# The features of the clinical manifestations of cancer. The modern methods of diagnostic and treatment of the malignant tumors

Lecturer: Senchukova Marina Alekseevna, MD, PhD, professor of the Oncology department of the Orenburg State Medical University

- The success of the malignant diseases treatment is determined by the timeliness of diagnosis.

- There are no pathognomonic symptoms that are characteristic only for malignant tumors.

- The clinical picture of malignancies is determined by the various factors.

# Factors affecting the clinical manifestations of malignancies

- Localization of tumor
- Stage
- Type of tumor growth
- The presence of precancerous diseases
- The presence of concurrent diseases

# Localization of tumor

❖**Visual localization**

- skin,
- oral cavity,
- nasal cavity,
- pharynx,
- breast,
- thyroid gland,
- vagina,
- rectum and other

**At the external localization, you can see or palpate tumor.**

# Localization of tumor

## ❖ Visceral localization

**The hollow organs**

- bronchi,
- esophagus,
- stomach,
- bowel,
- bladder,
- uterus

# Localization of tumor

## ❖ Visceral localization

**The parenchymal organs**

- lung,
- liver,
- kidney,
- pancreas,
- brain

# Localization of tumor

- **The tumors from the mesenchymal tissue:**

- connective tissue,
- muscle tissue,
- bone tissue,
- adipose tissue,
- nerve tissue,
- blood vessels.

## When the internal localization of tumor, the clinic depends from

- **the stage** (early, advanced and disseminated cancer),
- **the tumor location** (peripheral and central lung cancer, cancer of the cardia, antrum and gastric body, cancer of the right and left half of the colon); the type of tumor growth (exophytic or endophytic tumor growth),
- **the presence of precancerous diseases**

# The clinical features of the disease depending on the stage:

- **early stages:**
- no clinical manifestations;
- clinic of the precancerous diseases (chronic bronchitis, chronic gastritis, gastric ulcer, hepatitis, etc.).
- **advanced stages:**
- The local symptoms that are determined by the tumor location
- **disseminated stages:**
- The symptoms of metastasis and cancer intoxication

