POLTAVA STATE MEDICAL UNIVERSITY

DEPARTMENT OF SURGERY №2

QUESTIONS OF ONCOLOGICAL UROLOGY

Lecture 2

2022

LECTURE PLAN

- Kidney tumors
- Wilms' tumor
- Tumors of the bladder
- Benign prostatic hyperplasia
- Prostate cancer
- Testicular tumors
- Penile cancer

TUMOURS OF KIDNEYS

I. Epithelial tumors of a parenchyma of kidneys

- Adenoma
- Oncocytoma
- Adenocarcinoma (clear cell cancer)

II. Epithelial tumors of a pelvis of a kidney

- Transitional cell papilloma
- Transitional cell carcinoma

III. Nephroblastic tumors

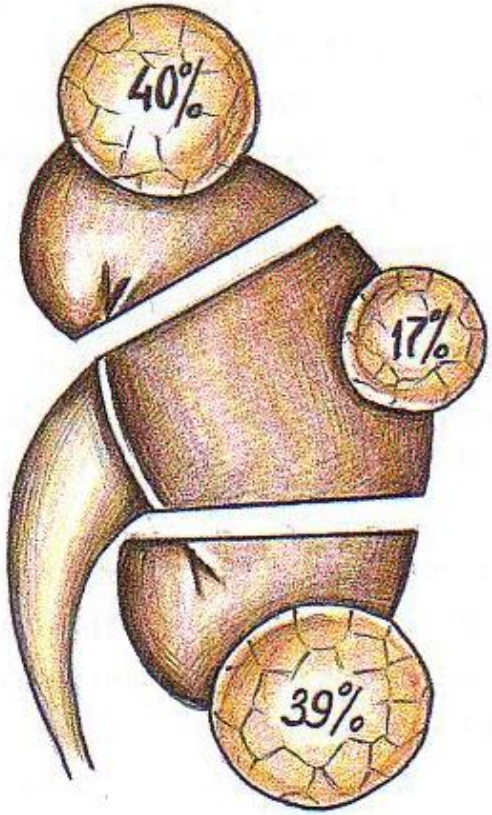
- Nephroblastoma (Vilms's tumor)

IV. Non-epithelial tumors

- Lipoma
- Hemangioma
- Angiomyolipoma

V. Other types of tumors

TUMOURS OF KIDNEYS (localization)



KIDNEY CANCER

The cancer of a kidney makes 3% of all neoplasms.

The adenocarcinoma (hypernephroma, clear cell cancer) takes 80-90% of all tumors of a kidney.

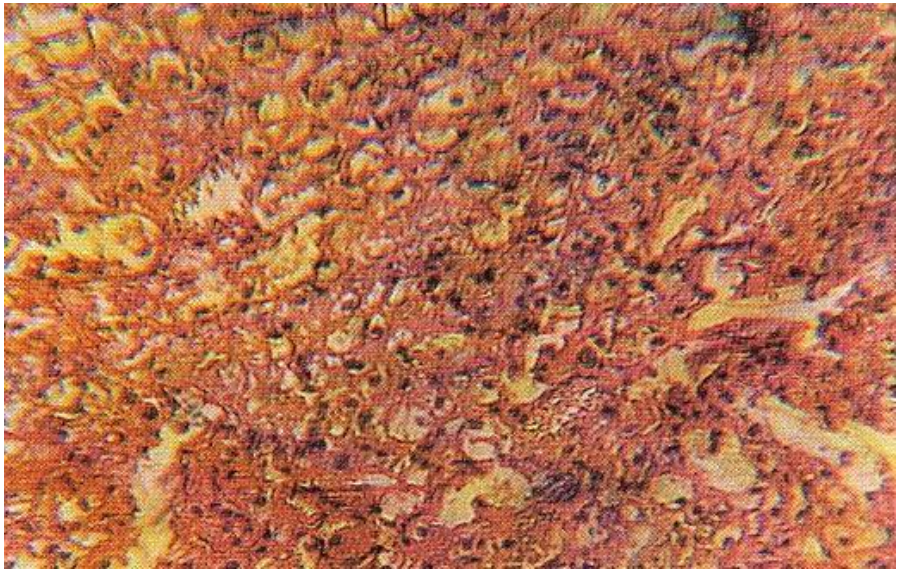
In men it`s diagnosed twice more often than in women.

It is characteristic that at the time of clinical manifestation **of cancer of kidney** metastases are revealed more than at a half of patients.

The cancer of a kidney metastasizes mainly hematogenous way, first of all **in lungs, a liver, a brain.**

Tumors of a renal pelvis and ureter metastasize in lymphatic vessels of submucosal layer, **a bladder**, the distant metastases – in **lungs**.

CANCER OF THE KIDNEY (macro view)



KIDNEY CANCER. TNM CLASSIFICATION

- **T0**– symptoms of primary tumor are absent
- **T1**– a tumor ≤ 2,5 cm within a kidney
- **T2**- a tumor > 2,5 cm within a kidney
- **T3**– a tumor extends to a vena cava, an adrenal gland, a renal capsule, without getting out of limits of a fascia of Gerota
- **T4**– a tumor extends out of limits of a fascia of Gerota

- **N0**- metastases in regional lymph nodes are not defined
- **N1**– single metastases in regional lymph nodes ≤ 2 cm
- **N2**– metastases in the distant lymph nodes ≤ 5 cm
- **N3**– metastases in lymph nodes**>** 5 cm

- **M0**– the distant metastases are not defined
- **M1a**– the single distant metastases
- **M1b**– the multiple distant metastases

KIDNEY CANCER

General (extrarenal) symptoms:

- Deterioration in the general state due to intoxication tumor decay products (anorexia, the general weakness, anemia).
- Decrease in weight (30%).
- Fervescence (11-50%). Resuming of fever after radical operational treatment demonstrates existence of a recurrent tumor or metastases.
- Increase of ESR.
- Increase of level of blood serumfibrinogen.
- Hyperglobulia (2,5%).
- Arterial hypertension (15-20%).

Local symptoms:

- **The hematuria**, is more often in the form of oblong clots (to 70%).
- **Pain** (60-70%).
- **The palpated tumor** (11-40%).

