TUMORS OF GENITOURINARY ORGANS

Tumors of the kidney

Tumors of the kidney

The most common kind of tumor of the kidney is cancer of the renal parenchyma.

Tumors of the kidney

The tumors of the kidney in adults make up 2-3% of the number of all neoplasm. Men suffer more often than woman.

Classification of tumors of the kidney

Tumor of the renal parenchyma:

- Benign tumors: adenoma, angiomyolipoma, lipoma, fibroma, rhabdomyoma, leiomyoma and other rare benign renal tumours

Classification of malignant tumors of the kidney in stages:

Tumor within the limits of renal capsule

Classification of International Agency for Cancer Research:

T1 – a tumor of small sizes;

T2 – a large tumor changing a renal contour;

T3 – extension of tumor to the pararenal tissue, renal vein and vena cava;

T4 – a tumor penetrates contiguous organs of peritoneum

Classification of International Agency for Cancer Research:

N0 – there is no damage of regional lymphatic nodes;

N1 – damage of one regional homolateral lymph node;

N2 – damage of bilateral or multiple contralateral regional lymph nodes;

Classification of International Agency for Cancer Research:

N3 – not dislodged metastatic regional lymph nodes;

N4 – damage of juxtaregional lymph nodes;

Nx – minimum requirements for recognition of a state estimation of regional lymph nodes are not fullfilled;

Classification of International Agency for Cancer Research:

M0 – absence of the distant metastates;

M1 – presence of the distant metastases;

M x – minimum requirements for recognition of
the distant metastases are not fulfilled

Benign Tumors of the kidney

Adenoma of the cortex of the kidney

is a small dense tumor. Adenomas almost always proceed asymptomatically, they are found out accidentally, frequently they are multiple.

Benign Tumors of the kidney

Oncocytomas

are spherical, distinctly limited formations that may contain radial cicatrix posed in the center.

Benign Tumors of the kidney

Angiomyolipomas.

These tumors consist of blood vessels, muscular elements and fatty tissues. They arise more often and develop almost exclusively in adult women.

Malignant Tumors

Renal Cell Carcinoma
(Hypernephroma,
Renal Adenocarcinoma)

Wilms' Tumor

Wilms' Tumor is nephroblastoma of the kidney. The tumor is named in honour of Max Wilms, who gave its description in 1899.

Tumors of the Urinary Bladder

Tumors of the urinary bladder make up about 4% of all neoplasms or 70% of all tumors of the urinary tract, yielding in frequency only to tumors of the stomach, esophagus, lungs and larynx.

Tumors of the Urinary Bladder

According to the world statistics, frequency of this disease increases. 80% of cases occur in patients at the age over 50.

Classification is valid only while observing the following conditions:

It is applied only to cancer and not used in case of papilloma.

Bening Prostatic Hyperplasia

Until recently benign prostatic hyperpasia was considered as rather age and hormone dependent surgical disease. It was known, that for its development, as a minimum, two conditions are necessary.

Bening Prostatic Hyperplasia

- The prostate gland is the male organ most commonly afflicted with either benign or malignant neoplasms.

Bening Prostatic Hyperplasia

The posterior surface of the prostate is separated from the rectal ampulla by Denonvilliers' fascia.

Bening Prostatic Hyperplasia

The normal prostate measures 3–4 cm at the base, 4–6 cm in cephalocaudad, and 2–3 cm in anteroposterior dimensions.

Bening Prostatic Hyperplasia

Incidence & Epidemiology

Bening Prostatic Hyperplasia

BPH is the most common benign tumor in men, and its incidence is age-related.

Bening Prostatic Hyperplasia

At age 55, approximately 25% of men report obstructive voiding symptoms.

Bening Prostatic Hyperplasia

Risk factors for the development of BPH are poorly understood.

Bening Prostatic Hyperplasia

Etiology

Bening Prostatic Hyperplasia

The etiology of BPH is not completely understood, but it seems to be multifactorial and endocrine controlled.

Bening Prostatic Hyperplasia

Observations and clinical studies in men have clearly demonstrated that BPH is under endocrine control.

Bening Prostatic Hyperplasia

The latter may suggest that the association between aging and BPH might result from the increased estrogen levels of aging causing induction of the androgen receptor, which thereby sensitizes the prostate to free testosterone.