# "Alarming symptoms“ requiring in-depth examination of patient to exclude of cancer.

## External localization of tumor

- Rapid growth of tumor mass
- Ulceration of tumor

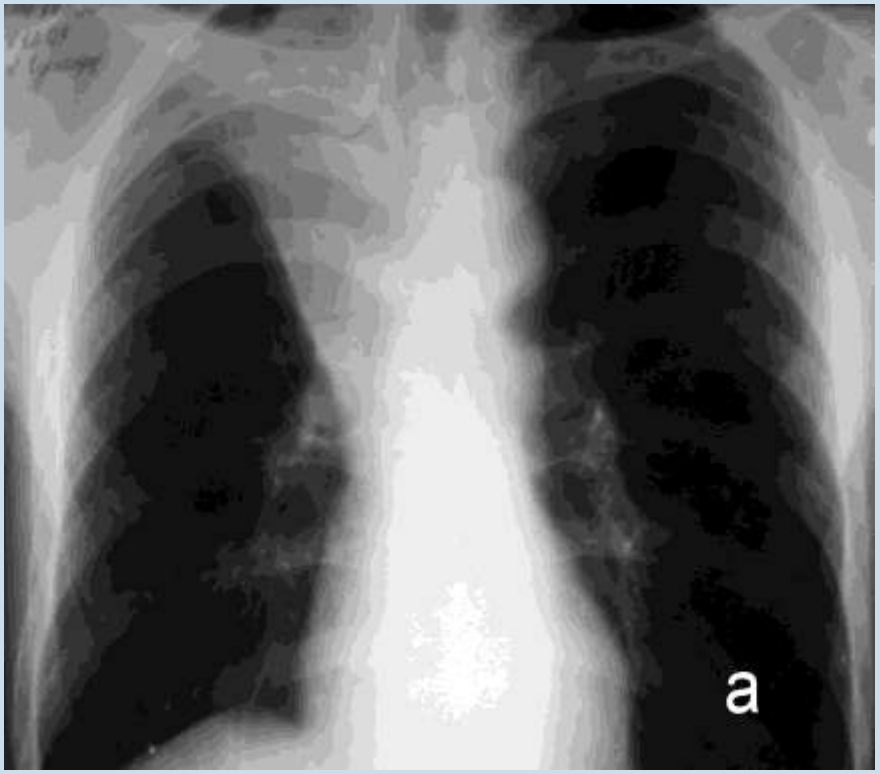
## - Internal localization of tumor

- The changing of the symptoms that were in patients with precancerous diseases in the past;
- The appearance of intoxication symptoms;
- The lack of effect of the treatment.

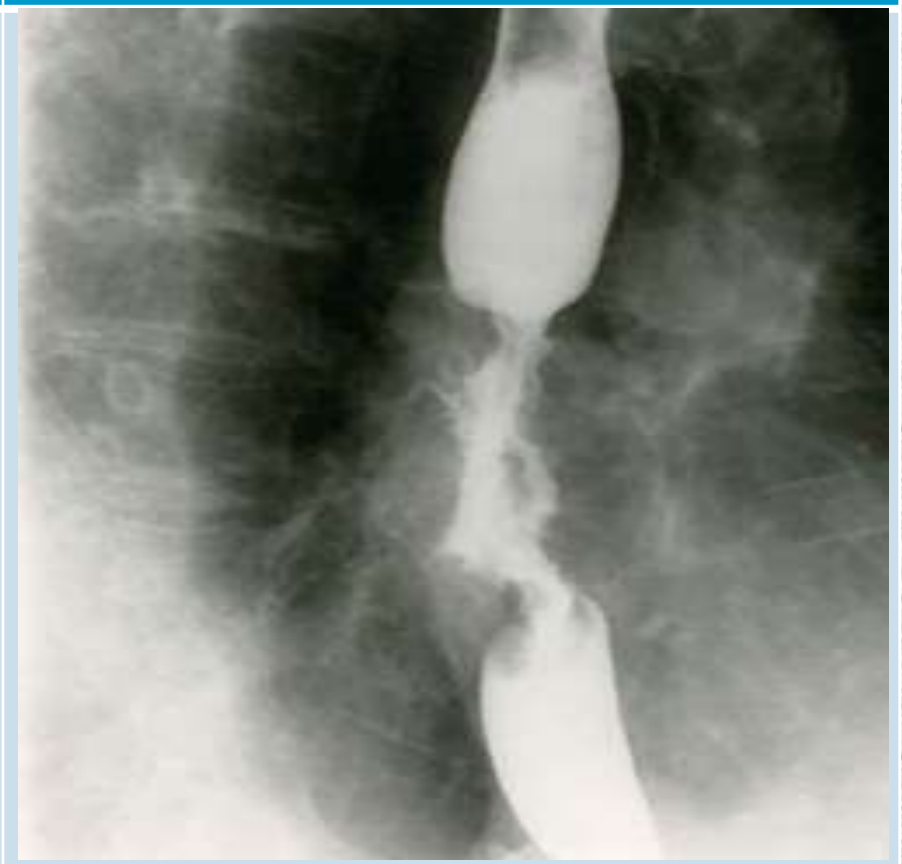
# The main clinical phenomena of cancer:

- obstruction
- destruction
- compression
- intoxication
- tumor mass
- paraneoplastic syndrome