KIDNEY CANCER
DIAGNOSTIC ALGORITHM

ULTRASONOGRAPHY

▼

SURVEY AND EXCRETORY UROGRAPHY

▼

CT

▼

MRI

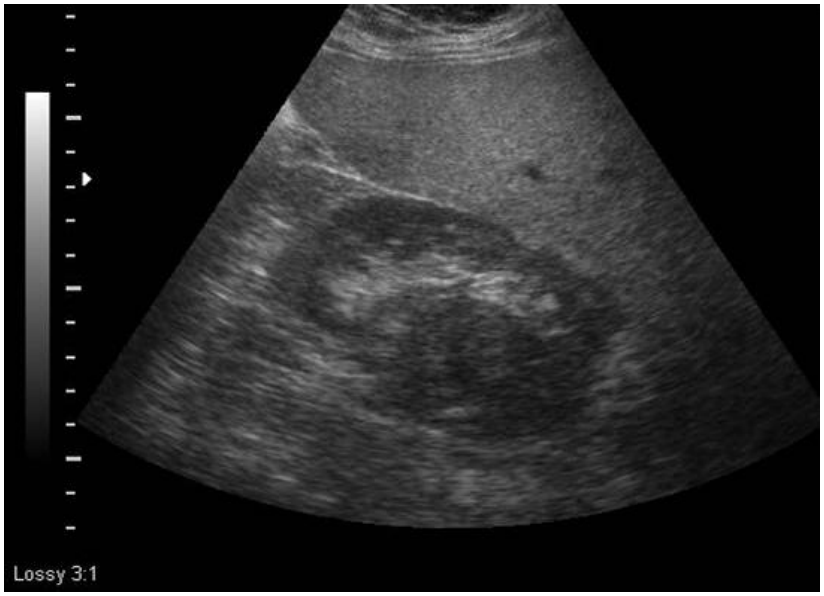
▼

ANGIOGRAPHY

▼

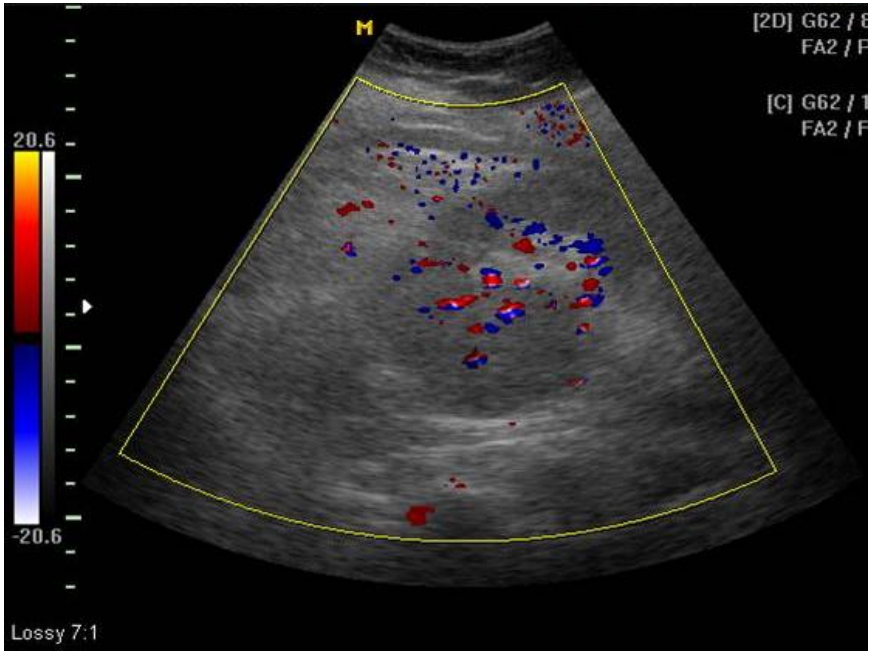
Roentgenogram of lungs, ultrasonography of a liver, brain CT, MRI (for Mts exclusion)

KIDNEY CANCER (ultrasonography in the mode of a gray scale)

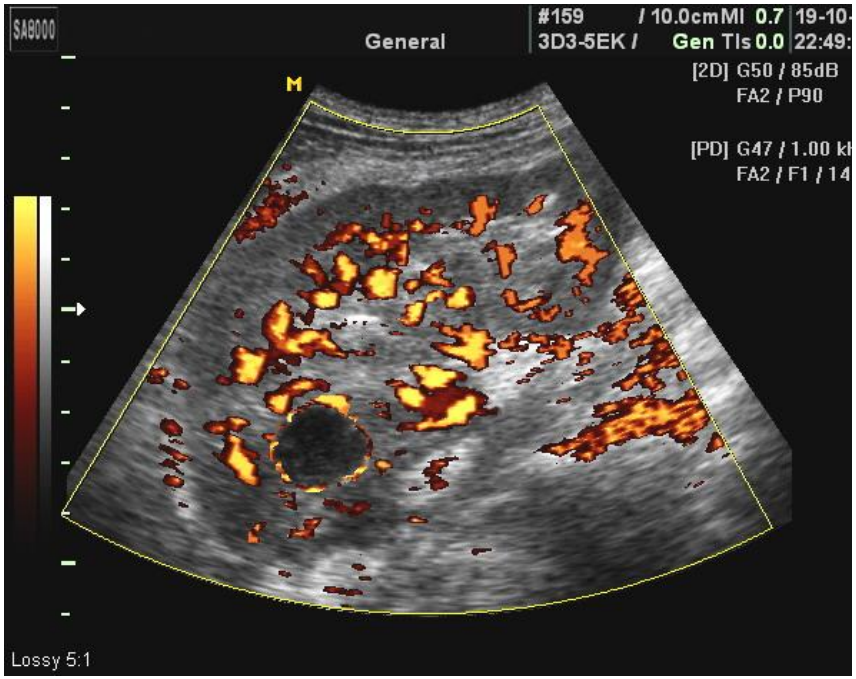


KIDNEY ABSCESS (ultrasonography, power doppler)

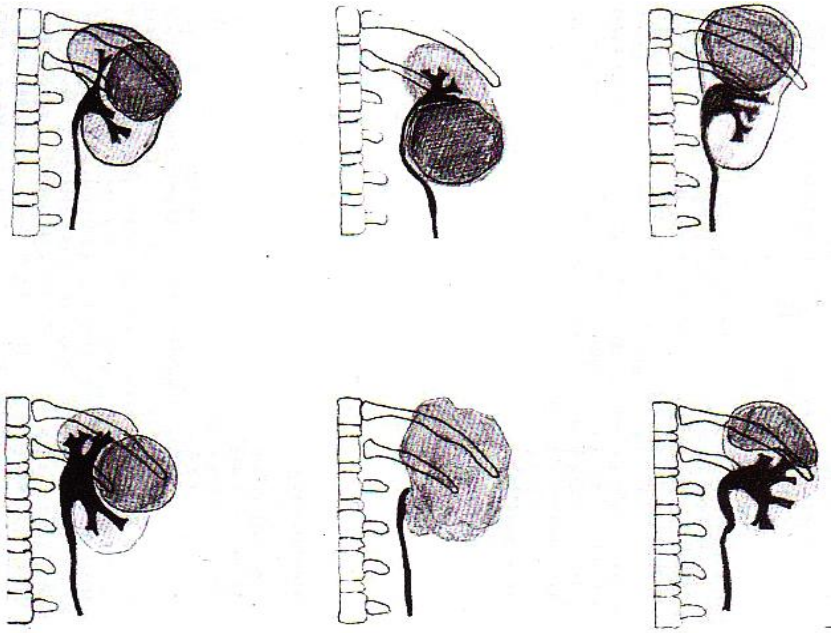
KIDNEY CANCER (ultrasonography, color Doppler mapping)



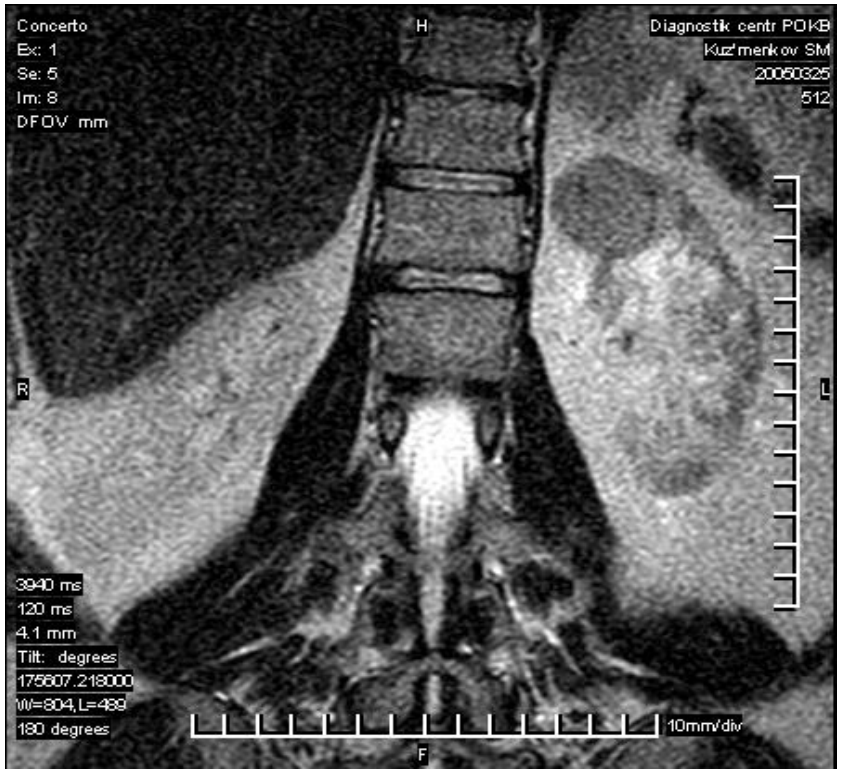
KIDNEY ABSCESS (ultrasonography, power doppler)



