Early Postoperative Complications for Diabetes Patient

Abstract: 50 samples were collected from Al-Ramadi Teaching Hospital, and early postoperative complications for diabetes patient were identified as uncontrolled blood glucose could lead to complications for patients with surgery or for diabetics. Slightly high blood sugar can delay healing and can increase your chances of developing an infection from less than 2 percent to more than 10 percent. In general, the higher the blood sugar level, the higher this risk. Checking glucose during surgery is reasonable if the surgery is prolonged or if your glucose levels are unpredictable. Even diabetics who control diet and exercise well can experience high blood glucose levels during the hours and days following surgery. If your glucose fluctuates widely between checks, you may even need to be checked at night if you have symptoms of low or high blood glucose. Features of the flow surgical diseases in patients with diabetes mellitus and complications diabetes itself represent a significant theoretical and practical interest for doctors of various specialties. In developed countries, diabetes mellitus occurs in 5-6% of the population, and the need surgical interventions occur in more than half of them, this demonstrates the urgency of the problem of diabetes mellitus in surgery. Based on the previously acquired knowledge of normal and pathological physiology and anatomy, endocrinology to study etiology, pathogenesis, clinic, diagnosis, treatment tactics in complications of diabetes mellitus within the competence of the surgeon, features of surgical pathology in diabetes mellitus.

Task
- To assimilate morphological substrates for the development of surgical complications of diabetes.
- To study the clinical manifestations of surgical complications diabetes mellitus, learn how to take anamnesis, complaints, examination with this pathology.
- To get acquainted with modern approaches to the treatment of surgical complications of diabetes.
- To study the features of the clinic of surgical diseases in diabetes mellitus.
- Become familiar with the surgical approaches to the treatment of sugar diabetes.

Test questions from related disciplines
1. Insulin, its role in metabolism.
2. Violation of metabolism in diabetes mellitus.
3. The structure of the capillary wall and arterial bed.

Control questions on the topic of the lesson
1. Etiology and pathogenesis of diabetes mellitus.
2. Influence of insulin on metabolism.
3. Complications of diabetes mellitus related to the competence of the surgeon.
5. Acute gastrointestinal bleeding in diabetes.
6. Purulent-inflammatory diseases of the skin and subcutaneous tissue.
7. Anaerobic non-clostridial soft tissue infection in diabetes.
8. The concept of diabetic foot syndrome. five

Keywords: Diabetes, Postoperative, Surgery, Increased, Neuropathic
INTRODUCTION

Diabetes is a Greek word and means "siphon" or "leak." This term denoted a disease occurring with high consumption water and its rapid elimination from the body. Diabetes mellitus (DM) is a group of metabolic (endocrine) diseases characterized by hyperglycemia, which is the result of defects in insulin secretion, its action or both of these factors (WHO, 1999). Diabetes mellitus other than chronic hyperglycemia also manifests itself:
1. glycosuria, polyuria, polydipsia;
2. violation of carbohydrate, lipid, protein and mineral exchanges;
3. The development of specific complications: angiopathy, neuropathy, retinopathy, osteoarthritis, and nephropathy.

- An absolute insulin deficiency leads to the development of insulin-dependent diabetes mellitus or type I diabetes (%20-10)
- Relative deficiency of insulin due to decreased sensitivity insulin-dependent tissue receptors for insulin leads to the development of non-insulin-dependent diabetes mellitus or type II diabetes (80%). In the last 30 years, there has been a sharp increase in the incidence of diabetes, especially in industrialized countries, where its prevalence is 5-6% and tends to further increase, in the first turn, in age groups over 40 years old. Every 10-15 years the number of patients with diabetes doubles. Up to 5% of the population suffers from latent forms of diabetes. The great social significance of SD is that it leads to early disability and high mortality, primarily due to development of micro- and macroangiopathy. Every second patient with diabetes needs surgical care. In this case, the quality of the exchange substances, violation of homeostasis in the development of surgical pathology together with operational stress, blood loss can lead to rapid decompensation of diabetes and pose a threat to the development of severe complications. Suppression of the immune system, metabolic disorders, decrease pain sensitivity change the clinical picture and for many surgical diseases can lead to serious diagnostic errors and negatively affect the outcome of surgical pathology with diabetes.