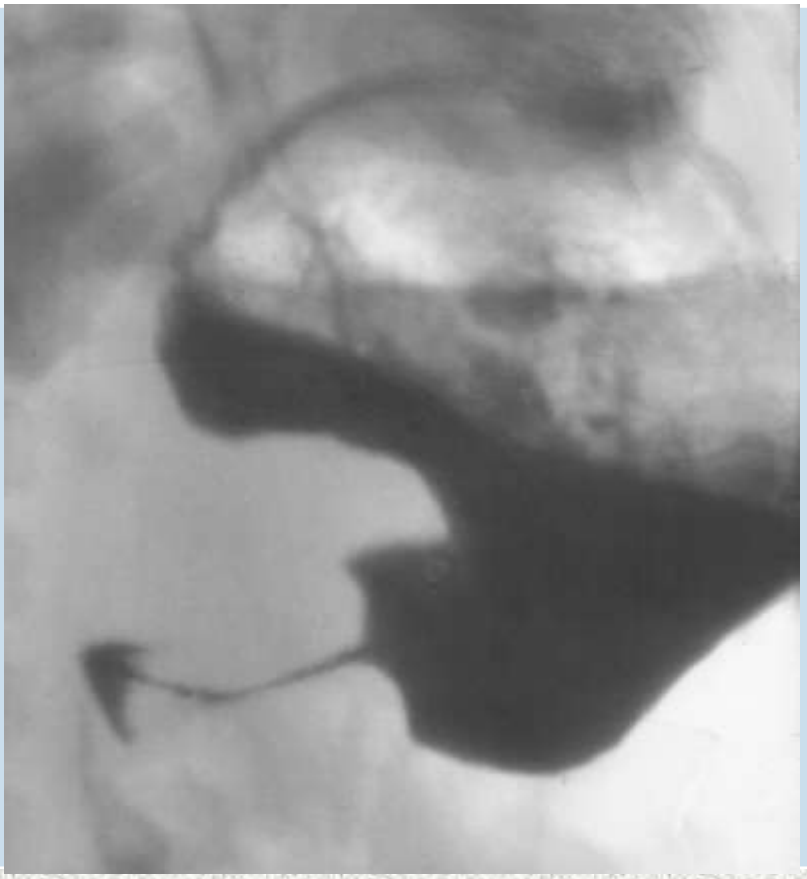
# The phenomenon of obstruction

| Tumor localization | Symptoms | Picture |
|---|---|---|
| Bronchus | Pulmonary atelectasis |  |

# The phenomenon of obstruction

| Tumor localization | Symptoms | Picture |
|---|---|---|
| Esophagus and cardia | Dysphagia |  |

# The phenomenon of obstruction

| Tumor localization | Symptoms | Picture |
|---|---|---|
| Antrum | Gastric stenosis |  |

# The phenomenon of obstruction

| Tumor localization | Symptoms | Picture |
|---|---|---|
| Pancreatic head | Jaundice |  |

# The phenomenon of obstruction

| Tumor localization | Symptoms | Picture |
|---|---|---|
| Bowel | Intestinal obstruction |  |

# The phenomenon of destruction

- **Symptoms of intoxication**: fever, weakness, sweating, the increasing of leukocytes, band neutrophil, an ESR;
- **Bleeding symptoms**: coughing up blood, a symptom of "coffee grounds", melena, blood in the stool

# The phenomenon of compression

## What bodies and structures may be compressed?

| Bodies and structures | Symptoms |
|---|---|
| **Neural structures** | |
| Exteroceptive and proprioceptive nerve endings | Pain |
| Nerve fiber | Sensitivity disorder, paresis and paralysis |
| **Vessels** | |
| Large veins of limbs, vena cava inferior | Limb edema, expansion of the subcutaneous veins, pain |
| Portal vein | Ascites, the expansion of the abdomen saphenous veins |
| Superior vena cava | Dyspnea, expansion of the subcutaneous veins of the neck, face edema |
| **Bodies** | |
| The hollow organs | Phenomenon of obstruction |
| The parenchymal organs | Pain |

# The phenomenon of intoxication

- fever,
- weight loss,
- anemia,
- weakness,
- loss of the appetite,
- leukocytosis,
- increased of the erythrocyte sedimentation rate and other