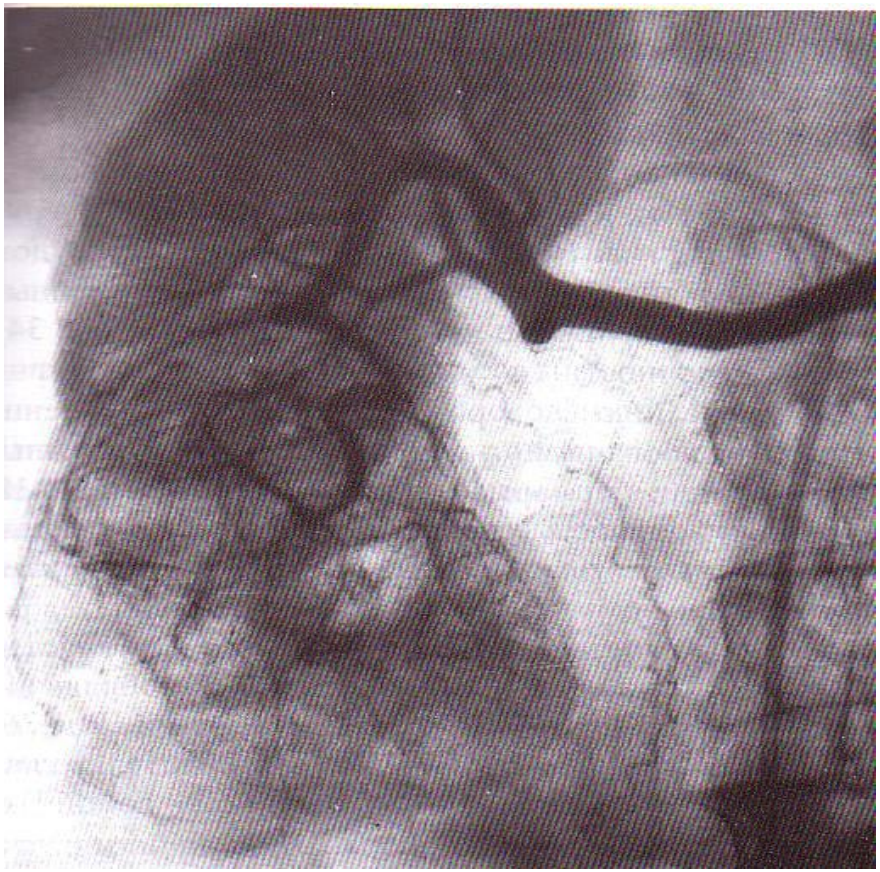
KIDNEY CANCER (excretory urography)



CANCER OF THE KIDNEY (MRI)

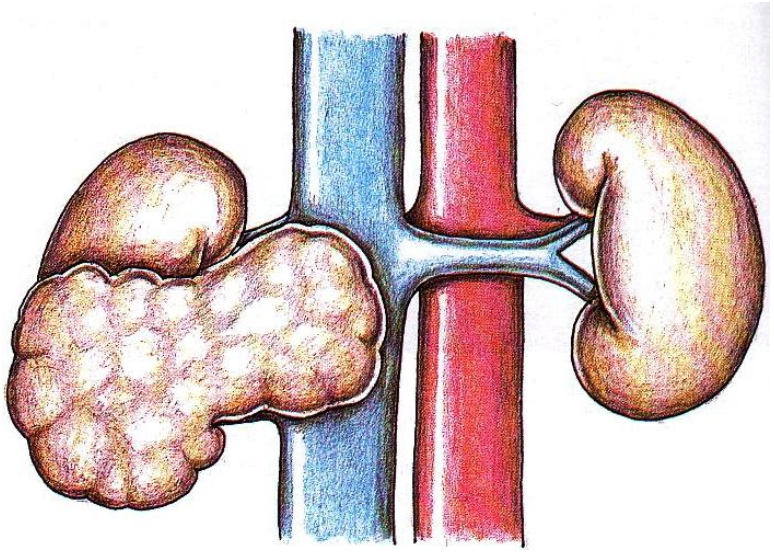


CANCER OF THE KIDNEY (angiography)



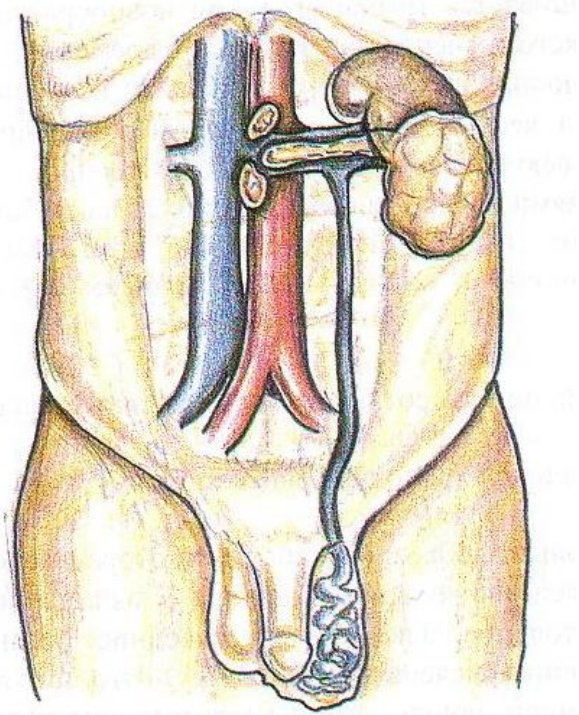
KIDNEY CANCER

(a venocavagrafia, tumor thrombus in the lower vena cava, 6-10%)



KIDNEY CANCER

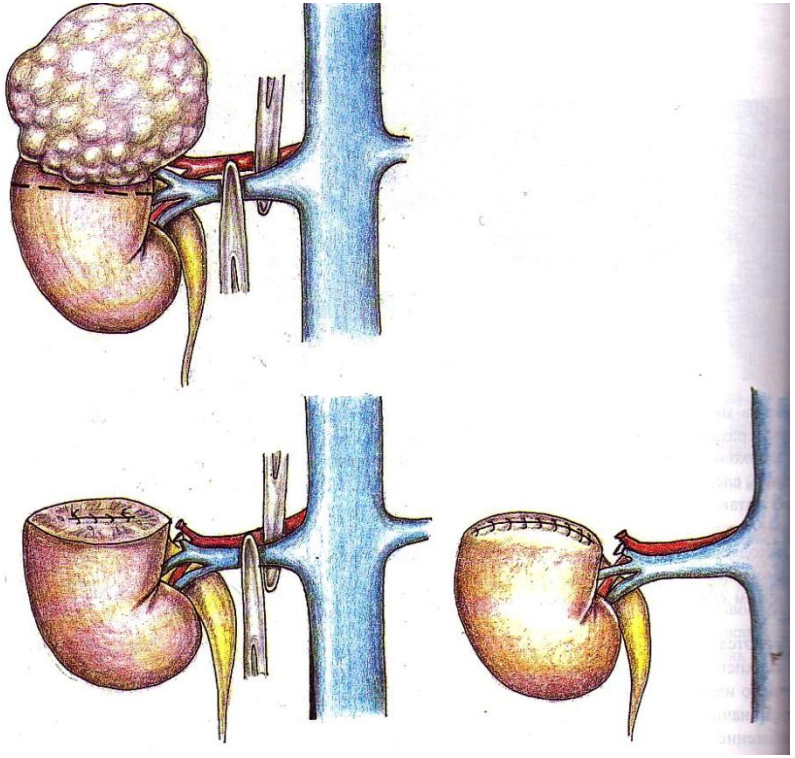
(varicocele due to tumor thrombus in the lower vena cava and renal vein)



KIDNEY CANCER. TREATMENT

- ***Radical nephrectomy.***
- ***Indications to organsparing tactics*** **-** *tumors 4-7 cm in an upper or lower segment of a kidney (is more rare on middle segment).*
- ***Substantiation of organsparing tactics*** *is based on perhaps multifocal, bilateral damage of kidneys.*
- ***Treatment of a papillary tumor of a renal pelvis*** *includes a nephrureterectomy with a bladder resection (removal of a lymphatic collector).*

KIDNEY CANCER. TREATMENT (organsparing operation)



NEPHROBLASTOMA (VILMS'S TUMOUR)

- *In a children's onkourology **Vilms's tumor** takes 92**%** of cases, is more often at the age of **2-5 years**. Metastasizes more often to lungs.*

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- *It arises from embryonal rudiments of pronephros or a metanephros. In **20%** of cases it is combined with anomalies of development.*
- *In most cases the first symptom paying an attention of parents and the doctor is **"the mass of an abdominal cavity".***
- *In **75%** of cases **increase of the BP** at the child takes place.*
- *Treatment– **a radical transabdominal nephrectomy**.*
- *The children operated in age till **6 months** survive practically in **100%** of cases. The children operated till **one year** survive more than in **80%** of cases.*

BLADDER TUMOURS

Percent **of tumors of a bladder** takes **4%** of all neoplasms, with a tendency to its increase. Men are diagnosed with bladder tumours 3-4 times more often, at the age of **50-70**.

