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Tutorial to prepare for practical classes in the Faculty of surgery for the students of the course 4 medical, Pediatric, medical-preventive and dental faculties

 "APPENDICITIS"

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UDC

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Appendicitis is one of the most frequent hirurgichekih diseases of the abdominal cavity and is very variabilnostju clinical course.

Tutorial contains basic information on pathogenesis, peculiarities of clinic and diagnostic of appendicitis and is intended to prepare for practical classes in the Faculty of Surgery students 4 course medical, Pediatric, medical-preventive and dental faculties.

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**Content:**

**1. Introduction ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .... 4**

**2. Clinical Anatomy Appendix ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .... 5**

**3. The etiology ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ..... 9**

**4. Pathogenesis of ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .... 9**

**5. classification of ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .... 10**

**6. Clinical presentation and diagnosis of ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... 11**

**7. Differential diagnosis ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .. 18**

**8. treatment ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... 21**

**9. complications of acute appendicitis ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... 26**

**10. Postoperative period ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... 31**

**11. Tests and situational tasks................................................................ 34**

**12. the list of used literature ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... ... .... 44**

1. **Introduction**

**Acute appendicitis-** acute nonspecific vermiform process inflammation of the cecum.

Appendicitis is the most common acute illnesses

abdominal cavity. In Russia each year about 400-600 thousand appendjektomij operations, approximately 2000 patients a year die after surgery because of complications (0.2%) -0.4

The term "appendicitis" proposed in the year 1886, the Special Commission of u.s. doctors, headed by Reginald Fitz to denote the inflammatory diseases of the vermiform process.

In cold period of processus was first removed by Claude Amiandoj in the year 1735.

In the year 1884, independently, Mahomed (England) and Kronlejn (Germany) first performed in appendjektomiju complicated forms of acute appendicitis.

In Russia the first appendjektomiju performed the famous surgeon A.a. Trojans in 1890 year. In 1889 year A.a. Beavers removed part of the process in a patient with appendikuljarnym infiltration.

According to the majority of clinics, surgical hospitals patients with acute appendicitis comprise about 58%-72% 89%. This disease requires immediate surgical intervention. They get sick, and men and women, but the latest in 2-3 times more, especially at a young age (12-35 years). During the life of about 6% of the inhabitants of the planet have a chance to move.

Acute appendicitis, diagnosed and operated on time, not usually leads to complications and mortality when it reaches -0.6 0.01%. At the same time without timely intervention the surgeon deaths identified as 6-9% of cases.

Despite the fact that the disease is well known to doctors even now errors in diagnosing it occur quite frequently (12-31%). Only 80-85% of cases (according to Boris Petrovsky), doctors immediately put the correct diagnosis of acute appendicitis and on time produce operation. Acute appendicitis-rich disease and therefore its diagnosis is not always easy. One of the most experienced domestic surgeons-clinicians I.i. Greeks wrote that appendicitis is hameleonopodobnym disease-its not find where he is, and where it is found and do not assume! ".

Within this tutorial assumes development of students following competencies in accordance with the requirements of the GEF 3 generation: OK-1, PC-5, 17, 19, 20, 27.

**2. Clinical Anatomy of the Appendix**

Vermiform process, appendix vermiformis, departs from the often wall posteromedial cecum. The distance between the base of it and place the transition of small intestine in thick ranges from 0.6-5 cm. Rarely straying from the Processus tops the cecum. Its length is fickle, it ranges from 4 to 12-18 cm, and most often equal to 8-10 cm. Diameter process reaches 0.4-1.2 cm, 0.7 cm on average.

**Projection position, sintopija**.

**The projection of the Foundation process** at the front abdominal wall is very fickle. Most often the Foundation is projected on the border between Central and right third lin. bispinalis **(Lanza**) or on the border of the lower and middle thirds of the line connecting the navel with the front upper thoracic spine of the ilium i.e. lin . spinoumbilicalis (**dot Mak Burneja**) (fig. 1). Provisions of the vermiform process variability is one of the reasons for the diagnostic error when his nerve.

|  |  |
| --- | --- |
| |  | | --- | | The spina iliaca anterior superior | |

Figure 1. The main projection point reason vermiform process on the front abdominal wall.  
1-point Mack Burneja; 2-point Lanza.

**Provisions of the vermiform process Options**. Processus can occupy a different position relative to the blind gut (fig. 2). There are the following options to its location:

1) **Downward** ≈ 40-43%, and as his extreme **pelvic position**

2) **Rising** ≈ 6-8%, and how extreme **the situation podpechenochnoe**

3) **Lateral** ≈ 23-25%;

4) **Medial** ≈ 10-12%;

5) **Front** ≈ 7-9%.

6) **Rear** ≈ 3 -14%

In the latter case, it can be placed in the abdominal cavity and is completely covered with peritoneum **(retrocekalnoe position) or** same be zabrjushinno **(retroperitonealnoe regulation process**).

**Figure. 2.** the provisions of the vermiform process Options relative to the blind gut.  
1 — top-down; 2-side (lateral); 3-inner (medial); 4-rear (retrocekalnoe, dorsalnoe); 5 — front (ventral).

**Retroperitonealnoe** position of the vermiform process makes it difficult to remove because it is located deep in the wound, behind the cecum, and sometimes behind the ascending colon; very often it is surrounded by srashhenijami and soldered to the posterior abdominal wall. In such a situation, the inflammatory process may extend to the fatty tissue and organs retroperitoneal space, as well as in the lumbar region, which can cause poddiafragmalnogo or okolopochechnogo abscesses.

**Anatomical characteristics**

The wall of the vermiform process consists of four shells: Mucosa, submucosa, muscularis, and serous. Serosa constitutes the peritoneum. Muscle sheath consists of outer longitudinal layer of muscle fibers and the inner circular layer. In the podslizistom layer is located a large number of **lymph follicles**. The mucosa of the appendix has deep crypt.

**Brjushinnyj cover, mesentery.**

Vermiform process is covered by peritoneum on all sides. He has his bryzhejku, mesenteriolum vermiformis appendicis, which in most cases represents the dublikaturu of the peritoneum of the triangular form. One side of the bryzhejki is fixed to the cherveobraznomu tree, the other to a blind gut and the final Division of the small intestine. The free edge of the bryzhejki the major lymphatic and blood vessels, as well as nerve plexus.

**Blood supply.**

Artery of the vermiform process, a. arrendicis vermiformis, departs from the Ilio-colon artery a. ileocolica (fig. 3). Artery of the vermiform process initially positioned posterior to the final Division of the ileum, then passes in the free edge of the vermiform process bryzhejki and paid to him 4-5 branches.

**Figure. 3.** Options beginning a. appendicis vermiformis.  
1-a. ileocolica; 2-a. appendicis vermiformis; 3-ileum; 4-appendix vermiformis; 5 — caecum.

**The lymphatic system**

The lymph from the cecum and vermiform process is carried out in the lymph nodes located along the course of Ilio-colon artery (fig. 4). Distinguish between the lower, upper and middle groups of lymph nodes in this area. The lower group of nodes is where Division of Ilio-colon artery at its branches, i.e. near ileocekalnogo angle; the top is located at the place of origin of Ilio-colon artery; the average lies approximately halfway between the bottom and the top of the host group in the course of Ilio-colon artery. Lymph from these hosts poured into a central group of mesenteric lymph nodes.

**Fig. 4** lymph vessels and nodes ileocekalnogo angle (rear view).

1 — caecum; 2 — appendix vermiformis; 3 — lymphatic vessels of the vermiform process bryzhejki; 4-ileum; 5-ileocekalnye nodes; 6-a. ileocolica.

Lymphatic vessels and nodes have multiple angle ileocekalnogo anastomoses with the lymph nodes, kidneys, liver, gall bladder, duodenum, stomach and other organs (d. a. Zhdanov, b. b. Ognev). An extensive network of anastomoses may contribute to the spread of infection to other bodies with inflammation of the vermiform process.

**Innervation of the vermiform process.**

The nerve branches to the upper bryzheechnogo Plexus innervate the vermiform process, a blind gut, ascending colon and transverse colon colon. These branches are suitable to the intestinal wall, located in perivaskuljarnoj tissue main arterial trunks (a. ileocolica, a. colica dextra, a. colica media). Near the intestinal wall, they are divided into smaller branches, which anastomose with each other (fig. 5).

**Fig. 5** Innervation ileocekalnogo angle.

1-a. ileocolica; 2 — the nerve plexus branches mesenterici superioris; 3-ileum; 4-a. appendicis vermiformis; 5-appendix vermiformis; 6 — caecum.

**Anatomical characteristics:**

The wall of the vermiform process consists of four shells: Mucosa, submucosa, muscularis, and serous. Serosa constitutes the peritoneum. Muscle sheath consists of outer longitudinal layer of muscle fibers and the inner circular layer. In the podslizistom layer is located a large number of **lymph follicles**. The mucosa of the appendix has deep crypt.

**Functions of vermiform process:**

1. tonsil bowel (barrier);

2. formulation of lymphocytes;

3. effect on the growth of the organism (via the pituitary gland);

4. effect on intestinal peristalsis;

**3. The etiology**

There are many theories of the origin of appendicitis but none of them is not exhaustive. A single universally accepted theory of the occurrence of acute appendicitis does not.

**1) theory of stasis** -breaking contractility of smooth muscle fibers walls of the vermiform process leads to stagnation in it content rich bacterial flora, faecal stones, injury mucous and its inflammation with the subsequent development of an acute inflammatory process.

