarction complicated by cardiac shock, vasopressor therapy is the drug of choice. This in turn prevents an increase in the incidence of death among patients.

2. In acute myocardial infarction, the importance of vasopressor therapy is important, since it provides for hypoperfusion in tissues. In addition to increasing arterial pressure, dopamine can be called tachycardia, which further increases the need for oxygen in the myocardium, deepens ischemia. Norepinephrine does not affect the number of heart contractions and, in turn, raises arterial pressure, with the same it is considered preferable to dopamine.

3. The absence of recording of the evening potency of the left ventricle of the heart, QT interval dispersion and ectopic activity of the ventricles is indicative of the proarrhythmic positive effect of norepinephrine.

4. It was noted that in the infusion of dopamine (from 5 mcg/kg/min) increased myocardial contraction and increased the number of ventricular extrasystoles.

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Entered 09.03.2021