Bening Prostatic Hyperplasia

Symptoms

Bening Prostatic Hyperplasia

As discussed above, the symptoms of BPH can be divided into **obstructive** and **irritative** complaints.

Bening Prostatic Hyperplasia

A detailed history focusing on the urinary tract excludes other possible causes of symptoms that may not result from the prostate, such as urinary tract infection, neurogenic bladder, urethral stricture, or prostate cancer.

Bening Prostatic Hyperplasia

Signs

Bening Prostatic Hyperplasia

A physical examination, DRE, and focused neurologic examination are performed on all patients.

Bening Prostatic Hyperplasia

Laboratory Findings

Bening Prostatic Hyperplasia

A urinalysis to exclude infection or hematuria and serum creatinine measurement to assess renal function are required.

Bening Prostatic Hyperplasia

Serum PSA is considered optional, but most physicians will include it in the initial evaluation.

Bening Prostatic Hyperplasia

Imaging

Bening Prostatic Hyperplasia

Upper-tract imaging (intravenous pyelogram or renal ultrasound) is recommended only in the presence of concomitant urinary tract disease or complications from BPH (e.g., hematuria, urinary tract infection, renal insufficiency, history of stone disease).

Bening Prostatic Hyperplasia

Cystoscopy is not recommended to determine the need for treatment but may assist in choosing the surgical approach in patients opting for invasive therapy.

Bening Prostatic Hyperplasia

Cystometrograms and urodynamic profiles are reserved for patients with suspected neurologic disease or those who have failed prostate surgery.

Bening Prostatic Hyperplasia

Differential Diagnosis

Bening Prostatic Hyperplasia

Other obstructive conditions of the lower urinary tract, such as urethral stricture, bladder neck contracture, bladder stone, or CaP, must be entertained when evaluating men with presumptive BPH.

Bening Prostatic Hyperplasia

A urinary tract infection, which can mimic the irritative symptoms of BPH, can be readily identified by urinalysis and culture; however, a urinary tract infection can also be a complication of BPH.

Bening Prostatic Hyperplasia

Likewise, patients with neurogenic bladder disorders may have many of the signs and symptoms of BPH, but a history of neurologic disease, stroke, diabetes mellitus, or back injury may be present as well.

Bening Prostatic Hyperplasia

Treatment

Bening Prostatic Hyperplasia

After patients have been evaluated, they should be informed of the various therapeutic options for BPH. It is advisable for patients to consult with their physicians to make an educated decision on the basis of the relative efficacy and side effects of the treatment options.

Bening Prostatic Hyperplasia

Specific treatment recommendations can be offered for certain groups of patients. For those with mild symptoms (symptom score 0–7), watchful waiting only is advised.

Bening Prostatic Hyperplasia

Watchful Waiting

Bening Prostatic Hyperplasia

Very few studies on the natural history of BPH have been reported.

Bening Prostatic Hyperplasia

Retrospective studies on the natural history of BPH are inherently subject to bias, related to patient selection and the type and extent of follow-up.

Bening Prostatic Hyperplasia

As mentioned above, watchful waiting is the appropriate management of men with mild symptom scores (0–7).

Men with moderate or severe symptoms can also be managed in this fashion if they so choose.

Neither the optimal interval for follow-up nor specific endpoints for intervention have been defined.

Bening Prostatic Hyperplasia

Medical Therapy

Alpha Blockers

Bening Prostatic Hyperplasia

The human prostate and bladder base contains alpha-1-adrenoreceptors, and the prostate shows a contractile response to corresponding agonists.

Bening Prostatic Hyperplasia

5 α -Reductase Inhibitors

Bening Prostatic Hyperplasia

Finasteride is a 5 α -reductase inhibitor that blocks the conversion of testosterone to dihydrotestosterone.

Bening Prostatic Hyperplasia

Several randomized, double-blind, placebo-controlled trials have compared finasteride with placebo.

Bening Prostatic Hyperplasia

However, optimal identification of appropriate patients for prophylactic therapy remains to be determined.

Bening Prostatic Hyperplasia

Phytotherapy refers to the use of plants or plant extracts for medicinal purposes.