# The main causes of cancer intoxication

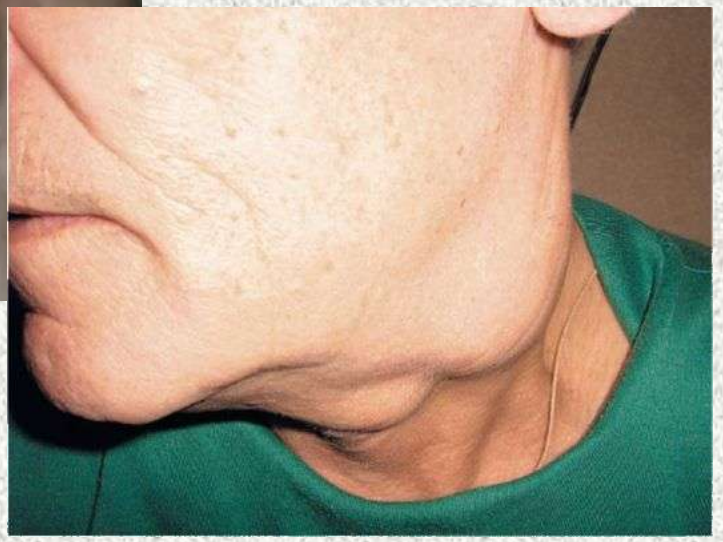
- Large tumor mass
- Tumor destruction
- Joining infection (obstructive pneumonia)
- Metastasis in liver, lungs, kidneys, brain
- Organ dysfunction (example, if the dysphagia)
- Complications (tumor perforation, bleeding, intestinal obstruction and other)

# The phenomenon of tumor mass

- Tumor

Tumor

Tumor



Metastasis in lymph node

# Paraneoplastic syndrome

Paraneoplastic syndrome are not associated with the tumor growth or metastasis. The syndrome is associated with the effects of the biologically active substances and hormones that are produced by the tumor.

PIERRE MARIE BAMBERGER SYNDROME IN LUNG CANCER

DERMATOMYOSITIS IN GASTRIC, LUNG, BREAST, COLON CANCER

# The modern methods of the malignant tumors diagnostics

## Types of diagnosis

- **Passive diagnosis** – when the patient himself came to the doctor.
- **Active diagnosis or screening** - the detection of the cancer before symptoms appear

**The most effective treatment is possible when cancer is diagnosed on early stages.**

## Types of screening

- **Universal screening** involves screening everyone, usually within a specific age group.
- **Selective screening** identifies people who are to be at higher risk of developing cancer.

# Requirements to the screening tests:

- effective
- safe
- well-tolerated
- having a low rates of false positive and false negative results.

# Screening tests

- **Breast cancer** – mammography
- **Cervical cancer** - Papanicolaou test or Pap test (cervical cytology) + HPV testing
- **Bowel cancer** - DNA testing to occult blood in fecal, sigmoidoscopy or colonoscopy
- **Prostate cancer** – PSA – test
- **Lung cancer** - low-dose computed tomography

# Types of diagnosis

- Primary diagnosis
- Specifying diagnosis

- **The purpose of the primary diagnostics** is to suspect the presence of a malignant tumor and confirm the presence of tumor by the instrumental methods
- **The objectives of specifying diagnostics** are:

  - The stage of disease
  - Morphological verification
  - The assessment of the overall therapeutic status of patient
  - Treatment Plan