**2) Dienlafou (1898)-theory "closed cavities"** -influenced by the kinks, scarring and adhesions in cherveobraznom in enclosed spaces are created, the outflow of contents is broken and the inflammatory process occurs.

**3) Rheindorf (1920)-theory of helminthic invasion** -adverse effects of pinworm (especially in children), which leads to a secondary inflammation of the nasal bone and the emergence of pain

**4) Asc(h)off (1908 г.)** -the infectious theory. Primary affect is called microbial (if you activate and reproduction) and their toxins, particularly enterococci, while strengthening their virulence. Pus find four anajeroba (bakteroida, peptokocchi, peptostreptokocchi, Clostridium) and 4 ajeroba (enterococci, Escherichia coli, Staphylococcus, Protei) they increased the pathogenicity of each other.

**5) Gematogennaja theory**. Acute appendicitis is the result of metastasis by hematogenic osteomyelitis-infection bacteremia from home purulent infection (for example, tonsillitis, furunkoulez, decayed teeth, etc.)

**6)** **bauginospazma Theory** -spastic bauginevoj reduction, cause stagnation content in the cecum and cherveobraznom shoot, and this leads to the spread of infection from the cecum to the mucosal lining of the bone, causing inflammatory changes, pain, and relevant clinical picture.

7**) Ricker** (1928)- **angionevroticheskaja theory**. Various neurogenic disorders, leading to muscular and sosudistomu spasms, bringing food, certain areas of the walls broken and sharply formed stretches of ischemia and necrosis, then in the membrane and wall of the process that leads to inflammatory process

8) **Nejrogennaja theory** -various changes in gastrointestinal (constipation, inflammatory diseases-enterocolitis) cause reflex spasm ileocekalnogo angle wall ischemia process, ischemia and necrosis of mucous, etc.

**Thus, appendicitis is polijetiologicheskim disease!**

**4. Pathogenesis**

**The main parts of the pathogenesis of acute appendicitis are:**

1) weakening of local and general protective capabilities of the organism, while the influence of predisposing causes change the physiological properties of the mucosal epithelium of the vermiform process.

2) epithelial cells do not provide their protective function; they lose the role of live barrier penetration pregrazhdajushhego gnoerodnyh microbes from the lumen of the vermiform process the submucosal layer and glubzhelezhashhie fabric appendikuljarnoj wall. As a result of the inflammatory process begins. An emerging hotbed of inflammation leads to mobilize the protective reactions of the body. The combination of these factors (of the inflammatory response and immune system) creates a clinical picture of acute appendicitis with all its specific features and various forms.

**5. classification**

**Classification of V.i. Kolesov (1972 g.):**

(I) **.** **Appendikuljarnaja colic**

II. **simple (superficial) appendicitis**

III**. The destructive appendicitis**

1) Flegmonoznyj appendicitis, including empiema vermiform process

2) Gangrenous appendicitis

3) Perforativnyj (probodnoj) appendicitis

(I) to(V). **Complicated appendicitis:**

1) appendikuljarnym infiltration.

2) appendikuljarnym by.

3) generalized peritonitis.

4) other complications (pileflebitom, sepsis, etc.).

**Note to classification:**

The exact form of the microbiology of appendicitis can be put only after appendectomy and corresponding patanatomicheskogo study. Until that time, one can only suspect one or another form in accordance with the severity of the clinical picture

**6. The clinical picture and diagnostic**

The clinical picture of the disease varied, so surgeons call it the **"hameleonopodobnym disease".** there are **three** main stages of acute appendicitis:

1) early or initial (up to 12:00);

2) stage of development of the destructive changes in shoot (from 12 to 48 hours);

3) stage complications (from 48 hours and more).

Similar divisions on stage very conditionally, and the disease can be very different, much more than the script underwent, but more often it develops.

Acute appendicitis usually starts suddenly, among the full health, with the appearance of pain in epigastria **(symptom Kocher**), near the navel, or even across the stomach. Pain accompanied by nausea, one-two vomiting. The pathological process evolves through 2-3 hours or later (this depends on the reactivity) pain shifted right ileum region (**p-m Kocher-Volkovich**), amplified when walking, irradiiruet in the right leg, right the lumbar region.

**When kataralnom appendicitis** in the first hours of the disease the patient's condition is satisfactory. Subfebrilnaya temperature ( -37.8 37.4° c), pulse 80-90 beats/min. Blood pressure does not change. The language is slightly moist, whitish bloom, not belly swollen front abdominal wall soft participates in the breath, but painful at palpation in the right iliac region. Notes the positive symptoms: Sitkovskogo, Rovzinga, Bartome-Mihelsona.

**When flegmonoznom appendicitis** patient's condition moderate febrile temperature ( -38.5 38.0° c), the patient restless, trying less to move. Pulse 90-100 beats/min. Language is paved with white bloom. By palpation indicated muscle tension and sharp pain in the right iliac region. Determined by positive symptoms: Karavaevoj, dolina, Sitkovskogo, Rovzinga, V.razdolskiy, Voskresensky, Bartome-Mihelsona, Shchyotkina-obrazcova, Bljumberga.

**When gangrenoznom appendicitis** condition of the patient is usually heavy. It's sluggish, aims to take a comfortable position so as not to exacerbate the pain in the abdomen, body temperature is 38.5° c -39.0 pulse 100-120 BPM, language dry, densely lined with grey touch. Abdomen in breathing practically does not participate, the front abdominal wall sharply painful in the right half with a muscle strain. Dramatically positive appendicitis symptoms and irritation of the peritoneum (V.razdolskiy, Karavaevoj, Voskresensky, Valley, obraztsova, Bartome-Mihelsona, Shchyotkina-Bljumberga, etc.). Bowel motility is not being heard, gases do not depart. Pronounced phenomenon of intoxication.

In the diagnosis of acute appendicitis in addition to **ascertaining the anamnesis, complaints, patient examination results, in which rectal examination necessarily**, have a value of **laboratory data** (blood test, urine test), indicating the development of the inflammatory process, the phenomenon of intoxication: in the blood rise blood leukocyte and shift left, EMS the ESR. When peritonitis leucocytosis rises to 25-blood 30 h 109/l.

**CLINICAL SYMPTOMS OF ACUTE APPENDICITIS**:

Symptoms of acute appendicitis in the literature described more than 100. Here are the most frequently applied in practice:

1) **Kocher** -pain in epigastria

2) **Kocher-Volkovich** -symptom of epigastric pain moving in right iliopsoas-inguinal region.

3) **Kjummelja** -occurrence of pain in the belly button

4) **Resurrection** - **symptom "shirts."** through a patient's shirt quickly produce sliding hand along the front of the abdominal wall from the rjobernoj arc to the inguinal ligament and back Alternately, first left, then right. When you do this, note the significant increase in pain in the right iliac region.

5) **Sitkovskogo** -emergence or increased pain in the right iliac region when turning the patient on the left side

6) **Rovsinga** -left hand press sigmovidnuju colon to the wing of the left ilium, and right hand exercise tolchkoobraznye movement in the left iliac region-(amplified) pain in the right iliac region.

7) **Bartome-Mihelsona** -pain during palpation of the right iliac region to position the patient on the left side

8) **Karavaevoj** -increased pain in the right iliac region when coughing.

9) **V.razdolskiy** -resistant and perkutornaja pain in the right iliac region

10) **Triad Delafua** -a combination of local hyperesthesia, local muscle tension, local pain at deep palpation in the right iliac region.

11) **Valley** -increased pain in the right iliac region retracted abdomen.

12) **Rizvasha** -increased pain in the right iliac region with deep breath (at high location process).

13) **Krymova** -increased pain during palpation of the external inguinal ring.

14) **Ivanova** -asymmetry of the abdomen-decreases the distance from the right front-upper iliac spine to the umbilicus through tension in the muscles of the anterior abdominal wall

15) **Dumbadze** -pain when feeling the umbilical ring (here the peritoneum lies the most superficial and responds to palpation of the jerky)

16) **Krasnobaeva** -voltage right rectus (children)

17) **Shilovceva** -when turning on your left side soreness area shifted to the navel.

18) **Lenandera-Samarina** -positive, when the difference between rectal and axillary temperature field exceeds 0.5 onwith

19) one important symptom is **muscle tension of the anterior abdominal wall.**

20) He observed at the transition of the inflammatory process in the parietalnuju the peritoneum, but its degree of manifestation happens different-from low voltage to "doskoobraznogo".

**Symptoms of retrocekalnogo location of vermiform process:**

21) **Obraztsova** -when lifting your right leg at 45 degrees the pain intensifies by palpation the right iliac region (location tip retrocekalnoe)

22) **Joure-Rozanova** -by palpation indicated pain in right waist area (triangle of Petit).

23) **Gabay** -muscle tension and sharp pain when you remove your hands in the right lumbar (Petit triangle).

24) **Acbar I** -sore right hip rotation in position laterally on the back

25) **Acbar II** -pain when uncurling the right hip in position the patient on the left side-reducing iliopsoas and internal muscle zapiratelnoj (translates blind intestine or adjacent organs of small pelvis, causing voltage parietal peritoneum and increased pain in the right iliac region).