ETIOLOGY AND PATHOGENESIS OF DIABETES MELLITUS

The cause of clinical manifestations in patients with diabetes is insufficient insulin in type 1 diabetes or insulin resistance in type 2 diabetes.

Insulin utilizes, metabolizes and stores nutrients entering the body. He also participates in process growth and differentiation of tissues, exhibits anabolic effect and catabolic properties in relation to carbohydrates, fats and amino acids.

The effect of insulin on carbohydrate metabolism:
1. increase glucose utilization by muscles and adipose tissue
2. increase in the synthesis of glycogen by the liver and muscles
3. increased phosphorylation of glucose
4. increased glycolysis
5. reduction of gluconeogenesis
6. Reduction of lipogenesis.

The effect of insulin on fat metabolism:
1. increased lipogenesis
2. increase in the activity of lipoprotein lipase
3. increased synthesis of fatty acids
4. increased formation of glycerol phosphate
5. increased esterification of fatty acids into triglycerides
6. Reduction of lipolysis and ketogenesis.

The effect of insulin on protein metabolism:
1. increased protein anabolism
2. increased absorption of amino acids
3. increased protein synthesis
4. reduction of protein catabolism

Impaired insulin synthesis or its ability to bind to insulin receptors, a decrease in the number of insulin receptors on the cell membrane leads to complex and interconnected disorders of all types of metabolism. These violations can be exacerbated with the development of surgical pathology, which requires the doctor to take timely adequate measures to provide qualified assistance sick.

SURGICAL COMPLICATIONS OF DIABETES

The main complications in diabetic patients are within the competence of the surgeon are:
1. Pseudoperitonitis or false "acute abdomen".
2. Acute gastric bleeding.
3. Acute purulent-inflammatory diseases of the skin and subcutaneous fiber.
4. Non-clostridial anaerobic soft tissue infection.
5. Violation of the wound regeneration process.

Pseudoperitonitis can develop with decompensation of diabetes due to, for example, purulent-inflammatory process of soft tissues, pneumonia or other diseases. This complication of diabetes is most often observed in patients insulin-dependent diabetes mellitus of young and middle age.
The reasons development of this condition is associated with irritation, autonomic nerveplexuses of the stomach and intestines, solar plexus products of diabetic acidosis.

Hypotension of the stomach duodenal ulcer and symptoms of intestinal obstruction associated with plasma hyperosmolarity and cellular hyposmia.

Clinic and diagnostics. Against the background of pronounced or latent flowing diabetes at normal or low temperature in a patient the pulse quickens up to 100-120 beats per minute. Then there is a deep noisy breathing of Kussmaul, agitation and anxiety, dizziness, debilitating vomiting, acetone odor from the mouth. Decreases arterial pressure and tone of the eyeballs. There is bloating and abdominal pain without clear localization, muscle tension of the anterior abdominal wall, the most pronounced at the height of inspiration, "splash noise" in the abdominal cavity.

Characteristic cyanosis of the skin of the face, participation in the act of breathing of the thoracic, cervical and abdominal muscles. On exhalation, the abdominal muscles relax and hardly respond to palpation. Long-term pressure allows you to overcome the false tension of the muscles of the abdominal wall

- Hyperglycemia - over 20.0 mmol / L, hyperleukocytosis - up to 80-90 109 / L,
- glucosuria - up to 277.5-444.8 mmol / l, the presence of acetone in urine is confirmed development of pseudo peritonitis on the basis of ketoacidosis precoma Protein appears in the urine, a large number of blood corpuscles and granular cylinders, which is due to toxic damage to the kidneys by type of acute glomerulonephritis.

With intensive insulin therapy and diabetes compensation, changes in urine and blood quickly disappears

Differential diagnosis

Pseudo-peritonitis and true peritonitis can be very difficult. At the same time, erroneously a diagnosis of peritonitis requiring a laparotomy, can lead to death of the patient, who is at the time operations, as a rule, in a state of precoma or coma.