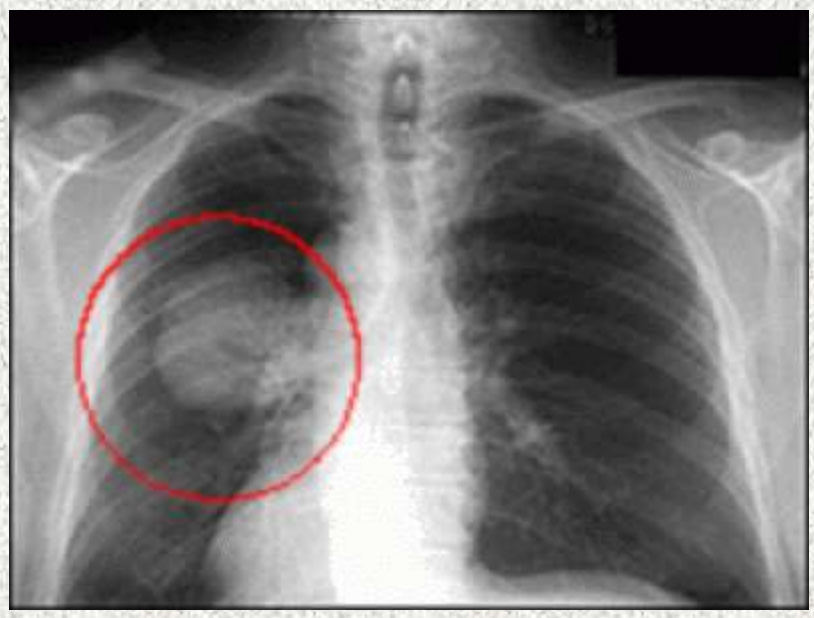
# Methods of cancer diagnosis

- Anamnesis
- Physical findings: clinical examination, palpation, percussion and auscultation
- Instrumental methods
- Methods of morphological verification
- Laboratory methods

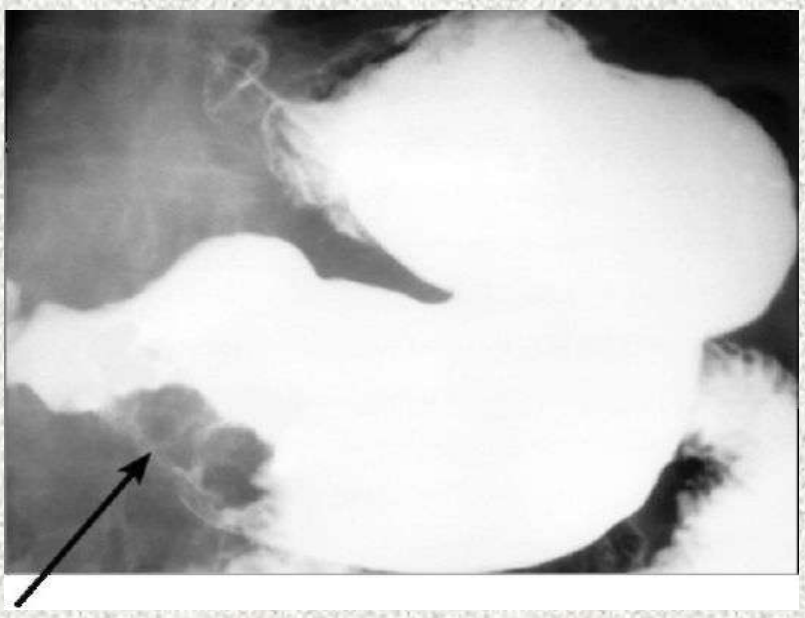
# Instrumental methods of the cancer diagnostics

- **Imaging Methods** allow us to evaluate the size of the tumor, the presence of regional and distant metastases.

❖ ***Standard Radiographs****:* projection radiography, fluoroscopy and contrast fluoroscopy



Lung cancer



Gastric cancer

# Imaging Methods

**Computed Tomography** is the method that based on the receiving of the series of the X-ray images and their computer processing for obtaining the detailed images of internal organs.