**Particularities of clinical picture of acute appendicitis during pregnancy**

Selection of acute appendicitis during pregnancy in a special kind of disease is due to the fact that a number of the symptoms (abdominal pain, vomiting, leukocytosis), observed during normal pregnancy and, therefore, more difficult to diagnose disease. **Acute appendicitis in the first half of pregnancy chashheprotekaet typical. Differences appear mainly in the second half of it!** First of all, draws the attention of the **nevyrazhennost pain syndrome**. Pregnant women often do not record it attention, identifying him with pains arising due to stretching of the ligaments of the uterus. However, the helpful feedback form allows you to set their start in epigastralna area and a gradual shift to a place of localization of vermiform process. Vomiting is not decisive, as is typical for the normal course of pregnancy.  
While researching belly must take into account the localization of vermiform process that can move up the timing of pregnancy increases. Thus, **local pain in acute appendicitis in the second half of pregnancy will be determined not in the right iliac region and significantly higher**. Due to the stretching of the anterior abdominal wall enlarged uterus local **muscle tension is expressed weakly**. In late pregnancy, when the cecum and its process behind the enlarged uterus can be negative, as described above, the appendikuljarnye symptoms and symptoms of irritation of the peritoneum: Shchetkina-Bljumberga, Resurrection, etc. Thermal reaction is expressed weaker than when appendicitis outside of pregnancy. The number of cells is moderately increased, but it should be borne in mind that Leukocytosis of up to 12 h 10/l in pregnant-physiological phenomenon.  
Causes of diagnostic errors in acute appendicitis in pregnancy. The location of pain above the ordinary places of localization suggests liver colic, cholecystitis, colitis. Pelvic pain suggests hydrosalpinx, adnexitis, ovariite, early abortion. Lumbar pain with retrocekalnom appendicitis in pregnancy can be confused with pain in kidney colic and other pathology of the kidney.   
To avoid errors, we recommend use a variety of diagnostic techniques survey of pregnant women, as well as to take into account some of the clinical signs. Frankel recommends a long study of the patient in the supine position on the left side. There may be increased abdominal pain when lifting the right leg**(with-m Jaworski)**, lying on the right side **(with-m Mihelsona** (Sitkovskogo-)), as well as the emergence of pain in the right iliac region at pressing on left edge uterus (**with-m Brendo**).   
Below are the symptoms, allowing to differentiate acute appendicitis with gynaecological pathologies having a sufficiently large value in **gynaecological Diagnostics**:

-Dujejja-sign pelvioperitonita: when vaginal duglasovom study space, severe pain occurs without probing any tumors; the uterus is moving, painful.

-Douglas is a sign of an ectopic pregnancy: severe acute pain during palpation of the vaginal changes, their form is not observed.

-Jelekera is a sign of an ectopic pregnancy: abdominal pain, which in the shoulder or shoulder (usually right).

-Zhendrinskogo-differential-diagnostic sign of acute appendicitis and acute Gynecologic diseases: patient in lying position press the finger the abdominal wall at the point of Kjummelja (separated by 2 cm to the right and below the navel), offering her a while to stand up; increased pain presents in favor of appendicitis, decreasing about adnexitis.

-Kera-a possible sign of intra-abdominal bleeding: severe pain in my left shoulder.

-Kulenkampfa is a sign of intra-abdominal bleeding: percussion on soft or almost mild abdominal wall causes severe pain.

-Cullen is a sign of ectopic pregnancy: a bluish-black color of the umbilical area.

-Promptova-differential-diagnostic sign of appendicitis in women: uterine during its retreat up rectal study characterized the genital pathology; When appendicitis is negative.

-Sumner-sign perekruta ovarian cysts: rigidity of the abdominal muscles in light palpation in the right iliac region.

**Particularities of clinical picture of acute appendicitis children**

Despite the fact that, according to g.-Mondor "acute appendicitis is mainly children's disease" in infants, it is rare. More disease and rapidly flows extremely hard than adults, because of the lack of resistance to infection of children, the weak children's plastic properties of the peritoneum, omentum, underdevelopment, which is not comes to the vermiform process and thus not involved in the creation of a limiting barrier. With the length of the Appendix often does not correspond to the small size of the stomach.  
Survey data, which in adults are crucial in children are reduced to a minimum or even misleading. Baby cries when approaching when it touch when he asked questions. If he's older and can hold a conversation, "he says with a cry that any palpation painful. It reduces your stomach as possible and resisting any attempt by palpation. Study of heart-wrenching for the sick, for family, for the doctor, and the latter frequently seeks to put an end to it as soon as possible "(Gowland). It should be remembered that the stubbornness with which the child pushes the hand palpirujushhuju a doctor, usually a sign of inflammatory reaction on the part of the abdominal cavity, and not only an expression of his caprice.  
Among the **factors hampering placing of correct diagnosis** and utjazheljajushhih the course of the disease can be distinguished:

● children infection towards sepsis, gangrene and perforation occurs faster than in adults;

● a child between a condition that allows you to calm down, and State, the seeming cynical, often takes only a few hours, and there is no early enough, nor sufficiently clear signs that would foresee dangerous deterioration process;

● light effect symptomatic and which conceals the true essence of treatment is daily danger, about which to relentlessly remembered;

● the toxic complications are frequent early phenomenon;

● children one of the causes of difficulty diagnosis serve themselves signs before zatushjovyvanija their therapeutic means. Normal temperature, slow pulse, the absence or denial of pain, diarrhea, liver symptoms, effects from the bladder, the absence of an overall reaction and so on-these are numerous causes;

**Spontaneous pain** in the abdomen is the first harbinger of the disease. Baby knows her and draws her attention. But you should not assume that it will always help to localize the pain. Often he feels it at the level of the umbilicus or in podlojecna area. The attention of the physician should attract strong acute pristupoobraznaya pain. You should be able to ask the child, which all denied because of fear of treatment or surgery. Enough to be present at the "spasm" and notice the small signs-like bent right hip or defensive position of the right hand in the appropriate place, to get a first glimpse of the localization of pain. The most important characteristics is the pain irradiirujushhaja left, the pain of passing over the middle line, and particularly night pain.   
Pain is very strong and increases or appears when movements. Therefore, if the child is easily able to plant, then it's not experiencing severe pain.   
A characteristic is its **posture** **(forced)**: it lies on the right side or on the back, causing the legs to the abdomen and putting his hand on right ileum area protects her from the examination by a doctor. To detect pain indirectly by Drahter recommended to take a one-handed stop child and another perkutirovat heel. In the case of peritonitis will defend itself baby starting from the pain caused by this percussion, with both hands, which he brings to the lower abdomen.  
**Provocirovannaja pain** in all cases, but in some cases this indicator is difficult to assess. During palpation should not obstinately looking at belly. It is necessary to pay attention to everything the person on the lower limbs. Sometimes it is best to judge a suffering patient: his face suddenly is coated, it inhibits the movement of the right foot and produces foot protester gesture. Should not be confined exclusively to including palpation of the abdomen. Also requires bimanualnaja and abdominal lumbar palpation. Never ignore rectal examination.  
**Skin gipersteziju** not just because arousal, fear and impatient little patient to easily attach to the grounds of doubtful character.  
    **Vomiting,** which appears on the background of pain is nearly constant symptom. However, sometimes vomiting, accompanying top diseases, stops and, conversely, there are cases of uncontrollable vomiting.  
    **Delay stool and gas** represent a normal picture. But more often in children than in adults there is diarrhea, particularly in early disease.  
    **The disappearance of breathing movements of the abdomen** is bright, almost constant and easily discoverable. When peritonitis it immediately catches the eye. In children as in adults, **muscular defense** is a very important sign. Being positive, it plays a crucial role. But sometimes, for example, when the entire length of the front abdominal appendicitis retrocekalnom wall remains absolutely soft.  
Frequency and heart rate variability in children do not always correspond to the severity of the lesion, and may depend, for example, from excitement. On the contrary, slowing the pulse may occur during the heaviest gangrenoznyh appendicitah. In children the discrepancy between pulse and temperature occurs more commonly than in adults.

Remember that if you have pain in the abdomen, children **always** need to be hospitalized in the surgical hospital for **follow-up.**

**Particularities of clinical picture of acute appendicitis seniors**

Acute appendicitis in elderly and senile age is rarer than in young and middle-aged, while dominated by his destructive form. This fact is due, on the one hand, the **low reactivity of the organism,** and, on the other hand, atrophy and sclerosis of all elements of the vermiform process, including multiple sclerosis, vessels that serves as the immediate cause of the quick violation blood supply with the development of necrosis and gangrene vermiform process.  
Symptom of acute appendicitis patients in this age group often **has effaced the picture**. As a result of **physiological threshold increase pain** sensitivity in elderly patients often fail to capture attention at the epigastric abdominal pain phase and the beginning of the disease often consider the emergence of pain directly in the right iliac region.  
Nausea and vomiting occur more often than the middle-aged, which is connected with the rapid development of the destructive process. Delay stool is not conclusive, because old age has a physiological tendency to constipation.  
While researching belly often reveal only moderate pain in the right iliac region even with destructive forms of appendicitis. As a result of age relaxation of the muscles of the abdominal wall muscle tension in the defeat slightly but with the-m Shchetkina-Bljumberga usually pronounced good. Often the positive with the Resurrection, we Sitkovskogo. Body temperature **rises moderately or remain normal**. **The number of cells or normal, or slightly higher,** neitrofilny shift is not expressed.  
Thus, the main causes of errors of diagnosis of acute appendicitis elderly and senile age are as follows:

* the discarding of thought about appendicitis owing to old age;
* high localization of pain;
* often an absolute absence of changes in temperature and heart rate at the beginning of the heaviest forms;
* frequent and early appearance of swellings and timpanita (false occlusion);
* erroneous expectation of the contraction of the muscles of the abdominal wall, which is rare (sluggish reflexes and small weight involved muscles);
* neglect of rectal research;
* obsession about cancer (psevdoopuholevaja form);
* If there is a possibility of development of vnutrigryzhevogo hernia, purulent appendicitis;
* symptoms of hepatic or renal failure, combined with appendikuljarnymi phenomena or dominate the illness.