Papillary cancer – the most frequent form **(85%)** of a bladder cancer.

Etiology:

- work with aniline dyes;
- tobacco smoking;
- chronic inflammatory processes in a bladder;
- bilgartsiosis;
- the increased concentration of urine.

- **The most frequent symptoms of bladder cancer** – *an intermittent hematuria and a dysuria.*

BLADDER PAPILLOMA

Benign papilloma* –** *a stage of development* ***of cancer of bladder*.*

Diagnosis ***of papilloma of a bladder*** *includes TUR of a wall of a bladder with a tumor biopsy****.***

All patients are subject ***to dispensary observation*** *with a control cystoscopy within* ***the first year*** *every 3 months;* ***the second year*** *– every 6 months,* ***within the next 3 years*** *– once a year.*

BLADDER CANCER. TNM CLASSIFICATION

- **Ta**– a papillary noninvasive tumor
- **Tis**- cancer of "in situ" (within a mucous membrane)
- **T1**– the superficial cancer infesting a mucous membrane and a submucosal layer
- **T2**– invasive and muscular cancer
- **T2a**– an invasion of inside layers of a detrusor
- **T2b**– an invasion of enveloping layers of a detrusor
- **T3**- an invasion out of detrusor limits
- **T3a**– a microscopic invasion
- **T3b**– a macroscopic invasion
- **T4**– an invasion in the near organs
- **T4a**– a prostate, a rectum, a uterus
- **T4b**– a pelvic wall, a front abdominal wall

- **N1**- a single lymph node ≤ 2 cm
- **N2**- lymph nodes ≤ 5 cm
- **N3**- lymph nodes> 5 cm

BLADDER TUMOURS
DIAGNOSTIC ALGORITHM

ULTRASONOGRAPHY

▼

CYSTOSCOPY WITH THE TUMOUR BIOPSY

▼

PHOTODYNAMIC (FLUORESCENT) CYSTOSCOPY
(special optics, 3% solution of 5-aminolevulenic acid)

▼

KUB AND EXCRETORY UROGRAPHY

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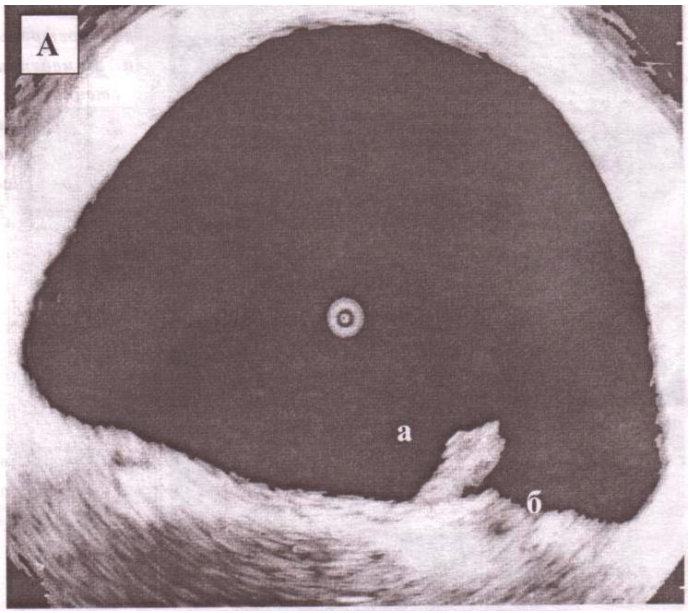
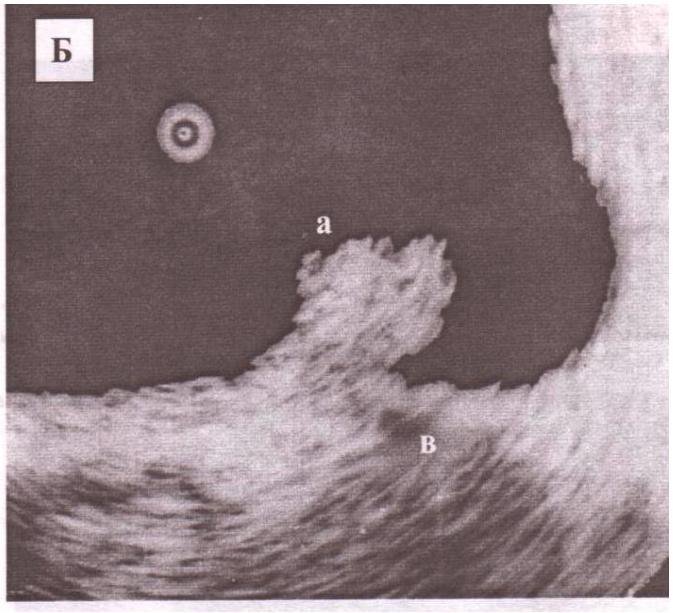
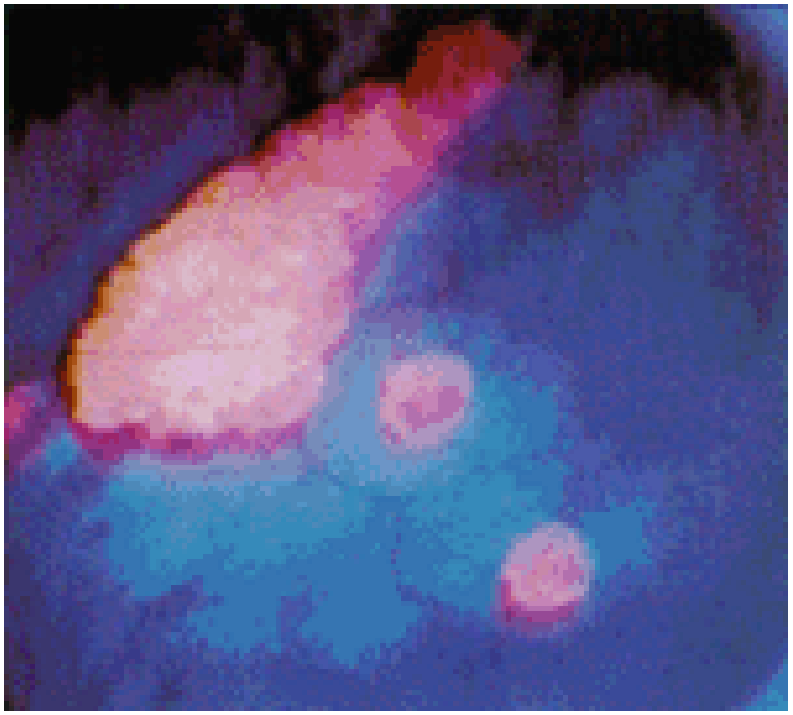
Roentgenogram of lungs, ultrasonography of a liver, CT, MRI
(for Mts exclusion)

BLADDER TUMOUR. TRUS



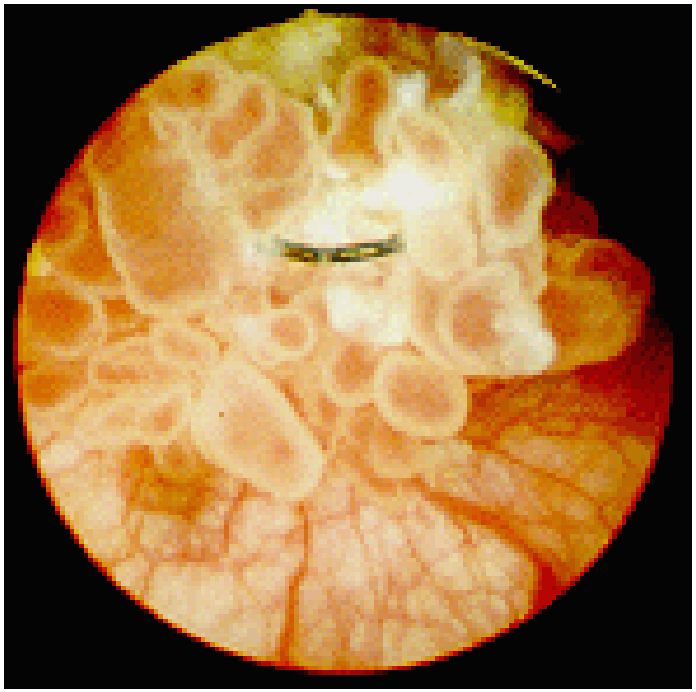


CANCER "in situ". PHOTODYNAMIC CYSTOSCOPY



BLADDER TUMOUR (cystoscopy)