Treatment. In case of doubt, intensive treatment should be started. ketoacidosis precoma or coma If with disappearance decompensation of diabetes after 2-3 hours of intensive corrective therapy peritoneal phenomena also disappear, the diagnosis of Pseudo-peritonitis is confirmed. The operation is not shown in this case. The same patients, at which against the background of a decrease in hyperglycemia, dehydration and ketoacidosis symptoms of peritoneal irritation remain, emergency is indicated laparoscopy.

Acute Gastrointestinal Bleeding

the main cause of gastrointestinal bleeding in patients with diabetes The reasons is The occurrence of hemorrhagic gastritis is associated with endothelialis of the gastric vessels and its atony due to ketoacidosis with accumulation of excess histamine and histamine-like substances in the blood, causing an increase in the permeability of the vessels of the stomach Emergence erosion of the gastric mucosa due to hyposecretion gastric juice in response to the release of the counter-insulin hormone glucagon, deterioration of blood supply to the atomic stomach and a decrease the formation of protective mucus. The occurrence of bleeding from erosion stomach contributes to a decrease in blood clotting due to hyperacidity and thrombin inactivation in an acidic environment.

Clinic and diagnostics

Gastric bleeding occurs in the background decompensation of diabetes: polydipsia, polyuria, hyperglycemia and increasing ketoacidosis. Patients suddenly develop weakness, headache, a feeling of heaviness in the epigastric region and pain without clear localization, hiccups, vomiting of "coffee grounds" (hemotemesis) and tarry stools (melena), odor of acetone from the mouth, tachycardia at normal temperature body. The general condition is serious. The patient has a characteristic blush on the cheeks, tongue dry and coated. The pulse is fast, weak filling. Arterial low or normal pressure Arrhythmias are often observed - ventricular premature beats, atrial fibrillation. On examination of the abdomen moderate swelling and "splash noise" are noted. The abdominal muscles are not tense. On rectal examination, tarry stools are found With fibro gastroduodenoscopy, multiple erosions are detected stomach.

Patients with diabetes are prone to purulent-inflammatory skin diseases. With the appearance of a purulent focus, hyperglycemia, glucosuria, ketoacidosis, and electrolyte disturbances increase catastrophically. As you increase abscess increases and the likelihood of decompensation of diabetes mellitus in as a result of the development of inflammatory acidosis, inactivation of insulin microbial toxins accumulating in this focus and proteolytic enzymes of destroyed leukocytes.

The hyperthermia arising during the purulent-septic process is even greater aggravates metabolic disorders As a result, ketoacidosis increases, who goes into state and to whom, Decrease immunological reactivity of the organism and antibiotic resistance contribute to the generalization of the purulent-necrotic process and the development sepsis Purulent infection of any etiology leads to the fact that latent and a mild form of diabetes turns into a severe one that is difficult to correct.

Diabetic foot syndrome and diabetic gangrene

In drome of the diabetic foot (SDS) is a complex of anatomical and functional changes that occurs in
various forms in 30-80% of patients with diabetes mellitus and is characterized by the development of lesions:

1. arterial bed - angiopathy;
2. peripheral nervous system - neuropathy;
3. bones and joints - osteoarthropathy;
4. skin of the foot and infection.

These factors pose an immediate threat to development purulent-necrotic processes up to limb gangrene. The formation of a gangrenous area does not significantly affect the overall patient's condition. No pain with diabetic gangrene due to the early death of sensitive nerve endings in as a result of acidosis, disorders of capillary circulation, hypoxia. The onset of purulent-necrotic processes and diabetic gangrene contribute to microtrauma, ingrown nails, calluses, abrasions of the feet. Inadequate compensation of diabetes, its labile course predispose to the onset and progression of diabetic gangrene.

Cardiovascular failure, obesity, bronchial asthma, chronic lung diseases, arterial hypertension aggravate the course of diabetic gangrene and contribute to its further progression.

Classification of Diabetic Foot Syndrome (1991)
I. Clinical forms:
- neuropathic (neuropathic infected foot);
- ischemic (ischemic gangrenous foot);
- mixed form (neuro-ischemic).