**Figure. 6 diagnostic algorithm**

**7. Differential diagnosis**

The differential diagnosis of acute appendicitis must be conducted with all acute diseases of the abdominal cavity and primarily with:

1) its stomach ulcer and 12 duodenal ulcer,

2) acute cholecystitis,

3) acute pancreatitis,

4) acute ileus,

5) right-handed renal colic,

6) ectopic pregnancy

7) acute adneksitom.

**Perforativnaja gastric ulcer and 12 duodenal ulcer** might resemble the clinic of acute appendicitis, starting with pain in epigastria, who then pushed right ileum area. However, unlike appendicitis, if its ulcer pain significantly stronger, "how to kick the knife" **("")**. **History** of patients there are indications of **ulcer disease**. Notes expressed weakness, nausea, stool and gas delay. The general condition of the patient is significantly heavier than in acute appendicitis: facial expression, afraid of suffering; position in bed-on the back or on the side of the legs to the stomach (pose "the embryo"). In the first hours of determined aetiology (50-55 beats/min), and then tachycardia. Blood pressure drops to 90/40 mm Hg. The tongue dry, lined with white bloom. Retracted belly (scaphoid), anterior abdominal wall of the abdomen in breathing does not participate, sharply strained- **«doskoobraznyj stomach**».

You should always remember about this triad of symptoms: "" pain "," doskoobraznyj belly, ulcerative anamnesis (**triad-Knigina-Mondor**). Defines a positive symptom dramatically Shchyotkina-Bljumberga around the stomach. Perkutorno liver dullness is reduced or not defined (**a symptom of Spizharnogo**). The sloping ground belly taped free liquid. Abdominal x-rays determined free gas in the form of a Crescent strips under right dome diaphragm. In the blood indicated pronounced Leukocytosis with a shift to the left lejkoformuly, high ESR. It should be remembered that through 8-10 hours from the onset of the disease, the pain subsides, the patient noted improvement, but this is a period of "imaginary well-being". The phenomenon of increasing intoxication, clinic of peritonitis progresses (language dry, swollen belly, boleznenen dramatically in all departments, tachycardia, gases do not depart, no Chair), blood leucocytosis, under fluoroscopy-Bowl Klojbera, there is no stomach gas bubble . The patient must operate urgently. In difficult cases, differential diagnosis must use ultrasound, laparoscopy.

**Acute cholecystitis** often resembles a picture of acute appendicitis, too, starting with upper abdominal pain. Is possible with high, podpechenochnom, location of the vermiform process or during pregnancy, when the Processus pushed back up, as well as at low the location of the bottom of the cholecyst-"hanging a bilious bubble. All of these options are difficult in diagnostic terms.

It should be remembered that the acute cholecystitis usually starts after taking a large amount of spicy and fatty foods, at night, with the appearance of sharp pain, accompanied by nausea and repeated vomiting with jelchew, little facilitates human patient's condition. Move in the right hypochondrium pain and here are localized. Acute cholecystitis frequently suffer from overweight women aged 45-50 years. Typical pain irradiation illusion (which is not in acute appendicitis) in the right arm, shoulder, and nadpleche shoulder. The patients body temperature rises rapidly (up to 38° c and above) indicates weakness, malaise. It is possible to ikterichnost (zheltushnost) skler and skin when hit by a stone in the common bile duct. The language in the first hours of wet, then dry and covered with brownish touch. The belly is not swollen by palpation of the anterior abdominal wall indicated expressed pain and muscle strain in the right podreberie, where one can often detect testovatoj consistency-the bottom seal of the gall bladder. Determined by positive symptoms Ortner, Murphy, Kera, Zaharin, Mussy-St George, Shoffara, Baking. The expression of the process in the right podreberie observed protective muscle tension. In the peripheral blood leucocytosis is detected with a shift to the left lejkoformuly, high ERYTHROCYTE SEDIMENTATION RATE, raising cium (which does not happen with appendicitis). When ULTRASOUND: detects gallstones, lamination and other signs of hitting the wall of the gallbladder.

**Acute pancreatitis** is also characterized by the emergence of pain in epigastria, but unlike acute appendicitis pain intensity is significantly stronger. Pain radiating to the back, worn shingles nature. pain Precedes syndrome diet-large the amount of spicy and fatty foods, and alcohol.

Pain syndrome accompanied with acute dispepticheskimi disorders in the form of nausea and repeated, not facilitate, vomiting. The condition of patients with progressive deteriorating: the skin of the face is pale grey, dry language, with greyish-Brown. The abdomen is moderately swollen bowel motility is weak or not listening, not depart-the phenomenon of dynamic ileus. Defines the positive symptoms of the resurrection, Kerte, Mayo-Robson, Cullen,-Mondor, Grey-Turner. Notes the shortness of breath, tachycardia, reduction in blood pressure.

When the laboratory examination blood leucocytosis is detected with the lejkoformuly shift to the left, high ESR. In biochemical research-hyperglycemia, gipocalziemia, increased blood amylase. Growing up to high numbers (512.1024 etc.) urinary incontinence. If ULTRASOUND detected the characteristic signs of acute pancreatitis, often liquid in sealing the bag and the abdominal cavity. When rentgenoskopicheskom study is determined by the reduction of trips of the diaphragm, the presence of fluid in the peritoneal and pleural cavities.

**Acute intestinal obstruction** have to differentiate from acute appendicitis, in cases where the pain is localized in the right abdomen, e.g. when ileum intussusception in blind (often children). With the emergence of pain shvatkoobraznogo nature, nausea, vomiting, delay flatus and stool. The belly is usually swollen, but there is no abdominal palpation of its tension. In the ileocecal region is determined by the maloboleznennoe, moving kolbasovidnoe education-invaginat. Percussion of the abdomen-timpanit. Quite often when rectal study find mucus with blood-symptom of "raspberry jelly.

Acute intestinal obstruction in adults is usually preceded by diet, for example-receiving abundant, rough food after the preceding fasting. Therefore, acute intestinal obstruction, especially stranguljacionnuju, called "disease wars". History can be abdominal operation.

Bowel obstruction can be caused by a tumor, helminthic invasion, the inversion of the intestines, uzloobrazovaniem or invaginaciej. Patients complain of sharp, cramping in the abdomen without explicit localization, nausea, vomiting repeatedly. In the final stage in the development of peritonitis, vomiting is "kalovyj". For intestinal obstruction characterized by asymmetric bloating, lack of stool and gas. Determined by positive symptoms Valya, Hose, Sklyarov (succussion), Spasokukockogo, Obukhiv hospital. When the review of abdominal radiography detected Bowl Klojbera.

**Renal colic.** Typical for right-handed renal colic is a sharp pain in the lower back, irradiirujushhaja in his right groin, restless patient behavior, frequent urination with rezju and pain in small portions with an impurity of blood. During palpation- pain along the course of the ureter. Positive symptom of Pasternackogo. Symptoms of irritation of the peritoneum. Urine protein and fresh blood. X-rays of the kidneys and ureters-shadow concrements. When hromocistoskopii is delayed or absent secretion of indigokarmina. ULTRASOUND:

stones are detected and symptoms of renal hypertension.

**Ectopic pregnancy** Unlike acute appendicitis is characterized by strong, sharp pains in the abdomen above the vagina accompanied by dizziness, weakness, nausea, vomiting, transient fainting. There has been a delay in menses, bleeding from vagina. The skin is pale. Frequent heartbeat, weak content. Blood pressure lowered. The abdomen is moderately swollen, not involved in the Act of breathing. Can be determined by voltage recti. Positive symptom Schetkina-Bljumberga. Percussion-free fluid in the abdominal cavity. Puncture of posterior FORNIX confirms or excludes the diagnosis of ectopic pregnancy. ULTRASOUND: a free fluid in the abdominal cavity (blood).

**Acute adnexitis (acute inflammation of the uterine appendages)** as acute appendicitis is characterized by lower abdominal pain, fever. Unlike appendicitis, with radiating pain disorders in the sacrum back. In history there are indications on the menstrual cycle or transferred previously inflammatory disease of appendages. By palpation tenderness is defined at the bottom of the abdomen on both sides. Muscle tension is often missing. When the vaginal inflammatory tumor detected study appendages, which is closely related to the uterus. Defines a positive symptom Promptova soreness at the retreat of the uterus during vaginal or rectal. Can be determined by positive symptom Zhindrinskogo-reducing pain in the right iliac region when you change the status of the patient (from a lying position in sitting position).

**8. treatment**

Therapeutic tactics in acute appendicitis in contrast to many other diseases of abdominal cavity organs acknowledged: "in establishing the diagnosis of acute appendicitis is shown emergency surgery, regardless of the form of acute appendicitis, age of the patient and the time elapsed from the onset of the disease.

Operation choice of **appendectomy.**

Method of anesthesia is anesthesia or spinal anesthesia.  
**Surgical technique:**

1. **Access**

Anterior abdominal wall incision, produced by **Volkovichu-Djakonovu**-Mack Burneju. Cut through the skin and hypodermic cellular tissue, bleeding vessels ligated. The edges of skin wounds obkladyvajut napkins and probe Kocher or pincetu cut through on-the-go fibers Aponeurosis of the external oblique abdominal muscles (a). The cleaved edge Aponeurosis blunt hooks stretch in hand, cut through perimizij and stupidly pushing the internal oblique and transverse abdominal muscles on the go (b).

