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# GENESIS OF ANAPHYLACTIC SHOCK IN SURGICAL PATIENTS

**Annotation.** The use of drugs in surgical pathology in patients most often leads to the development of anaphylactic shock. This presents serious difficulties for diagnosis. The main reasons for the development of anaphylactic shock is the prescription of medications with high allergenic properties.

**Key words:** anaphylactic shock, antibiotics, non-steroidal anti-inflammatory drugs, adrenaline, allergic reactions.

## RELEVANCE OF THE TOPIC

Every fourth inhabitant of the planet suffers from allergic pathology of various origins and forms. The prevalence of allergic diseases in Uzbekistan ranges from 11.2 to 31%. Acute and chronic allergic diseases and drug intolerance become a “stumbling block” for many specialists, both therapeutic and surgical.

The presence of surgical pathology and surgical intervention can both contribute to the worsening of the course of a concomitant allergic disease and be the cause of its occurrence.

In patients hospitalized for surgical treatment, according to statistics, in 15–30% of cases, adverse reactions to drugs develop, which can be fatal. Drug complications due to medical errors are clinically manifested by allergic reactions, including anaphylactic shock, Stevens-Johnson and Lyell syndromes, Quincke's edema, bronchospasms and various types of rash in 10–22% of cases.

The most common acute allergic reactions in postoperative patients are antibiotics (chloramphenicol, penicillin, cephalosporins) and non-steroidal anti-inflammatory drugs, and the importance of the former in the development of acute allergic reactions over a 5-year period decreased from 33 to 29%, and the latter increased from 21.3 up to 29%.

An important risk factor for pseudoallergic reactions in surgical patients is a history of drug allergies. A serious clinical problem is cross-allergic reactions in patients to medications that have common antigenic determinants.

## PURPOSE OF THE RESEARCH

To study the genesis of anaphylactic shock in surgical patients.

## MATERIALS AND METHODS OF RESEARCH

The study was carried out in the Andijan regional clinical hospital and the regional multidisciplinary medical center in the surgical departments. 120 patients were examined, including 58 (48.3%) women aged 34 to 57 years and 62 (51.7%) men aged 40 to 65 years. Patients were treated for various surgical pathologies. To obtain reasonable data, analyzes of allergic reactions, as well as general and biochemical blood tests were used.

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## RESULTS OBTAINED

An analysis of allergic reactions was carried out in 120 patients treated in the surgical departments of a multidisciplinary hospital with 250 surgical beds over a three-year period. In all cases, due to the severity of allergic symptoms, the participation of an allergist was required to clarify the diagnosis and correct treatment.

As practice has shown, anaphylactic shock was the most difficult pathology for diagnosis and treatment among all allergic reactions that developed in patients during the period of their treatment for surgical pathology. Drug-induced anaphylactic shock, observed in 34 cases (10 men and 24 women), was the cause of death in 3 patients. All cases of death from anaphylactic shock were confirmed by autopsy data, and in 1 of them there was a discrepancy between the clinical and pathological diagnoses.

Drug-induced anaphylactic shock was more common in patients with purulent diseases of the abdominal cavity and retroperitoneal space, which was obviously due to the large volume of various medications administered to these patients.

Before the operation, anaphylactic shock developed in 37 patients, in 27 during the operation, and in 10 in the postoperative period.

In all cases, shock was a consequence of parenteral administration of drugs: in 18 patients - with injections of painkillers (analgin, ketorol), in 7 - with the introduction of antibacterial agents (semi-synthetic penicillins, cephalosporins), in 9 - during local anesthesia (Novocaine, Marcaine), 3 had Actovegin.

Indications of a history of drug allergies were noted in 22 patients. 12 patients had allergic diseases: bronchial asthma, hay fever, atopic dermatitis.

Considering the peculiarity of the pathology profile, a reaction to latex as a possible cause of anaphylactic shock was not confirmed in any case.

Thus, the most common cause of shock in surgical patients was the administration of non-steroidal anti-inflammatory drugs (contrary to the prevailing opinion among doctors that anaphylactic reactions are more often a consequence of the administration of antibacterial drugs).

It should be noted that in five patients anaphylactic shock was caused by the administration of drugs without taking into account possible cross-allergic reactions to medications: when the patient was administered cefazolin if he had an allergy to penicillin, ketorol - with an unfavorable history of analgin, aminophylline - with an existing allergy to suprastin.

There were no cases of mild anaphylactic shock when registered by attending physicians. Hemodynamic disturbances in the first degree of severity of shock, due to their insignificant severity and reversibility due to the compensatory capabilities of the body, remained either unnoticed against the background of the main surgical pathology, or were interpreted as a natural manifestation of a surgical disease or its complications. Only the subsequent appearance of other allergic symptoms and more detailed questioning of the patient about cases of previous reactions to medications made it possible to suggest the true cause of their occurrence.