BLADDER TUMOUR
(TUR of a bladder wall with a tumor biopsy)



CANCER OF THE BLADDER TREATMENT STRATEGIES

Stage	***Treatment***
Tis/Ta/T1	• TUR + Single dose of intravesical chemotherapy • BCG therapy is recommended in tumours with a high risk or recurrence and/or progression e.g. high-grade (G3) tumours and in carcinoma in situ (CIS)
T2-T3	• Radical cystectomy gold standard. • Radiotherapy can be considered for those patients not suitable for surgery or for those patients who want to preserve their bladder
T4	• Palliative – chemo/radiotherapy for symptom relief

HYPERPLASIA OF THE PROSTATE (BPH)

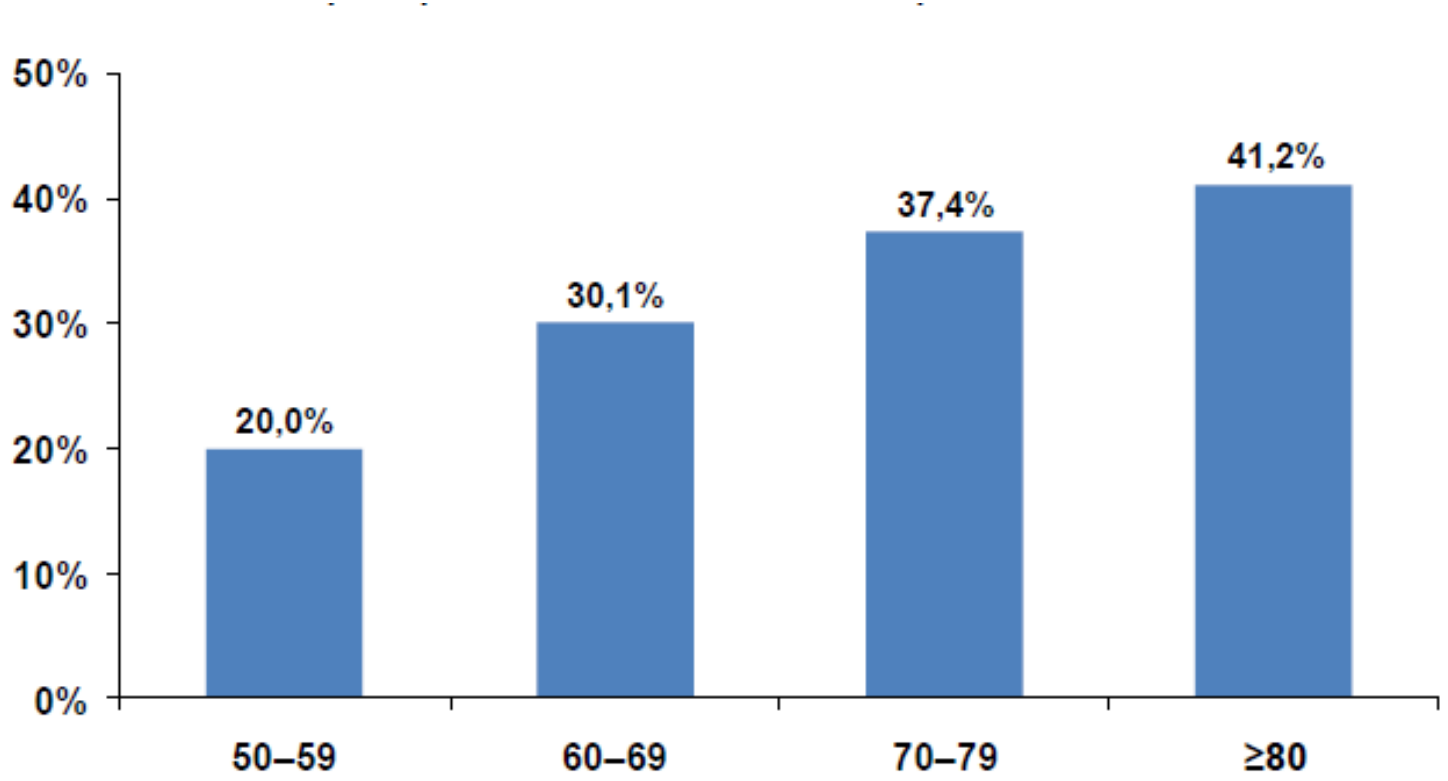
- **The most frequent disease of men** after 50 years

  In Great Britain more than 1,5 million addresses to the doctor annually are registered

- **Operation for BPH -** on the tenth place on frequency among surgical interventions within NHS
- **The acute urine retention** takes 5% of the most frequent reasons of the emergency request for medical care in NHS hospitals

NHS, National health system

Age frequency of addresses to the doctor of patients with BPH



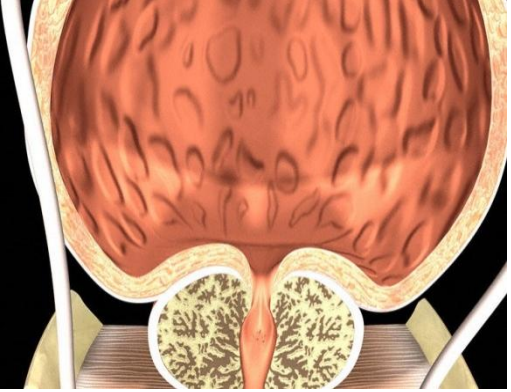
LUTS frequency at BPH

Clinical LUTS

- Clinically LUTS suggestive of BPH is present
  - ~10% in 40s
  - ~25% in 50s
  - ~40% in 60s
  - ~40% in 70s
  - *Overall 25% in 40-79*

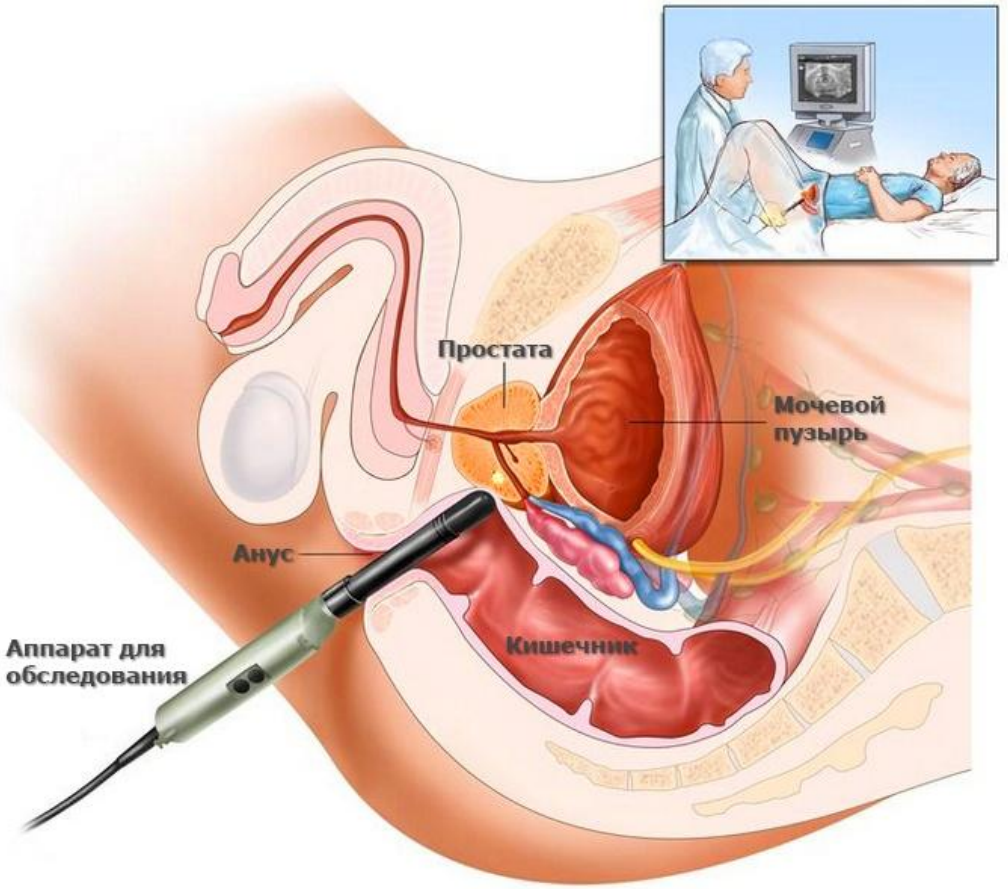
– Garraway Lancet 1991 (Stirling study)

Garraway WM, Collins GN, Lee RJ. High prevalence of benign prostatic hypertrophy in the community. Lancet. 1991 Aug 24;338(8765):469–471.