II. Clinical stages:
- aseptic (early);
- infected (late).

The aseptic stage includes such manifestations as cracks, hyperkeratosis, osteoporosis, acral necrosis, dry gangrene of the fingers or the entire foot. At this stage, surgical treatment is not required. The infected stage develops after attachment microflora and the growth of purulent-necrotic processes on the feet, leading to wet gangrene of local or generalized character. At this stage, surgical interventions are required.

III. By the prevalence of purulent-necrotic changes
Local changes are processes that do not tend to spread over area and depth (areas of dry necrosis, gangrene one or more fingers, the defeat of one cellular space). Common changes are processes involving at least two cellular spaces, damage to the phalanges with tarsal and metatarsal bones of the foot.

Neuropathic Form
There is a predominant dysfunction of the peripheral and autonomic nervous system, which is an additional factor in the violation of microcirculation Autonomic neuropathy and sympathetic nervous system disorder promotes increased blood flow in the lower extremities and especially foot due to paralytic expansion of the shunts between the arterioles and venules. Such increased blood circulation in the skin with neuropathic form provides an increased temperature of its surface and increased blood filling of cutaneous veins with strengthening of their pattern.

The neuropathic form is characterized by a specific deformity feet, hyperesthesia and paresthesia of the fingers and ankle joints, decrease in all types of peripheral sensitivity, lack pain syndrome in the area of ulcerative defects on the foot, preserved pulsation on the arteries of the foot. Color and skin temperature – within norms, ulceration and hyperkeratosis are noted at points of excess loading pressure. There are complaints of a feeling of heaviness and weakness in symmetrical parts of the limbs and pain of varying intensity. Observed reduction of all types of sensitivity. Paresthesias often occur, and pain syndrome manifests itself to a greater extent at night. Characteristically decrease in pain and temperature sensitivity, which is the reason for the decrease in attention to traumatic injuries of the foot (ingrown nail, injections, cuts), which leads to the development of ulceration and purulent complications with a poor prognosis. Often celebrated painful terminal cramps in the calf muscles, decreased tendon reflexes.

Of primary importance in the formation of the ischemic form are angiopathy (primarily macroangiopathy). Patients present complaints of a feeling of coldness in the legs, chilliness of the feet, pain in the legs at rest, especially at night, intermittent claudication. The latter is characterized by pain in the calf muscles of the lower leg with walking, because of which patients are forced to stop and rest. Pain decrease after a short rest due to the restoration of energy and oxygen supply to muscles. In patients with ischemic form the intensity of pain decreases when the leg hangs out of the bed. On examination, the skin of the foot is pale or cyanotic, cold on touch, there is no or sharply reduced pulsation on the arteries of the foot. In an elevated position, there is a blanching of the limb and a delayed filling of superficial veins. Thinning of the skin, atrophy subcutaneous tissue, and then the muscles of the lower limb. Violation of the trophism of the skin leads to a decrease in local immunity and loss of barrier properties against microorganisms, living on the skin.

This leads to various purulent-inflammatory complications: pan dactylitis, phlegmon of the foot, gangrene of the limb. A characteristic feature of angiopathy in diabetes mellitus is that as the ischemia progresses and the objective the condition of the affected limb, the intensity of the pain syndrome decreases due to the progression of neuropath. Decrease intensity of pain creates a false idea of the alleged improving the condition.
Mutual burden syndrome

Surgical pathology is a group of inflammatory, degenerative and inflammatory-degenerative diseases of organs abdominal cavity, chest and blood vessels, for the treatment of which surgical intervention is required. This is appendicitis, cholecystitis, pancreatitis, intestinal obstruction, complications of peptic ulcer disease stomach and duodenal ulcer, hemias and their complications, peritonitis, empyema pleura, pneumothorax, mediastinitis of various etiology, obliterating arterial diseases, varicose veins, etc.

The course of surgical pathology in patients with diabetes has its own features and is often atypical At the same time, the course of diabetes mellitus against the background surgical pathology, surgical trauma, blood loss, purulent inflammatory processes becomes more labile, with a tendency to decompensation and coma development.

Diabetes mellitus and surgical pathology mutually burden each other

Features of surgical pathology in diabetes mellitus:

1. Less pronounced pain syndrome. This is due to the fact that at diabetes mellitus accumulates sorbitol (a metabolic product glucose) in the nervous tissue, which leads to damage to the nerve trunks and the development of neuropathy.