Muscle stretch hooks along the length of skin wounds, and then shift the predbrjushinnuju fiber with parietal peritoneum. Peritoneum capture two anatomical tweezers and lift it into the shape of a cone, cut through a short course of a scalpel or scissors (). Incision of peritoneum extend upwards and downwards (g). The edges of the peritoneum clamps Mikulic fix gauze napkins.

A) B) ),)

**Figure. 7 anterior abdominal wall Incision on Volkovichu-Djakonovu-Mack Burneju.**

2. If the abdominal cavity exudates aspirator remove it or face wipes. Wound edges stretch blunt hooks.

3. **derivation of the cecum with developed appendage into the wound**. Then seek out a blind gut, gently grab her anatomical tweezers, extract into the wound and keep marleva tissue (d). If the vermiform process not immediately became extinct with the gut wound, to find his touch on libera taenia colon before the appearance of the wound in the lower corner of the founding process. Vermiform process then carefully grasp the anatomical tweezers and extract from the abdominal cavity (e).

4. **clipping and tying up with proshivaniem bryzhejki vermiform process.**

Inferred processus fix soft clip placed on the bryzhejku near its top. After the silk thread by using a needle or clip Haemostatic Deshana perevazave bryzhejku at the base of the process (w). Very low overlay on the ligature should not be bryzhejku to not wrap the arterial branches feeding the blind gut wall. In short its mesentery perevazave portions of several receptions and scissors cross bryzhejku, clutching to the cherveobraznomu tree (w).

D)E) F))

**Figure. 8 Appendectomy**

Abdominal bleeding after appendectomy represent a dangerous complication. To prevent appropriate cross bryzhejku **with obligatory proshivaniem.** it is not recommended to take one ligature, great site bryzhejki. Hold the thread need in bessosudistyh areas.

5. **Remove process**. After the mobilization process at a distance of 1-1, 5 cm on the blind gut impose a thin silk by-muscle kisetnyj seam (s). The founding process of the compress two clamps Kocher. One of them is the bottom-remove and formed sulcus perevazave ketgutovoj processus thread (to). Between the ligature and the remaining clip protruding cross scalpel (l) and stump it (it should be no more than 1 cm) greased with tincture of iodine and submerged kisetnym seam (m). On top of the kisetnogo seam for greater tightness impose Z-shaped seam (n).

And)k) lmn

**Figure. 9 Appendectomy**

6. **abdominal cavity drenages** thin rubber or hlorvinilovoj tube fed right ileum hole for subsequent introduction of antibiotics. The introduction of rubber tube shown with destructive changes and vermiform process available in the abdominal cavity of serous and purulent exudates.

**Laparoscopic appendectomy**

The main stages of laparoscopic appendectomy:

1. access

2. the audit of the abdominal cavity organs

3. immediate laparoscopic appendectomy

a) traction vermiform process

b bryzhejki), the intersection of the vermiform process

in) processing stump vermiform process

g) removing the vermiform process

d) audit control, sanitation, drainage of abdominal cavity

e) operation

**1. access**

The operation runs of three or four accesses. In the area of the umbilical ring runs a small (10-11 mm) incision, through which by standard technique using a needle superimposed Squealing pnevmoperitoneum (insufljacija- filing process of carbon dioxide in the abdominal cavity) and Enter the first 10 mm body cavity for a laparoscopy. The subsequent introduction of troakarov tools is controlled by the view and is elected individually depending on the anatomical characteristics of the patient's abdominal cavity. In addition to "umbilikalnogo" in the abdominal cavity injected another two trocar: above the pubis in the midline (5-mm body cavity) and in the right podreberie whooo clavicle lines (10-12 mm body cavity).

***Figure. 10 Laparoscopic access***

**2. the audit of the abdominal cavity organs**

After the introduction of the instruments produced a thorough audit of the abdominal cavity and are determined by the presence and extent of peritonitis, the nature of the position and form of the vermiform process, morphological changes of bryzhejki, the founding process and the dome of the cecum, the ability to remove it a way technical features and endoscopic surgery-how to mobilize and intersection.

**3. immediate laparoscopic appendectomy**

Vermiform process captures the soft clip for bryzhejku, fascia anteriorly and down and "hung out" for the purpose of the audit bryzhejki (**traction vermiform process**). Depending on the experience of the surgeon, the nature of the change and the availability of tools bryzhejki was elected the way its intersection- **koaguljacionpyj, ligaturnyj, klipirovapie and hardware.** there is no need to allocate and dressing separately branch appendikuljarnoj artery. If the fatty tissue in the mesentery and infiltration are not expressed, visible artery and its branches, you can elect any means of mobilizing and their combination.

At the base of the process in the mesentery dissektorom or scissors creates a small hole through which takes place the ligature, and mesentery optionally using intra-or extracorporeal technology. In the comfortable situation (small mesentery, pronounced trunk receptacle) can perform ligation bryzhejki klipapplikatorom. With broad and mesentery artery branches successively expressed their klippirovat and cross.

In cases where the artery does not have a main trunk, mesentery fat expressed and noted her inflammatory infiltration, it is better to use coagulation bipolar clamp method. This step is performed sequentially ante and Canal depending on exposure: koagulirovannaja part bryzhejki intersects with scissors, etc.

After the mobilization process determines how appendectomy, he may be the traditional ligaturnym and using Surgical Stapling instruments. Application of the latest shows especially when infiltration and perforation of the founding process and tiflite when possible marginal resection of the dome of the cecum.

Trim process is done with scissors using electrocautery or laser vysokojenergeticheskim. Achieved their sterilization line crossing the vermiform process allows to abandon the traditional method of completion of appendectomy-peritonizacii, dipping his stump in the dome of the cecum different kinds of seams.

Vermiform process is removed from the abdominal cavity through the 10-mm body cavity. In the case of bone destruction with a view expressed by the prevention of infection of the anterior abdominal wall in the area of puncture it, you must retrieve in a special plastic container.

**9. complications of acute appendicitis**

Complications of appendicitis most often occur in neglected cases. Overall frequency

complications, according to different authors, is about 12%. For a successful fight against complications of acute appendicitis each surgeon must remember the main position: *early diagnosis and early surgery for appendicitis*.

**Classification of complications**

**(I).** **Depending on the time of occurrence of** Group 3 allocate complications

**1) Dooperacionnye complications**

**2) Intraoperative complications**arising during appendectomy

**3) post-operative complications** occur in the postoperative period

**II. Depending on the location**

**1) abdominal complications** (appendikuljarnyj infiltration, perforation, peritonitis, etc.)

**2) Complications from the wound** (wound festering, infiltration, jeventracija, etc.)

**3) common complications** (sepsis)

**The main complications** of acute appendicitis are:

1) Periappendikuljarnyj (appendikuljarnyj) infiltration

2) perforation of the vermiform process

3) Peritonitis

4) Pileflebit

5) Abscesses:

a) appendikuljarnye

b) pelvic or abscesses Douglas space

) mezhkishechnye

g) podpechenochnye

d) poddiafragmalnye

6) Sepsis

**9.1 Periappendikuljarnyj (appendikuljarnyj**) **infiltration**

**● Definition:**

Periappendikuljarnyj (appendikuljarnyj) infiltration **-** conglomerate fused between them organs and tissues located around vospaljonnogo vermiform process. In his education takes part parietal peritoneum, peritoneum, cecum and small bowel loops.

**● Types:**

There are two forms of appendikuljarnogo infiltration:

1) Loose

2) Tight

**● Clinical picture:**

A typical picture appendikuljarnogo infiltrate develops usually later 3-5 days from the onset of the disease. Previously abdominal pain almost completely subside, feeling sick was improving, even though the temperature remains subfebrile. When an objective study of the stomach cannot reveal muscular tension or other symptoms of irritation of the peritoneum. At the same time, in the right iliac region by palpation can palpate quite dense, maloboleznennoe and tumorous malopodvizhnoe education. Dimensions of infiltration may be different, sometimes it takes the whole right ileum area. Often the positive symptoms of Rovsinga and Sitkovskogo. Leukocytosis is usually mild with the presence of inflammatory nejtrofilnogo. In the diagnosis of appendikuljarnogo infiltration is essential history. If the appearance of specified education in the right iliac region was preceded by a bout of pain in the abdomen with appendicitis symptom Kocher-Volkovich, one-time vomiting and moderate fever, you can be sure correct diagnosis of appendikuljarnogo infiltration.

**● Outcomes:**

Exodus appendikuljarnogo infiltration can be either full

**resorption**or **abscedirovanie (formation of appendikuljarnogo abscess)**.

**● Treatment:**

When appendikuljarnom infiltrate apply conservative wait-and-see tactics of treatment. **The operation is contraindicated in the quiet reaches of appendikuljarnogo infiltration**, when dynamic observation is set a clear trend towards its resorption.

Of the therapeutic measures prescribed **bed rest, cold on the right ileum area, digestible form diet, antibiotics**. At the same time conduct close monitoring of the abdominal cavity, the nature of the temperature curve and the dynamics of the number of leukocytes, periodically perform an ULTRASOUND. If the infiltration as a result of conservative reference resolves, then sick in order to avoid the recurrence of acute appendicitis strongly recommend **routine appendjektomiju** through the 3-4 months after discharge from hospital.

**9.2 Perf vermiform process**

**Definition:** Break the walls of vermiform process.

**Clinical picture:** on the occurrence of perforation: sudden increased pain in the right iliac region, coming immediately increased, and the weakening of pulse, drop ad, deterioration of the general condition and appearance of signs peritonitis.