Bening Prostatic Hyperplasia

Conventional Surgical Therapy

Transurethral Resection of the Prostate (TURP)

Bening Prostatic Hyperplasia

Ninety-five percent of simple prostatectomies can be done endoscopically.

Bening Prostatic Hyperplasia

Much controversy revolves around possible higher rates of morbidity and mortality associated with TURP in comparison with those of open surgery, but the higher rates observed in one study were probably related to more significant comorbidities in the TURP patients than in the patients undergoing open surgery.

Bening Prostatic Hyperplasia

Several other studies could not confirm the difference in mortality when results were controlled for age and comorbidities.

Bening Prostatic Hyperplasia

Clinical manifestations of the TUR syndrome include nausea, vomiting, confusion, hypertension, bradycardia, and visual disturbances.

Bening Prostatic Hyperplasia

Men with moderate to severe symptoms and a small prostate often have posterior commissure hyperplasia (elevated bladder neck).

Bening Prostatic Hyperplasia

Outcomes in well-selected patients are comparable, although a lower rate of retrograde ejaculation with transurethral incision has been reported (25%).

Bening Prostatic Hyperplasia

Open Simple Prostatectomy

When the prostate is too large to be removed endoscopically, an open enucleation is necessary.

Bening Prostatic Hyperplasia

Open prostatectomy may also be initiated when concomitant bladder diverticulum or a bladder stone is present or if dorsal lithotomy positioning is not possible.

Bening Prostatic Hyperplasia

Open prostatectomies can be done with either a suprapubic or retropubic approach.

Bening Prostatic Hyperplasia

The dissection plane is initiated sharply, and then blunt dissection with the finger is performed to remove the adenoma.

Bening Prostatic Hyperplasia

In a **simple retropubic prostatectomy,** the bladder is not entered.

Bening Prostatic Hyperplasia

Minimally Invasive Therapy

Laser Therapy

Many different techniques of laser surgery for the prostate have been described.

Two main energy sources of lasers have been utilized—Nd:YAG and holmium:YAG.

Bening Prostatic Hyperplasia

Several different **coagulation necrosis** techniques have been described.

Bening Prostatic Hyperplasia

Transurethral Electrovaporization of the Prostate

Transurethral electrovaporization uses the standard resectoscope but replaces a conventional loop with a variation of a grooved rollerball.

Bening Prostatic Hyperplasia

Hyperthermia

Microwave hyperthermia is most commonly delivered with a transurethral catheter.

Bening Prostatic Hyperplasia

Transurethral Needle Ablation of the Prostate

Transurethral needle ablation uses a specially designed urethral catheter that is passed into the urethra.

Bening Prostatic Hyperplasia

This technique is not adequate treatment for bladder neck and median lobe enlargement.

Bening Prostatic Hyperplasia

High-Intensity Focused Ultrasound

High-intensity focused ultrasound is another means of performing thermal tissue ablation. A specially designed, dual-function ultrasound probe is placed in the rectum.

Bening Prostatic Hyperplasia

This probe allows transrectal imaging of the prostate and also delivers short bursts of high-intensity focused ultrasound energy, which heats the prostate tissue and results in coagulative necrosis.

Bening Prostatic Hyperplasia

Intraurethral Stents

They are usually covered by urothelium within 4–6 months after insertion.

Bening Prostatic Hyperplasia

These devices are typically used for patients with limited life expectancy who are not deemed to be appropriate candidates for surgery or anesthesia.

Bening Prostatic Hyperplasia

Transurethral Balloon Dilation of the Prostate

Balloon dilation of the prostate is performed with specially designed catheters that enable dilation of the prostatic fossa alone or the prostatic fossa and bladder neck.

Carcinoma of the Prostate (CaP)

Incidence & Epidemiology

Carcinoma of the Prostate (CaP)

Prostate cancer is the most common cancer diagnosed and is the second leading cause of cancer death in American men.

Carcinoma of the Prostate (CaP)

The lifetime risk of a 50-year-old man for latent CaP (detected as an incidental finding at autopsy, not related to the cause of death) is 40%; for clinically apparent CaP, 9.5%; and for death from CaP, 2.9%.

Carcinoma of the Prostate (CaP)

Thus, many prostate cancers are indolent and inconsequential to the patient while others are virulent, and if detected too late or left untreated, they result in a patient's death.