2. The destruction of tissues is developing rapidly. This is due to defeat vessels - angiopathy. Thickening of the basement membrane occurs capillaries due to dysfunction of mesangial cells, develops violation of the permeability of the basement membrane and the deposition of fibrin in the capillary wall, which leads to damage to small vessels and the development microangiopathy. Vessels of large and medium caliber are also affected in the form of atherosclerosis, calcifying sclerosis, diffuse fibrosis of the intima with the development of macroangiopathy. These factors impair the blood supply to tissues and contribute to their faster destruction.

3. High tendency to thrombotic complications. A significant role in this process is played by a change in rheological properties of blood the viscosity of blood plasma in diabetes increases due to hyperlipidemia and hyperglycemia. High aggregation capacity shaped elements, hyperfibrinogenemia, pathological rigidity erythrocytes lead to a slowdown in blood flow, intravascular aggregation platelets and erythrocytes, the development of sludge syndrome and thrombosis.

4. Peritonitis develops rapidly. In this case, the source of peritonitis may be not only the pathology of the abdominal organs, but also the anterior abdominal wall, retroperitoneal and pancretal tissue.

Peritonitis due to a decrease in immunity and inhibition of the plastic properties of tissues with diabetes, it quickly becomes widespread with the development of sepsis with multiple organ failure.

5. Renal, cardiovascular, respiratory failure as a consequence of the already existing defeat of these systems with TD.

6. Slow wound healing, frequent purulent complications. Cause this in violation of microcirculation and in high antibiotic resistance in patients with diabetes due to frequent inpatient treatment and previous antibiotic therapy.

Features of Surgical Interventions For Diabetes

1. High risk of anesthesia and surgery if violations occur metabolism, dehydration, acidosis, suppression of immunity and regeneration.

2. Surgical trauma, microcirculation disorder, blood loss, hypotension and necrosis aggravate metabolic disorders.

3. The course of the postoperative period without life-threatening complications are possible only with full compensation of diabetes and stabilization of homeostasis.

Preparing diabetic patients for elective surgery

1. 2-3 days before the operation, transfer to simple insulin treatment. Preference is given to fractional administration of small doses of simple insulin.

2. One day before surgery - intravenous infusion of 5% glucose solution. We inject insulin under glycemic control until the level of 8.3 is reached - 8.9 mmol / L.

3. On the day of the operation, we continue the infusion of 5% glucose solution, we determine the level of glycemia before and during the operation every 2 hours and in accordance with this, we prescribe simple insulin.

Surgical Treatment of Diabetes Mellitus

Despite the success of insulin therapy, mortality and the number of complications of diabetes continue to grow. In this regard, there is the need to develop methods of surgical treatment of diabetes. The most promising are the following areas of solution this problem:

1. Organ transplantation of the pancreas

2. Transplantation of pancreatic islet cell culture
RESULT

Fig1 - The basic qualities of the patients

Fig2 - Comparisons between diabetic groups
**CONCLUSION**

Your diabetes needs to be well controlled after surgery to prevent complications such as wound infection, slow healing, and increased scarring. If your track record of taking care of yourself, taking your medications as prescribed, and routinely checking glucose is poor, the post-surgery recovery phase is definitely not a time to continue this self-destructive pattern.

- Diabetes can be difficult to deal with, and this is especially true when recovering from surgery.

- It is well worth the time and effort to control glucose levels - after surgery and as a daily routine - to maintain good health and well-being. Healing faster and avoiding infection is a bonus during the postoperative period, but living longer and feeling better is an absolutely worthwhile goal for every day.

- There is no objection to undergoing surgery for a diabetic, but it is necessary to control the level of blood sugar before, during and after surgery, that performing the surgery, despite the lack of control of sugar, leads to infection of the wound after the operation, as well as the possibility of the patient's exposure to a diabetic coma during surgery as a result of the accumulation of acetone inside the body.

**REFERENCES**


5. Garcia, G. H., Fu, M. C., Webb, M. L., Dines, D. M., Craig, E. V., & Gulotta, L. V. (2016). Effect of metabolic syndrome and obesity on complications...