**Treatment:** Emergency surgery, treatment of peritonitis (see below).

**9.3 Peritonitis**

**Definition: Peritonitis is** inflammation of the peritoneum (the serous cover the abdominal cavity), characterized by local and common symptoms and accompanied by violation of the functions of the vital organs and body systems.

**Species:**

(I). **On the nature of the exudates** secrete: serous, fibrinous, purulent, Putrid, bloody, mixed.

II. **common process**

1) softness (abscess)

2) diffuse neotgranichennyj located within anatomical areas-local (one anatomical region), common (multiple areas) and the total spilled (amazed the whole peritoneum).

**Clinical picture:**

During acute peritonitis secrete **three clinical stages**:

1. **reactive** (12-24 hours)-maximum local manifestations and the reaction of the simpatadrenalovoj system of the body (primarily pain);

2. **toxic** (24-72 hours)-stihanie local manifestations, the prevalence of common symptoms of intoxication;

3. **Terminal** (over 72 hours)-extremely serious intoxication on the verge of decompensation of the vital functions of the organism.

Increasing intoxication leads to the defeat of the vital organs and the development of multiple organ failure: Hepatorenal, then cardiovascular and lung and in end stage lesion of the CENTRAL NERVOUS SYSTEM. Diagnosis usually does not pose a problem. The cause of the disease (original peritonitis) and then detected **symptoms of peritoneal**:

1. abdominal pain,

2. abdominal muscle strain

3. positive symptom Schetkina-Bljumberga,

3. nausea and vomiting

4. increased body temperature, etc.

If the reactive stage prevails pain syndrome and protective voltage abdominals, the toxic stage these symptoms are less pronounced, but increasing tachycardia, nausea, vomiting, bowel paresis and bloating, febrile morbidity.

In the terminal stages of peritonitis symptoms of toxic lesions of CNS-consciences is oppressed, facial features zaostrenny. The pulse deficit amid tachycardia, a decline ad. Belly considerably swollen, peristalsis of the intestine (symptom of "absolute silence).

In laboratory studies of blood and taped Crescent Leukocytosis, which can then change or lakopenia, indicating exhaustion protective forces of the organism, there has been a significant toxic lejkoformuly shift left. Hypo-and desproteinemia also provide evidence of immuno-depletion of protective forces of the organism. Increasing intoxication affects the kidneys-observed trace anuria, changes in urine toxic nature.

Instrumental research methods do not have any independent significance, but merely complement the main clinical picture: ECG signs of toxic lesions of the myocardium; radiographically-identifies the Bowl Klojbera, high standing of the dome of the diaphragm and friendly effusion in pleural cavity; Ultrasonic examination of abdominal viscera (by prescription) and free abdominal cavity to detect fluid. Diagnostic laparoscopy is shown in cases of uncertainty in diagnosis.

**Treatment:**

The basic method of treatment of peritonitis is **surgical**. Shows how to execute a laparotomy, auditing organs of the abdominal cavity and removal of the hearth, which caused peritonitis, sanitation and drainage of the abdominal cavity, nasogastrointestinal intubation. In the pre-and aftercare period intensive infusion, dezintoksikatsionnaya, anti-inflammatory, antibacterial therapy, including razlitom peritonitis extracorporeal detoxification methods (ULTRAVIOLET blood hemosorption, plasmapheresis, limfosorbcija, etc.). Correction is performed cardio-vascular, pulmonary, hepatic-renal failure.

The constituent elements of an integrated treatment are:

1) **early elimination of the infection** of the surgical interventions by the Government;

2) suppressing infection in the abdominal cavity, its sanation using multi-stage lavage and **Active drainage** occurring trubcha drains;

3) removal of intestinal failure syndrome by gastrointestinal decompression and subsequent ASPI walkie content via **nazogastrointestinalnyj probe**;

4) **correction volemicheskih, electrolyte, protein naru solutions** using adequate infusion therapy;

5) **restoration** and maintenance at an optimum level **functions of lungs, heart, liver, kidneys.**

**9.4 Pileflebit**

**Definition: Pileflebit-** septic (purulent) conjunctivitis Portal vein and its tributaries.

**Pathogenesis:**

Infectious inflammatory process starts in the veins of the vermiform process, and then on the superior mesenteric Vienna goes to the vorotnuju vein and veins of the liver; the last formed INR zhestvennye abscesses **(abscesses of the liver)**. Liver abscesses can form and as a result, skidding infected emboli in portal vein system in the liver. Most observations pileflebit occurs after appendectomy.

**Clinical picture:**

The general condition of patients with pileflebite is always difficult. Patients complain of stomach pain, weakness, poor sleep, lack of appetite. The pains occur in the right podreberie, podlojecna area, occasionally they're radiating into the back, right shoulder. Hectic fever character, pronounced Leukocytosis with left shift, increasing the size of the liver, jaundice.

**Treatment:**

Intensive intravenous thrombolytic, dezintoksikatsionnaya and antibacterial therapy. Anticoagulants in combination with antibiotics broad-spectrum desirable type directly in the portal vein system by catheterization of umbilical vein or puncture of spleen. Surgical intervention when pileflebite is in place above vein ligation thrombosis and ulcers showdown in the liver. Prognosis in pileflebite extremely unfavorable because mortality is high and reaches 90% and above.

**9.5 Abscesses**

Abscess **-** limited accumulation of pus in tissues and organs. Acute appendicitis can become more complicated development periappendikuljarnyh, pelvic, mezhkishechnyh, poddiafragmalnyh and podpechenochnyh abscesses. (see fig.)

**Clinical picture:**

Appendikuljarnyj abscess may develop in the outcome of appendikuljarnogo infiltration. At the same time there has been deterioration in the condition of the patient, increased body temperature, which can be gekticheskoij in nature, high Leukocytosis with left shift accelerated ESR. There is an increasing pain in the right iliac region, a positive symptom Shchyotkina-Bljumberga.

**Treatment:**

Treatment of abscesses is primarily in **opening and draining the abscess**. Usually when appendikuljarnyh abscessah use **vnebrjushinnyj Pirogovu access.** When pelvic abscess autopsy abscessah produced through the wall of the rectum. Then in the postoperative period is assigned to massive antibacterial and desintoksicazionnaya therapy.

Figure. 10 **Localization of abscesses**:

1, 2 — abscesses iliac Fossa; 4-retrocekalnyj abscess. 3-pelvic abscess;

**Section of Pirogovu**. Starts from the anterior upper spine of the ilium, and is carried out at 4 cm above the inguinal ligament, parallel to her via oblique and transverse muscle to the outer edge of the rectus. Peritoneum move inside and up;

|  |  |  |  |
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Figure 11. The main projection point reason vermiform process on the front abdominal wall.  
1-point Mack Burneja; 2-point Lanza.

**1 0 The postoperative period.**

After surgery under local anesthesia for the following 24 hours the patient in bed attached to the intervention semisentados the situation. Movement in bed already are allowed on the day of surgery. On the same day, sick is injected subcutaneously to 1 ml of night 1-2% solution promedola or ketorol.

After surgical interventions at the destructive forms of appendicitis, peritonitis, complicated to fight infection treatment with antibiotics. Through nippelnuju tube (supplied during operations) intraperitoneally antibiotics introduced 2-3 times a day for 300-500 thousand. units of penicillin and 0.25 g streptomycin in 20 ml of 0.25% novokaina solution or other antibiotics. Intraperitoneal administration of antibiotics is used during 3-4 days, after which the drain tube is removed. In addition, antibiotics (aminoglycosides, cephalosporins) are injected intramuscularly also fractional pending determination of normal temperature and blood picture.

In order to combat intoxication according to applied desintoksicazionnaya intravenous infusion therapy. To stimulate the cardiovascular activity, if necessary, use the subcutaneous introduction kordiamina, kordiazola and other means (after consulting a cardiologist).

When flatulence shows introduction of vapour pipes, reglan injection. Cleansing enema with delay the Chair, should not be applied to previously 5-6 days after surgery. To eliminate the delay urination applies heat to the area of the bladder, in case of failure it is possible in the absence of contraindications to put the patient on his feet so that he urinated. If these measures don't help, urine excreted by using a catheter. After appropriate catheter rinse the bladder warm saline solution, or furacillinom, enter antibiotics.

Remove tampons are made:

1) when tamponade about parenhimatosis bleeding not earlier than 48 hours

2) when tamponade due to incomplete removal of sources of infection not earlier than 8-9 sutokposle operations. Extracting tampons should be atravmatichno and painless, for this purpose, half an hour before bandaging patient introduced subcutaneously analgesics or apply short-term anesthesia nitrous oxide with oxygen.

Sutures are removed on the 6-7 day after the operation.

**Diet.** After surgery under local anesthesia is allowed to drink in small quantities (100-200 ml) a day after the operation, water, tea with sugar, Morse.

In the future, we recommend the following diet:

        3-th day after surgery-broth, porridge, soft-boiled egg, jelly, tea with sugar;

        4-5-th day the same + pureed soups, butter, white bread crumbs;

        6-th day the same + cheese, sour milk, steam cutlets;

        7-th day-a common table.

When you assign a diet should take into account the condition of the patient, his tastes and desires, as well as the presence or absence of post-operative complications. If during the postoperative period of the diet can be expanded in the early 3-4 days after surgery.

Ambulation of patients after surgery for simple and flegmonoznyh appendicitov 8-12 allowed within hours after surgery.