Classification of BPH

- **Stage I** – ***a scale of IPSS is 0-7 points*** prostate gland volume up to 30 cm3, Qmax<15 ml/sec., no residual urine)
- **Stage II** - ***scale of IPSS is 8-19points*** volume of a prostate 30-80 cm3, Qmax<10ml/sec., volume of a residual urine <200 cm3)
- **Stage III** - ***scale of IPSS of 20-35 points*** prostate gland volume >80 cm3, Qmax<5 ml/sec., volume of a residual urine>200 cm3, decompensated bladder, ureterohydronephrosis, intermittent uric infection)

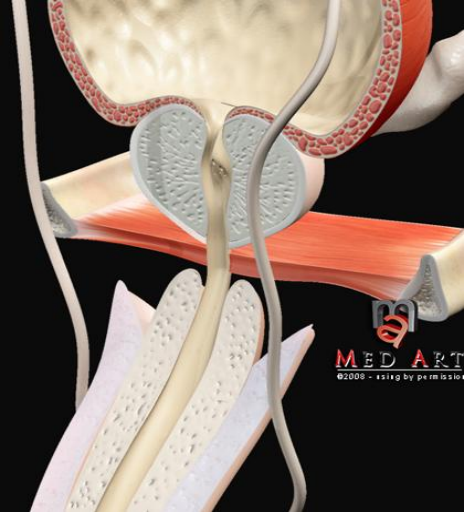


Diagnosis of BPH. Digital rectal examination. TRUS

RISK FACTORS OF PROGRESSING OF BPH

- Age (>60 years)
- Expressiveness of LUTS (>8 points on IPSS scale)
- Urine flow rate (Qmax<15 ml/sec.)
- **Prostate volume (>30 cm3)**
- **PSA level (>1,5 ng/ml)**

McConnell J et al. N Engl J Med. 2003; 349:2387–2398; Emberton M et al. IJCP. 2008; 62:1076–1086; Emberton M et al. BJU Int. 2011; 107:876–880.

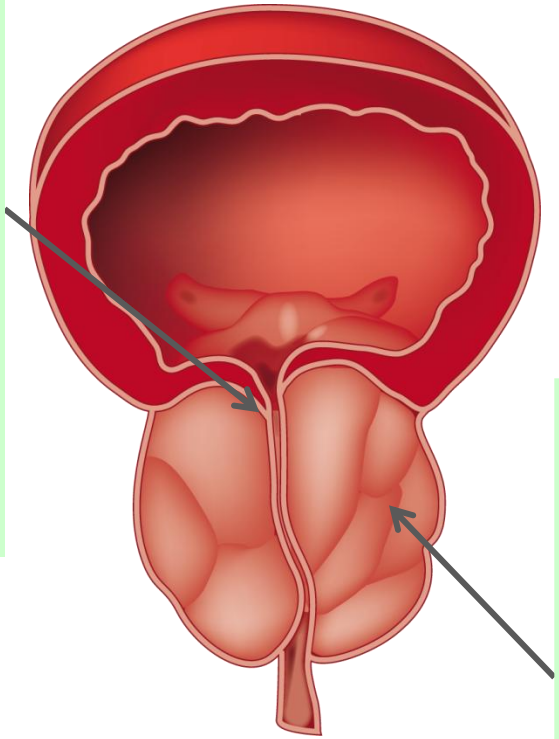


BPH. Medical tactics

- **Stage I** - ***IPSS of 0-7 points:*** ***dynamic supervision***
- **Stage II** - ***IPSS of 8-19points:*** ***conservative treatment***
- **Stage III** - ***IPSS of 20-35points:*** ***operative treatment***

BPH. Conservative therapy:
inhibitors 5α-of reductase and α-adrenoblockers

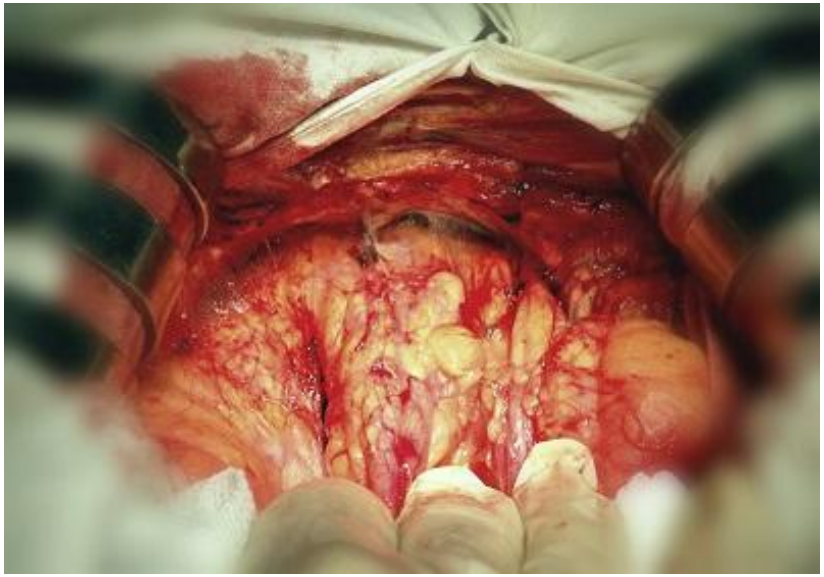
α-adrenoblockers-
(tamsulozin, doksazozin)
relax receptors of smooth muscles of a neck of a bladder and a prostate

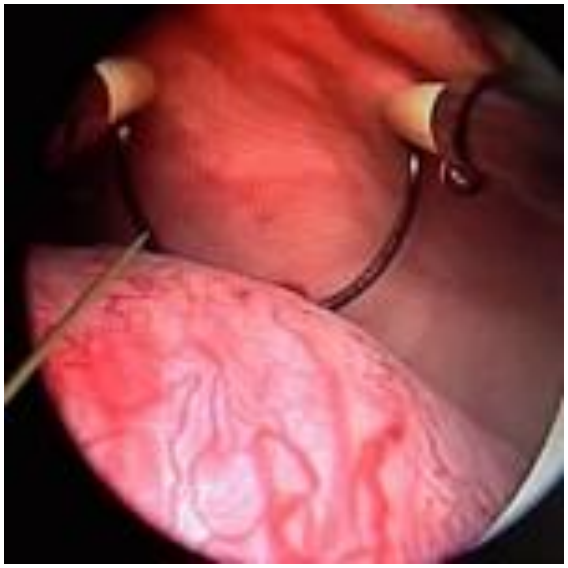


5α-reductaseinhibitors
(finasterid, dutasterid)
reduce the prostate size due to inhibition of growth cells