The main clinical features of anaphylactic shock were:

– the speed of development of the pathological process in all patients;

– severity of hemodynamic disturbances: threadlike pulse or its absence in peripheral vessels (in 24 cases), drop in blood pressure below 60 mm Hg. Art., inability to determine diastolic pressure (in 20 cases), development of a terminal condition (in 4 cases);

– respiratory depression in the absence of signs of asphyxia (in 28 cases);

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– impairment of consciousness – in 19 cases;

– pallor of the skin (in 37 cases), acrocyanosis (in 13 cases).

In 12 patients, the course of shock was benign: there was a drop in pressure within 30 minutes to 70/40 mm Hg. Art., loss of consciousness for 2–3 minutes, followed by its recovery during treatment, pallor of the skin (acrocyanosis in 3 patients), urticaria at the time of shock, which subsequently did not recur. There was no breathing problem. One patient had diffuse cyanosis against a background of pallor due to bronchospasm, clinically manifested by wheezing. In 4 patients, the initially developed erythema was replaced by pallor of the skin.

Lightning-fast development of the process was observed in 19 patients: within 1–2 minutes after administration of the drug, pallor of the skin, acrocyanosis increased, loss of consciousness occurred, breathing and blood circulation were impaired. 2 patients who died and 3 patients in a terminal state had seizures. Subsequent short-term urticaria or erythema developed in 10 patients. Abdominal symptoms: vomiting, abdominal pain, diarrhea were observed in 16 patients.

In 4 patients, anaphylactic shock developed during surgery under general anesthesia. The main manifestations of shock were: a pronounced drop in blood pressure for no apparent reason, the inability to stabilize hemodynamics by increasing the volume, speed of infusion therapy and the introduction of vasoconstrictors, absence of pulse in the peripheral vessels, pallor of the skin, severe tissue bleeding due to the massive release of endogenous heparin.

In 17 cases, the deterioration of the patient's condition was noted by the doctor, in 22 – by nursing staff. In all cases, a resuscitator participated in anti-shock measures.

During the initial examination, anaphylactic shock was diagnosed only in 15 patients who had skin manifestations of an allergic reaction in the form of erythema and urticaria. The remaining patients were given erroneous diagnoses: pulmonary embolism - in 1 case, stroke - in 2, cardiogenic shock - in 7, acute blood loss - in 5.

Diagnostic errors led to a violation of the principles of treatment of anaphylactic shock: the drug of choice in 6 cases was mezaton, in 16 - glucocorticosteroids (prednisolone, dexamethasone), in 9 - dopamine. In 1/3 of the patients, the drugs were administered intravenously. It was possible to carry out infusion therapy despite a drop in hemodynamics in 25 cases. However, intravenous administration of solutions and vasoconstrictors did not lead to rapid stabilization of blood pressure and restoration of consciousness in the vast majority.

A positive effect was observed only after the administration of adrenaline. This drug in a dose of 0.3–0.5 ml within 2–5 minutes from the onset of shock was administered to 10 patients, with a delay (after 20–40 minutes) to 15 patients, 8 of them thanks to the participation of an allergist. Adrenaline was administered subcutaneously in 9 cases, intramuscularly in 6, and intravenously in 10 cases.

7 people with a benign course of shock, the development of the pathological process was stopped with prednisolone, dopamine, and infusion therapy.

Among the dead there were 2 people who were not administered adrenaline.

Improvement in hemodynamics and restoration of consciousness after the administration of adrenaline occurred in 25 patients; 10 patients, due to the lack of obvious clinical effect, required repeated administration of adrenaline after 3–5 minutes at a dose of 0.3–0.5 ml (in 6 cases subcutaneously, in 4 intravenously) . The choice of a single dose of the drug from 0.3 to 0.5 ml was determined by the patient's body weight.

Thus, the method of administering adrenaline was not significant for stopping the pathological process.

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For intensive care 24 people. transferred to the intensive care unit. 5 patients required artificial ventilation. Patients with III-IV degree of shock received additional drips of adrenaline for several hours. All patients were prescribed glucocorticosteroids during treatment.

Six patients received dopamine infusion for 10–14 days due to persistent hypotension, which was apparently due to adrenal insufficiency. Prolonged hypotension was promoted, as it later turned out, by early withdrawal of glucocorticoids. Hemodynamics were finally stabilized only by long-term administration of steroids in moderate therapeutic doses. For the remaining patients, the duration of treatment in the intensive care unit ranged from 1 to 7 days, depending on the severity of the shock.

Due to the development of anaphylactic shock, surgery was canceled in 7 patients and delayed in 4. 13 people were transferred for follow-up treatment to the allergology department.

## CONCLUSION

Thus, anaphylactic shock in 9.1% of cases is a manifestation of a severe allergic reaction in surgical patients and poses serious difficulties for diagnosis. Shock develops as a result of parenteral administration of drugs, among which non-steroidal anti-inflammatory drugs are the leaders. The main reason for the development of anaphylactic shock is the prescription of medications with high allergenic properties, without taking into account a burdened allergic history, as well as the possibility of developing cross-allergic reactions in the patient.

Errors in the treatment of anaphylactic shock in practice are: refusal to prescribe or late administration of adrenaline, reducing the timing of steroid therapy after relieving the main hemodynamic disturbances in severe cases of the pathological process.

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