Extract the patient with smooth postoperative course and healing the wounds of the primary tension is made not later than 7 days after the operation. The timing of rising and discharge patients who applied tamponade or introduction into the abdominal cavity of the capillary tubes, rubber are determined by the nature of the postoperative course, namely: the general condition of the patient, the State of the wound, the absence or the presence of complications.

After discharge from hospital sick goes to outpatient treatment, the duration of which depends on the postoperative course and profession. In the absence of post-operative complications the duration of outpatient treatment average does not exceed 14-21 days. It may be extended to persons engaged in heavy physical labour; This group of patients sometimes have to recommend to change the nature of the work.

Complex medical gymnastics

**1. I.p.** -lying on your back, feet together, hands at your sides. Alternating leg flexion and extension in ankle joints. average Pace, breathing free. Repeat 6-8 times each leg.

**2. J. P.** the same hand bent in the elbow joints.

Flexion of the fingers in a fist and unbending. Average pace, breathing freely. Repeat 6-8 times.

**3. J. P.** -the same, legs slightly bent at the knee joints, brush one hand on your chest and the other in the abdomen, in the area of postoperative wounds. belly breathing in drag (hand should fall), exhale-vypjatit (hand lying on the stomach, should at this point is able to ). Repeat 2-3 times.

**4. J. P.** -the same, feet together, hands to your shoulders.

Perform a circular motion in the shoulder joints first forward, then back. Average pace, breathing freely. Repeat 4-6 times in each direction.

**5. p**.-same. Without breaking legs at the knee joint, gliding heel bed. Tempo slow, breath free. Repeat 6-8 times each leg.

**6. J. P.** -the same, legs together, brush the right hand on the field of wound, left hand along the torso. Breath-raise left arm up, exhale-delete temp slow smooth. Repeat 2-3 times.

**11. Tests and situational tasks by topic:**

**APPENDICITIS**

**1)** the most important symptom in diagnosis of acute appendicitis is:

**a)** triad of Dieulafoy

**b)** Symptom Kosher

**c)** Mihelson-Bartomie Symptom

**d)** Symptom Sitcowscki

**e)** Symptom Blumberg

**2)** Appendikuljarnyj infiltration has the following clinical signs:

**a)** gradually grows Leukocytosis

**b)** Swelling of various sizes, painful, that appears on the 3-5 day after the onset of the disease

**c)** dull pain in the right iliac region, which are amplified while walking

**(d))** The presence of fluctuations in the right iliac region

**(e))** Mild temperatures in the evening

**3)** Blumberg in acute appendicitis Symptom is as follows:

**a)** severe pain with a sharp hand remove in the right iliac region

**b)** Pain by palpation the right iliac region

**c)** Pain in the right iliac region prosthetic torso

**(d))** Pain during palpation in the right iliac region radiating in epigastria

**(e))** Pain in the right iliac region with insufljacii air in the rectum

**4)** When destructive acute appendicitis with generalized peritonitis requires differentiation with the following diseases:

**a)** ileus

**b)** Kidney Stone

**c)** Pulmonary vascular mezjenterialnyh

**(d))** Acute pancreatitis

**e)** Pnevmokokkovyj peritonitis

**5)** Choose the correct sequence of the onset of symptoms in acute appendicitis:

**a)** temperature, anorexia, nausea and vomiting, pain in the right iliac region, lekocitoz, pain in epigastria and around the navel

**b)** anorexia, nausea and vomiting, fever, leukocytosis, pain in epigastria or around the navel, pain in the right iliac region

**c)** pain in epigastria or around the navel, anorexia, nausea and vomiting, pain in the right iliac region, fever, leukocytosis

**(d))** Nausea and vomiting, pain in the right iliac region, temperature, anorexia, leucocytosis, pain in epigastria or around your belly button

**(e))** Pain in the right iliac region, pain in epigastria or around your belly button, temperature, leucocytosis, anorexia, nausea and vomiting

**6)** Podpechenochnyj appendicitis is manifested in the following clinical signs:

**(a))** Fever and chills

**(b))** Occurs more often in children

**(c))** may be accompanied by skin subikterichnostju

**(d))** Muscle tension and maximum pain in the right hypochondrium

**(e))** Flows as acute cholecystitis

**7)** differential diagnosis of acute appendicitis should be held with the following diseases:

**a)** Perforativnaja gastroduodenal ulcer

**b)** Mallory-Weiss Syndrome

**c)** food poisoning

**d)** acute pancreatitis

**e)** renal colic

**8)** acute appendicitis in the elderly has the following characteristics:

**a)** acute onset and rapid development

**b)** Weak muscle tension

**(c))** by palpation Pains in the right iliac region

**d)** trend towards destruction amid mild clinical picture

**e)** Moderate Leukocytosis, a slight increase in temperature and a pronounced flatulence

**9)** what diseases may simulate acute retrocekalnyj appendicitis?

**a)** acute cholecystitis

**(b))** Paranefralnyj abscess

**c)** inflammation of Meckel diverticulum

**d)** right Hydronephrosis

**e)** Acute pielit

**10)** When appendikuljarnom infiltrations:

**(a))** shall be appointed by the conservative treatment (cold on your stomach, diet, antibiotics, physiotherapy)

**(b))** Operated by young

**c)** Operated in the elderly

**(d))** Operated with pelvic Appendix location

**e)** Operated when not excluded the cecum cancer

**11)** the main symptom of appendicitis is:

**a)** Anorexia

**b)** Vomiting

**c)** Temperature

**d)** Diarrhea

**e)** Pain in the right iliac region

**12)** acute appendicitis in children varies primarily with:

**a)** Probodnoj ulcer

**b)** Acute cholecystitis

**c)** Food toksikoinfekciej

**d)** Renal colic

**e)** acute pancreatitis

**13)** at acute destructive appendicitis complicated local peritonitis abdomen drained as follows:

**(a))** through a separate kontraperturu

**(b))** through a wound

**c)** marlevam swab

**(d))** in both holes by two povzdoshnyh tubes

**e)** Drainage not shown

**14)** Optimum therapeutic tactics when appendikuljarnom infiltrate under abscedirovanija is:

**a)** conservative treatment, including antibiotics and physiotherapy

**b)** drainage of Extraperitoneal abscess (Pirogovu)

**c)** Draining the abscess under ultrasound control

**d)** drainage of the abscess through lower median laparotomy

**e)** drainage of the abscess through oblique incision on McBurney

**15)** The argumentirvannoj theory explaining the etiology of acute appendicitis is:

**a)** Infectious

**(b))** Polijetiologicheskaja

**c)** Mechanical

**d)** Kortiko-visceral

**e)** Chemical

**Answers to tests**

**related: APPENDICITIS**

1. (A)

2. A, B, C, E,

3. (A)

4. A, C, D, E

5. (C)

6. A, C, D, E

7. A, C, D, E

8. (B), (C), (D), (E)

9. (B), (D), (E)

10. (A)

11. (E)

12. (C)

13. (A)

14. (B)

15. (B)

**Situational tasks**

**related: APPENDICITIS**

**Objective No. 1**

Ill have 4 years 59 days ago appeared pain in epigastralna area, which then shifted right ileum area. Twice was vomiting, the temperature had risen to 37.5° c. Sick took tetracycline and Analgin and requested to see a doctor only in the 4-th day of the disease in the persistence of pain. The patient status is satisfactory. Low: 37.4° c pulse 88 beats per min. Tongue wet, lined with white bloom. In the right iliac region palpated education dimensions 12h8 cm plotnojelasticheskoj consistency, immobile, with clear boundaries, moderately painful. Symptom Shchyotkina — Bljumberga negative. Leukocytes in the blood 11 \* 109/l.

What disease you can think of? What diseases should differentiate? What is the therapeutic tactics?

**Task No. 2**

Sick 28 years operirovana about appendicitis through 8:00 from the onset of the disease. By opening the abdomen revealed that there is a moderate amount of serous effusion. Vermiform process length 7 cm, otechen, seroza its fluorescence with bleeding in the bowel it palpated kalovyj stone.

With any form of acute appendicitis met the surgeon and what should be his next steps?

**Task No. 3**

A patient 26 years operated about appendicitis through 5:00 pm from the onset of the disease. The operation discovered flegmonozno-gangrenous appendicitis with perforation vermiform process. In the right iliac region about 50 ml of purulent exudate. Specify the next steps of the surgeon and the specifics of the patient during the postoperative period.

**Task No. 4**

The patient was admitted to hospital with a diagnosis of acute appendicitis. Patient is bothered by pain in the right iliac region, irradiirovavshie in both the waist and groin. Was nausea, one-time vomiting, noted frequent urination. The patient's condition is satisfactory. Pulse 88 beats per min. Language suhovat. In the right part of the abdomen is moderately intense and painful only with deep palpation. "Symptom" positive psoas. Symptom Shchyotkina — Bljumberga negative. Palpation of the right lumbar region also somewhat painful. Leukocytes in the blood is a 13 \* 109/l.

Whether there were grounds to suspect acute appendicitis? What additional studies, you can verify the diagnosis?

**Task No. 5**

29 years old patient underwent sequential surgery about appendicitis on the 2nd day of onset of the disease. The operation discovered flegmonozno changed vermiform process and muddy effusion in the iliac region. The surgeon was limited to only removing the vermiform process. On the 6th day after the surgery the patient appeared to moderate pain in the rectum, painful urination. Rectal exploration revealed a bulging of the anterior wall of the rectum, tight and painful. Leukocytes in the blood is a 13 \* 109/l, temperature of 37.8° c.