BPH. Operative treatment

Retropubic adenomectomy

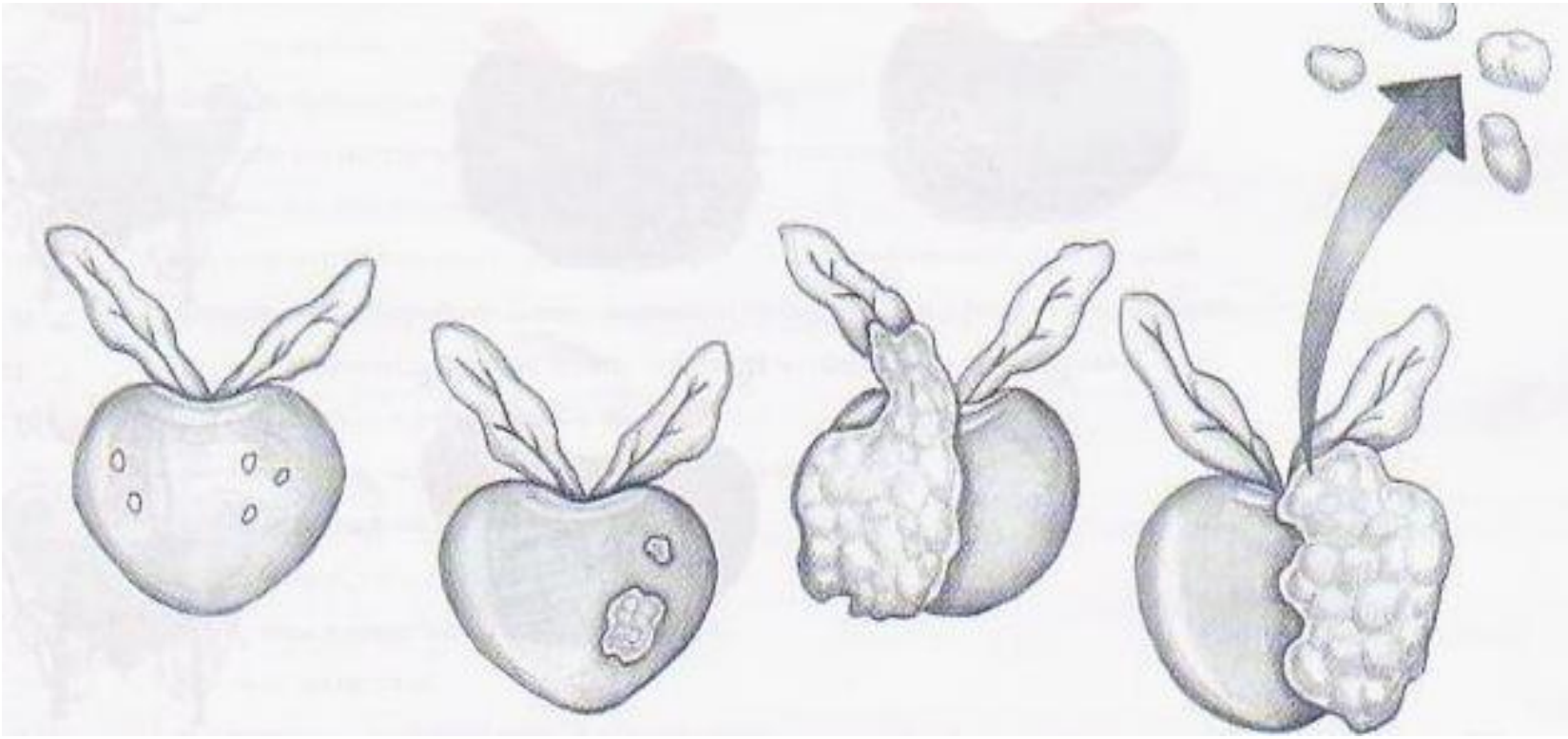




BPH. Operative treatment

Transurethral resection and vaporization of a tumor

PROSTATE CANCER



local | local spread | local-invasive | disseminated

PROSTATE CANCER

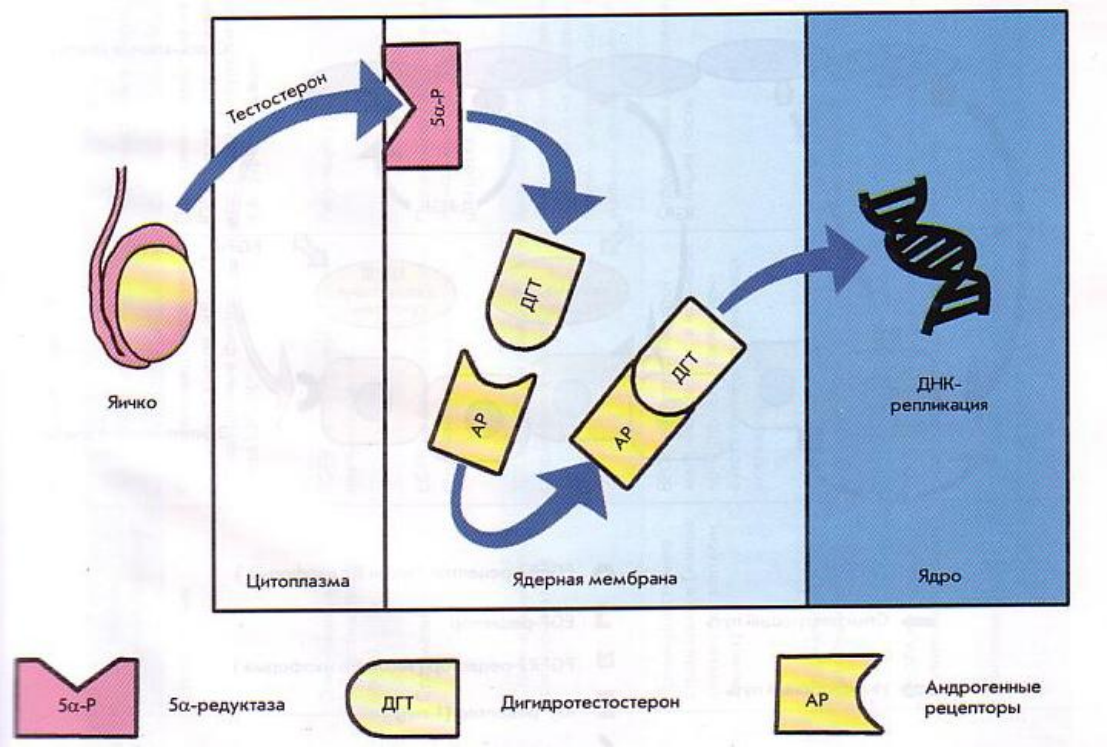
The most frequent oncological pathology in men after 60.

The microscopic centers of atypia of an epithelium (or cancer cells) ***without clinical manifestations*** *can be find in a at 30-40% of men. At the same time the probability to die from a cancer does not exceed 3%.*

Metastasizes **in pelvic bones and a backbone, lungs, a liver**.

Locally limited forms of cancer are *revealed in 30% of cases.*

PROSTATE CANCER



Mechanism of androgenic stimulation of cellular growth

PROSTATE CANCER. TNM CLASSIFICATION

- **Tx– primary tumor cannot be revealed**
- **T0– primary tumor is not revealed**
- **T1– clinically not revealed tumor**
- **T1a– accidentally revealed tumor (≤ 5% of the resected tissue)**
- **T1b– accidentally revealed tumor (≥ 5% of the resected tissue)**
- **T1c– revealed at a puncture biopsy (due to increase of the PSA)**
- **T2– a tumor within a prostate**
- **T2a– a tumor occupies less than a half of one lobe of a prostate**
- **T2b- the tumor affects more than a half of one lobe of a prostate**
- **T2c– a tumor occupies both lobes of a prostate**
- **T3– an invasion out of prostate capsule**
- **T3a– a unilateral invasion out of prostate capsule limits**
- **T3b– a bilateral invasion out of prostate capsule limits**
- **T3c– a tumor spreads to seminal vesicules**
- **T4– an invasion in the near organs**
- **T4a– an invasion in a rectum, a bladder neck**
- **T4b– an invasion into urogenital diaphragm, pelvic walls**

PROSTATE CANCER. TNM CLASSIFICATION

- N1– a single regional lymph node ≤ 2 cm
- N2- a single regional lymph node ≤ 5 cm
- N3– regional lymph nodes> 5 cm

- Mkh– the distant metastases cannot be defined
- M0– the distant metastases are not revealed
- M1– the distant metastases
- M1a– in non-regional lymph nodes
- M1b– in a bones
- M1c– other localization

PROSTATE CANCER

histologic gradation on extent of differentiation
D.F.Gleason, 1966

At small increase in a microscope morphologist can distinguish various types of a glandular configuration of a tumor.