Peripheral lung cancer

Metastasis of gastric cancer to the liver

# Imaging Methods

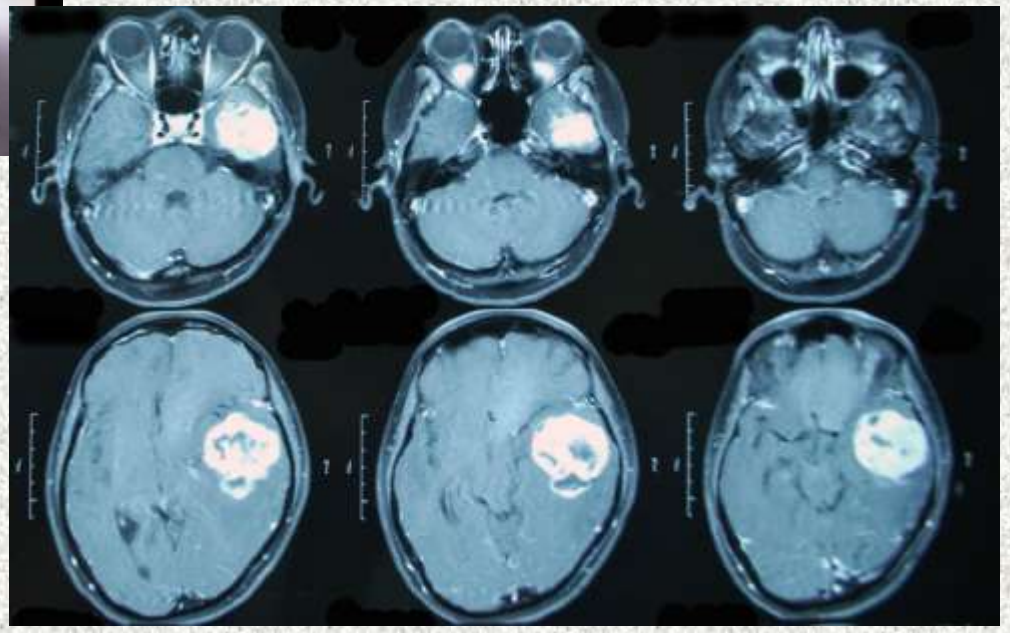
- Magnetic Resonance Imaging (MRI)
- Mammography
- Angiography
- Ultrasonography
- Thermography,
- Medical photography

**Radionuclide methods**

- Single-photon emission computed tomography (SPECT).
- Positron emission tomography (PET)
- Scintigraphy

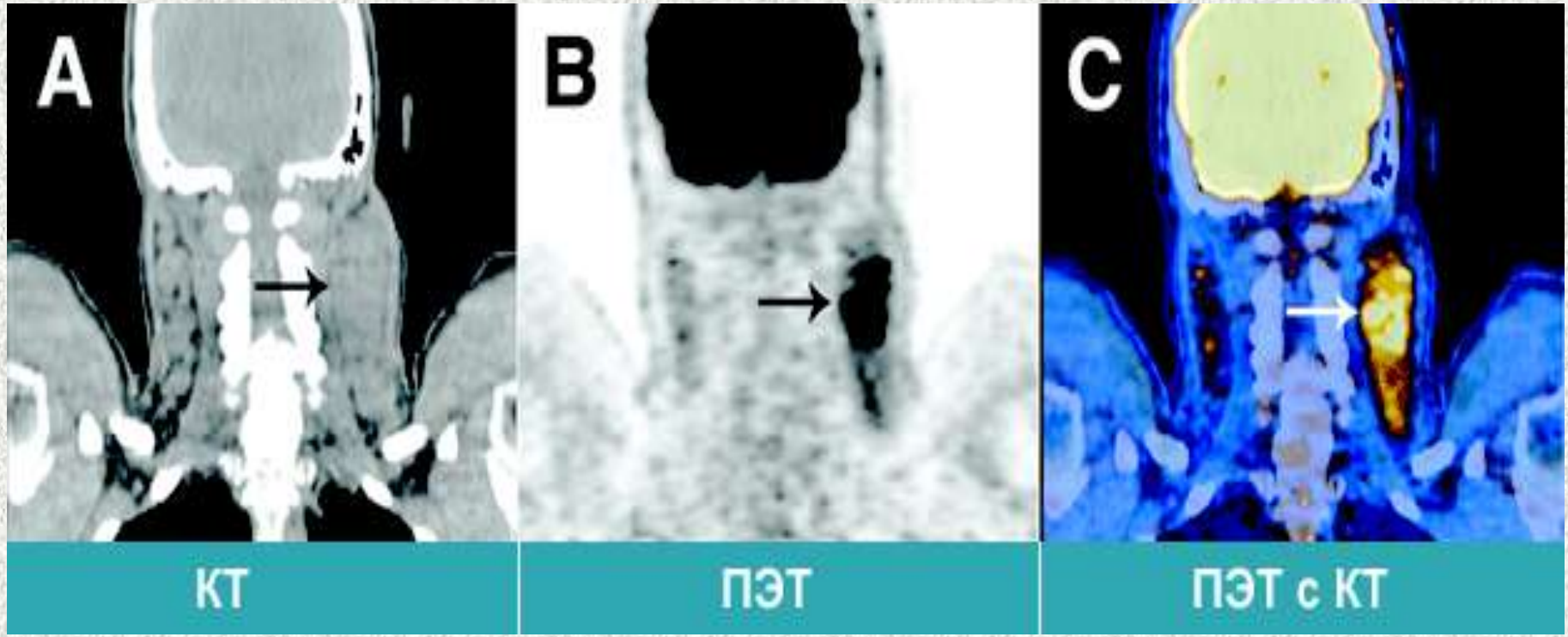
# Magnetic Resonance Imaging (MRI)