Carcinoma of the Prostate (CaP)

Several risk factors for prostate cancer have been identified. As discussed above, increasing age heightens the risk for CaP.

Carcinoma of the Prostate (CaP)

African Americans are at a higher risk for CaP than whites. In addition, African American men tend to present at a later stage of disease than whites.

Carcinoma of the Prostate (CaP)

The age of disease onset in the family member with the diagnosis of CaP affects a patient's relative risk.

Carcinoma of the Prostate (CaP)

High dietary fat intake increases the relative risk for CaP by almost a factor of 2.

Carcinoma of the Prostate (CaP)

Etiology

The specific molecular mechanisms involved in the development and progression of CaP are an area of intense interest in the laboratory.

Carcinoma of the Prostate (CaP)

Pathology

Over 95% of the cancers of the prostate are adenocarcinomas.

Carcinoma of the Prostate (CaP)

Symptoms

Most patients with early-stage CaP are asymptomatic. The presence of symptoms often suggests locally advanced or metastatic disease.

Carcinoma of the Prostate (CaP)

Metastatic disease to the bones may cause bone pain.

Carcinoma of the Prostate (CaP)

Signs

A physical examination, including a DRE, is needed.

Carcinoma of the Prostate (CaP)

Locally advanced disease with bulky regional lymphadenopathy may lead to lymphedema of the lower extremities.

Carcinoma of the Prostate (CaP)

Laboratory Findings

Azotemia can result from bilateral ureteral obstruction either from direct extension into the trigone or from retroperitoneal adenopathy.

Carcinoma of the Prostate (CaP)

Tumor Markers—Prostate-Specific Antigen (PSA)

Serum PSA has revolutionized our ability to detect CaP. Current detection strategies include the efficient use of the combination of DRE, serum PSA, and TRUS with systematic biopsy. Unfortunately, PSA is not specific for CaP, as other factors such as BPH, urethral instrumentation, and infection can cause elevations of serum PSA.

Although the last two factors can usually be clinically ascertained, distinguishing between elevations of serum PSA resulting from BPH and those related to CaP remains the most problematic.

Carcinoma of the Prostate (CaP)

Prostate Biopsy

Systematic sextant prostate biopsy was the most commonly employed technique used in detecting CaP.

Carcinoma of the Prostate (CaP)

Information from sextant biopsies has mainly focused on cancer detection and has been underutilized for cancer staging.

Carcinoma of the Prostate (CaP)

TRUS

TRUS is useful in performing prostatic biopsies and in providing some useful local staging information if cancer is detected.

Carcinoma of the Prostate (CaP)

TRUS provides more accurate local staging than does DRE.

Carcinoma of the Prostate (CaP)

Endorectal Magnetic Resonance Imaging

The reported staging accuracy of endorectal coil magnetic resonance imaging (MRI) varies from 51% to 92%.

Carcinoma of the Prostate (CaP)

Differential Diagnosis

Not all patients with an elevated PSA concentration have CaP.

Carcinoma of the Prostate (CaP)

Sclerotic lesions on plain x-ray films and elevated levels of alkaline phosphatase can be seen in Paget disease and can often be difficult to distinguish from metastatic CaP.

Carcinoma of the Prostate (CaP)

Treatment

Localized Disease

General Considerations

The optimal form of therapy for all stages of CaP remains a subject of great debate.

Carcinoma of the Prostate (CaP)

Treatment dilemmas persist in the management of localized disease (T1 and T2) because of the uncertainty surrounding the relative efficacy of various modalities, including radical prostatectomy, radiation therapy, and surveillance.

Carcinoma of the Prostate (CaP)

Watchful Waiting

No randomized trial has demonstrated the therapeutic benefit of radical treatment for early-stage prostate cancer.

Carcinoma of the Prostate (CaP)

In addition, the small, well-differentiated prostate cancers commonly found in this population are often associated with very slow growth rates.

Carcinoma of the Prostate (CaP)

Radical Prostatectomy

The first radical perineal prostatectomy was performed by Hugh Hampton Young in 1904, and Millin first described the radical retropubic approach in 1945.

Carcinoma of the Prostate (CaP)

Description of the anatomy of the dorsal vein complex resulted in modifications in the surgical technique leading to reduced operative blood loss.