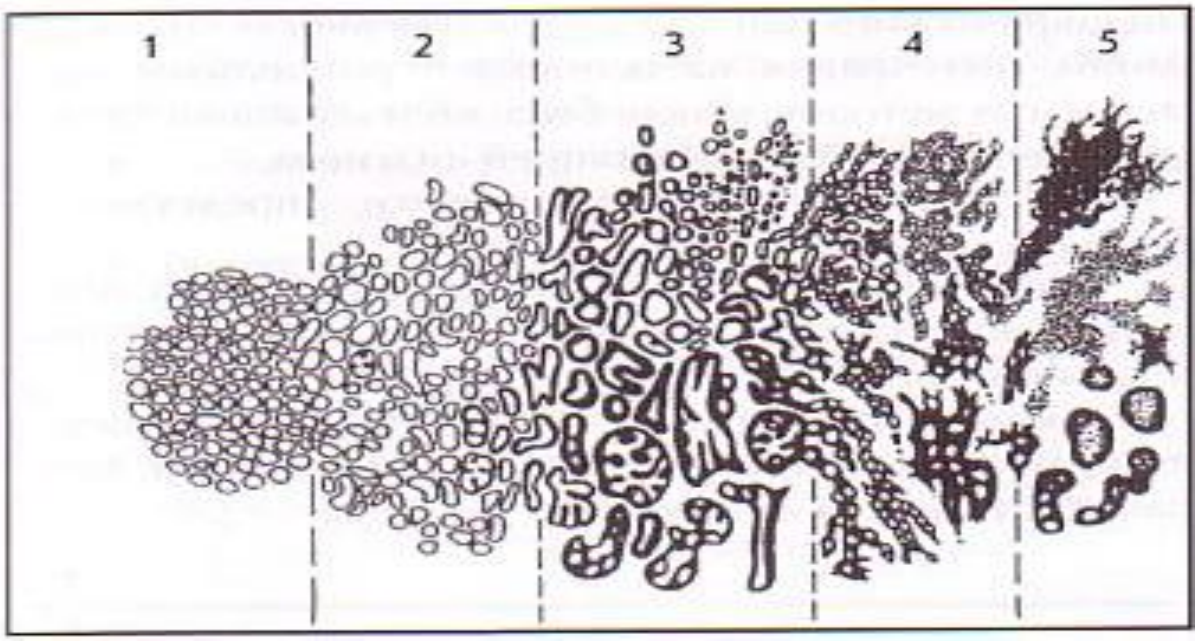
1 degree of a gradation are characterized by availability of almost normal glands.

In process of increase in an indicator of Gleason glandular structures become heterogeneous, their sizes and a configuration - wrong, tumor borders - indistinct.

At the 5th degree of a gradation glands are practically absent, the tumor has a solid structure.

PROSTATE CANCER

histologic gradation on extent of differentiation,
D.F.Gleason, 1966



PROSTATE CANCER

histologic gradation on extent of differentiation
in points, ***Gleason's index***

- ***G1 – the tumor which is well differentiated***
  Gleason's index 2-4

- ***G2 – the tumor which is moderately differentiated***
  Gleason's index 5-6

- ***G3 – a tumor from moderated to badly differentiated,***
  Gleason's index 7

- ***G4 – the tumor which is low differentiated, aggressive,***
  Gleason's index 8-10

The sum of balls on Gleason's scale is summed up from dominating and the following on frequency like differentiation and makes Gleason's index from 2 to 10

PROSTATE CANCER

predictive value of prostatspesific antigen (PSA) of blood serum

Probability of a malignant tumor, %,
W.J.Catalona et al., 1998

- 0-2 ng/ml - 1%
- 2-4 ng/ml - 15%
- 4-10 ng/ml - 25%
- >10 ng/ml - >50%

PROSTATE CANCER. TREATMENT

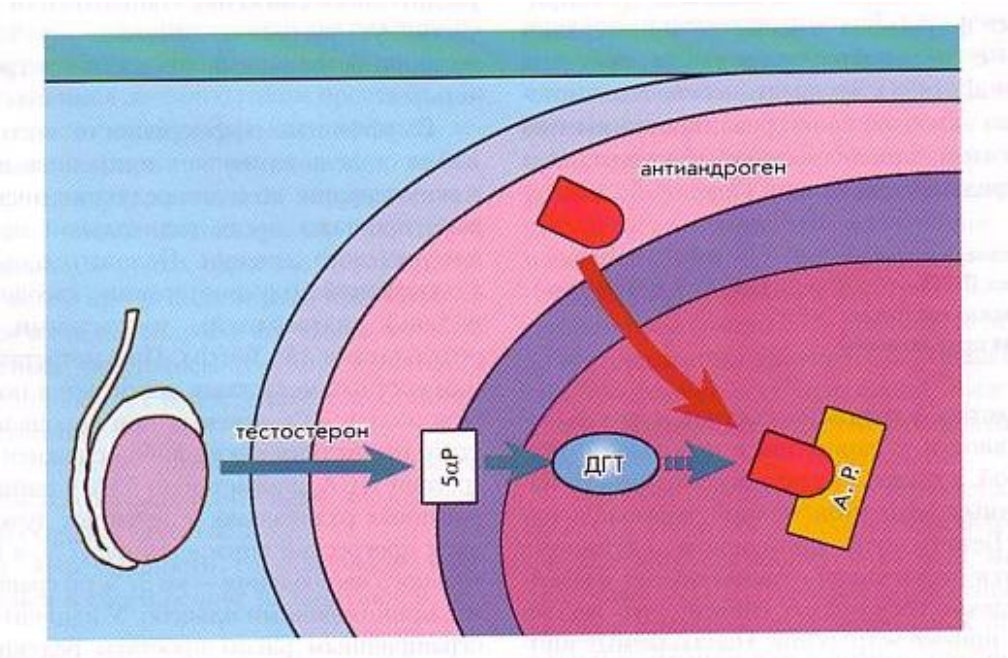
- ***Locally limited - a radical prostatectomy***
- ***Locally widespread –total androgenic block (medicamentous –*** *zoladex* ***- or surgical castration or a combination with hormonal anti-androgenic therapy -*** *androcur, bicalutamid, casodex****), brachytherapy***
- ***Disseminated - total androgenic block (medicamentous –*** *zoladex* ***- or surgical castration or a combination with hormonal anti-androgenic therapy -*** *androcur, bicalutamid, casodex****), shemo-and radiation therapy, symptomatic therapy***

PROSTATE CANCER

*At patients with locally limited (locally widespread) forms of a prostate cancer (**Gleason's index** **does not exceed 6**) **without clinical manifestations** after 70-75 – (life expectancy 10 years) most of scientists favors **active supervision** **with control of the PSA level each 6 months***

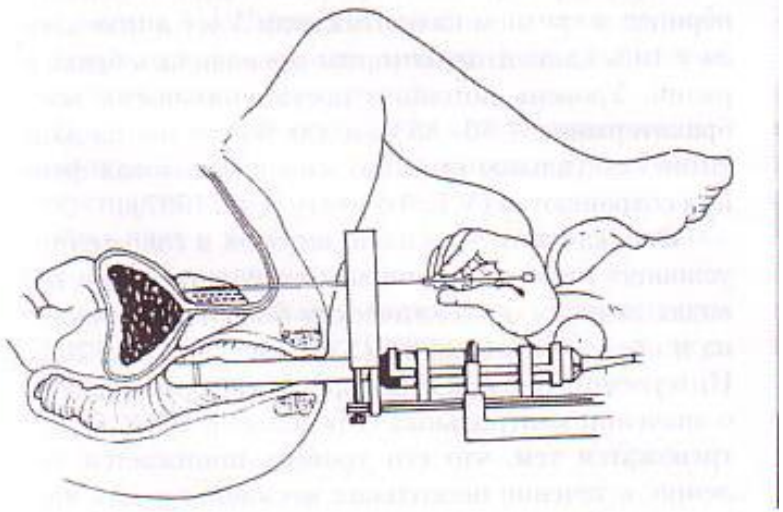
Owing to a negative impact of castration and aniandrogen therapy on central nervous and cardiovascular systems, etc. the risk of a "sudden" death not from nononcological pathology at such patients is much higher than oncological (hypercoagulation, thromboses, increase of the BP)

PROSTATE CANCER



The mechanism of action of anti-androgens – switching off a promoting effect of dihydrotestosterone due to blocking of androgenic receptors

PROSTATE CANCER



THANK YOU FOR ATTENTION!