What complications appendicitis can think and what can explain its development? What is the treatment of the patient?

**Task No. 6**

Patient with appendikuljarnym infiltration during conservative treatment increased pain in the right iliac region and shivers. By palpation of the abdomen was a slight increase in infiltration and increased his pain. The consistency of differential infiltration. In the evening, there was an increase in temperatures of up to 38-39° c. Leukocytes in the blood 17 \* 109/l.

Your diagnosis? What is the therapeutic tactics?

**Task No. 7**

Patient's 34 years at the 7-th day after surgery for flegmonozno-gangrenous appendicitis emerged shivering, pain in the rectum, tenesmus, frequent and painful urination. Rectal study detected infiltration in the pelvis. Through the 3 days after the treatment, which included warm enema camomile and antibiotics, the patient's condition had not improved. At repeated rectal study noted a softening of infiltration. The temperature took a hectic nature.

Your diagnosis and therapeutic tactics?

**Task No. 8**

Ill 23 years for 12:00 before entering the clinic appeared to moderate pain in the upper abdomen, nausea. Later the pain was over the vagina and accompanied by tenezmami. The patient status is satisfactory. The pulse of 96 strokes per minute. Language suhovat. The abdomen is moderately tense in the right iliac region-pahovo. Symptom Shchyotkina — Bljumberga negative. Rectal exploration discovered soreness of the anterior wall of the rectum. Temperature of 37.6° c, cells in the blood-14 \* 109/l.

What disease you can think of? What special studies can clarify diagnosis? What is the feature of the operation if you choose this option, the course of the disease?

**Task No. 9**

73 years of patient support at perforativnogo appendicitis with local peritonitis, 7 days after surgery pain appeared on the right side of the chest, light cough, shivering. When inspecting noted a backlog of the right side of the chest in the Act of breathing. Lower bound by palpation of the lungs a few raised is determined by the soreness in the right podreberie and IX-x mezhreberja. X-rays of the chest there fluid in the right sinus, right diaphragm and dome lifting restriction on his mobile, increasing the size of the shade of the liver. Leukocytes in the blood — 21H10/^, temperatures range from 37.8° c to 38.5° c.

What is the disease should be suspected? What additional studies you can clarify? What tactics?

**Task No. 10**

Patient age 58 59 hour ago appeared pain in epigastralna area, who have shifted to the right ileum area. Nausea and vomiting were single. The patient took Analgin and was applying the heating pad to the stomach, after which the pain subsided. On 2-nd day pain resumed, spread throughout the abdomen, there is a repeated vomiting. The patient's condition is grave. Consciousness sputannoe. Jejforichen. Pulse 128 beats per minutes, hell 95/60 mm Hg. Church. The tongue dry. Abdomen tense in all divisions and painful, but more in the right iliac region. Symptom Schetkina — Bljumberga determined in all departments. Temperature of 37.2° c. Leukocytes in the blood — 18 x 109 l.

Indicate the most likely cause of peritonitis and its stage. What treatment should be preceded by operation and what is the feature of the surgery?

**Task No. 11**

Sick 56 years operirovana about appendicitis through 72 h of onset. The operation revealed that in the right iliac region has inflammatory conglomerate consisting of the cecum, loops of small intestine and greater omentum. Vermiform process not found.

Your diagnosis and further tactics?

**Task No. 12**

Ill 19 years, went through days of onset with complaints of pain in the abdomen and right lumbar area. Nausea, vomiting was not. The general condition of the patient is satisfactory. 37.8-degree temperature, pulse 92 per minute. Draws the attention of the patient's situation enforced on your back with knees bent at the hip joint and given to the stomach right hip. If you try to bend the hip patient starts screaming from severe lower back pain. The abdomen is soft, painless, in the right iliac region only if very deep palpation. Symptom Shchyotkina-negative Bljumberga. Determined by palpation tenderness triangle Petit and dramatically positive symptom Pasternackogo the right. Symptom Rovzinga positive Sitkovskogo negative symptom. Dysuric phenomena not. Urine is not changed. Leukocytes-14000.

What disease can assume the patient?

**Task No. 13**

In a patient 26 years taken on an operation with a diagnosis of acute appendicitis, flegmonoznyj by opening the abdomen pointed out that vermiform process is thickened, hyperemic. Terminal Division of the small intestine for 50-60 cm otechen sharply, hyperemic, sometimes coated with fibrin, the mesentery is scatter plots haemorrhage, enlarged lymph nodes are defined.

What disease met the surgeon and what its next steps?

**Task No. 14**

Ill 69 years admitted complaining of dull pain in the right iliac region, subfebrilnuju temperature. Sick 4 days ago when noted the emergence of acute pain in epigastria, subfebrilnuju temperature, nausea. The 3-day pain diminished, moved into the right area where the ileum when researching

palpated a painful, still tight-elastic consistency of education. Symptom Shchyotkina-negative Bljumberga. Temperature of 37 degrees. Leukocytes-7700, ESR-50.

Diagnosis, doctor?

**Task No. 15**

The 5 day after receipt and on the 10th day from the onset of the disease in a patient with clearly limited appendikuljarnym infiltration, subfebrile temperature and significantly improved during the treatment condition suddenly appeared severe abdominal pain, low rise became appeared thirst, tachycardia, language became dry, was a one-time vomiting. Belly swollen, limited in mobility during respiration, sharply painful in all departments. Determined symptom Schetkina-Bljumberga around the stomach. Leucocytosis, increased from 10000 to 18000. What complication occurred in a patient? What should I do?

**Answers to situational standards task**

**related: APPENDICITIS**

1. the patient is likely to appendikuljarnyj infiltration. Due to the lack of signs of abscedirovanija, shows conservative treatment (locally — cold, dropped — antibiotics broad-spectrum and proteolytic enzymes). Surgery is indicated only when the development of clinical signs of abscedirovanija infiltration, and appendectomy is through 4-6 months. Differential

diagnosed with a tumour should be the cecum, invaginaciej, tuberculosis and aktinomikozom

2. Macroscopic picture corresponds to a severe kataralnomu appendicitu. While it must be remembered that similar changes could occur as a result of the reaction of the peritoneum in a number of other inflammatory diseases of the abdominal cavity (adnexitis, Terminal ileite, Mekkelevom diverticuli, etc.). Therefore, the audit should precede appendectomy before 1 pm the ileum and right adnexa

3. The surgeon must perform appendjektomiju, drain the abdominal cavity from the effusion and enter through a separate abdominal puncture mikroirrigator for infusion of antibiotics. In the postoperative period appoint: fovlerovskoe position in bed, parenteral antibiotics and the abdominal cavity.

4. This may be due to the clinical picture as retrocekalnym appendicitis, and pathology of the right kidney. For verification of diagnosis requires a urine analysis, excretory urography and hromocistoskopija, laparoscopy.

5. the patient developed pelvic infiltration caused by inadequate drainage of fluid from the abdominal cavity. Due to the lack of distinctive fluctuations in heart of infiltration and clear signs of sepsis is appropriate to conservative anti-inflammatory treatment that includes the warm enema camomile. When razmjagchenii must infiltrate open and drain the abscess through the rectum.

6. the patient periappendikuljarnyj abscess. An autopsy shows an abscess in the right iliac region access and draining it. Appendjektomiju produce should not be.

7. The patient has pelvic abscess. You must dissect it through the front wall of the rectum and drain.

8. The patient most likely acute appendicitis with pelvic location vermiform process. Restaging shows laparoscopy. When his confirmation is necessary appendectomy via access in the right iliac region, but preferably under general anaesthetic and with through the rectus abdominal muscles.

9. Should think primarily about poddiafragmalnom abscesse. Plevropulmonalnaja symptomatology is reactive. To confirm the diagnosis you can use simultaneous scanning of the lungs and liver, as well as ultrasound. Necessary opening and draining the abscess, which can be done outside or access chrezplevralnym. May punkcionnoe drainage of abscess cavity controlled laparoscopy or ultrasound.

10. at the beginning of the stream and disease can involve acute appendicitis with peritonitis perforativnyj in terminal stage. The operation must be preceded by active dezintoksikatsionnaya reopoligliukina transfusion therapy, including solutions of glucose and electrolytes, vitamins, aspiration of gastric contents, introduction cardiotonikov. When blood pressure stabilization needs surgery under general anesthesia by a midline laparotomy. The main stages of operations — a deletion peritonitis (appendectomy), thorough cleansing and flushing of the abdominal cavity by inflammatory exudate and introduction into the abdominal cavity 4-6 mikroirrigatorov for infusion of antibiotics in the postoperative period, nazointesticialnaja intubation.

11. the patient has appendikuljarnyj infiltration. The operation must be limited to the introduction into the abdominal cavity through a wound otgranichivajushhih tampons and mikroirrigatora for infusion of antibiotics. Appendjektomiju recommend, through 4-6 months

12. Patient retrocekalnyj acute appendicitis. Necessary appendectomy under/in anaesthesia.

13. The patient has Terminal ileitis (Crohn's disease). It is necessary to make the blockade of gut introduction root bryzhejki its 100-120 ml 0.25% novokaina with antibiotics and leave in the abdomen mikroirrigator for later introduction of antibiotics. Bowel resection is performed at obvious signs Phlegmon. In connection with existing secondary vermiform process changes

origin of appendectomy is not made

14. Appendikuljarnyj infiltration. Treatment of the conservative 10-20 days, the operation routinely.

15. A breakthrough appendikuljarnogo infiltration into the abdominal cavity. Laparotomy.

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