Magnetic resonance scanner



Brain tumor

# Positron emission tomography (PET)



# Endoscopic Methods

**These techniques allow us to see the tumor and obtain the material for the morphological studies**

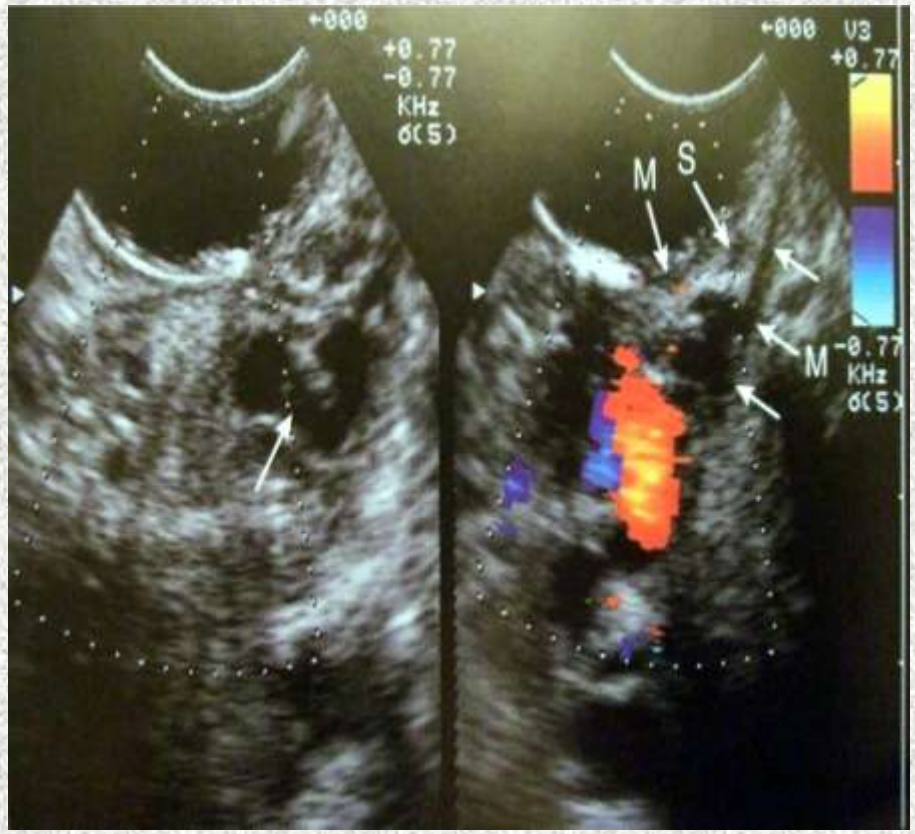
- Bronchoscopy
- Esophagogastroscopy
- Colonoscopy
- Tsistoskipiya
- Thoracoscopy
- Laparoscopy

## Modern methods

- Double balloon intestinoscopy
- Capsule endoscopy
- Autofluorescence endoscopy
- Endoscopic ultrasonography
- Chromoendoscopy
- Confocal laser endomicroscopy

# Endoscopic Methods

Bronchoscopy.
Central lung cancer




Endoscopic ultrasonography.
Gastric cancer

# Methods of the morphological research

- **Cytology** is the cell research

  fine needle aspiration biopsy,
  scraping,
  cell smear,
  sputum examination
- **Histology** is the tissue research
- **Immunohistochemistry** is the histology investigation with  using of the specific antibodies
- **Molecular genetic studies** (gene mutation)

## Laboratory methods

- clinical blood analysis
- clinical urine analysis
- biochemical blood analysis
- tumor markers (prostate specific antigen or PCA , CA 125, carcino-embryonic antigen and others)

## Methods of functional diagnostics:

- electrocardiogram,
- spirography,
- breath tests and other

# The modern methods of the malignant tumors treatment

# Factors influencing the choice of the form and methods of the treatment.

- Stage,
- Type of tumor growth (nodular or diffuse)
- Histological structure,
- Grade (degree of differentiation),
- Tumor localization,
- Age,
- Comorbidities

# The types of the oncotherapy depending on the purpose

- **Radical therapy**. Its purpose - to cure the patient or obtain the stable remission
- **Palliative and symptomatic** therapy. Their purpose - to alleviate patient suffering, improve the life quality. In the palliative therapy may be the impact to the tumor with use of the radiation and chemotherapy or surgery. When symptomatic therapy - no the exposure to the tumor.

# Methods of cancer therapy

- surgery
- radiation
- drug therapy
- additional and supporting therapy

# The types of the oncotherapy depending on the manner

- **Monotherapy** - the using of one method
- **Combined method** - using of two methods with different mechanism of action
- **Complex method** - using of three methods (surgery, radiotherapy, chemotherapy)
- **The coupled method** - using two methods with the identical mechanism of action (combined radiotherapy)

# The basic principles of the surgical treatment of cancer

- **Radicalism -** the removal of the tumor within healthy tissue in one block with the regional lymph nodes**.**
- **Ablastics -** a set of the measures aimed at the prevention of dissemination of malignant cells in the wound.

  - prevent trauma tumor during surgery;

  - removal of the tumor within healthy tissue;

  - removal of the tumor in one block of regional lymph nodes;
- **Antiblastika -** a set of the measures aimed at the destruction of the scattered tumor cells in the operational wound.

# Radiation therapy

## Types of radiation therapy depending on the time of use

- preoperative
- postoperative
- at curative radiotherapy

## Types of radiation therapy depending on the radiation source

- gamma-therapy;
- bremsstrahlung of high energy therapy;
- therapy with fast electrons;
- proton therapy, neutron therapy and other accelerated particles;
- applicator exposure method;
- close-focus roentgenotherapy;

# Drug therapy

- Chemotherapy
- Hormonotherapy
- Targeted therapy

## Types of drug therapy

- **Adjuvant or prophylactic -** used after radical surgery
- **Neoadjuvant -** used before the radical surgery in order to improve its radicalism
- **Therapeutic -** surgery is not provided

# Targeted therapy

## Targeted drugs act to the specific mechanisms

- Monoclonal antibodies (Herceptin)
- Blockers of angiogenesis (Avastin)
- Bisphosphonates (bone metastases)

# Additional and supporting therapy

- Immunotherapy
- Detoxification therapy
- Local hiportermiya
- Methods of synchronization of cell division

**Thank for your attention!**