

Objectives

- Definition
- Types
- Causes
- Evaluation of gross hematuria
- Evaluation of microscopic hematuria
- Follow up in case of negative investigation
- Treatment of an acute case with gross hematuria
- When to refer to an expert physician (Nephrologist)

Definition

- Presence of blood in urine.
- Gross hematuria
- Microscopic hematuria – 3 or more RBC / HPF in a centrifuged urine sediment from two of three properly collected urinalysis specimens
- Should be based on microscopic examination of a freshly voided, clean-catch, midstream urine specimen.

Types

- Gross / Microscopic
- Initial, total or terminal
- Pain- LUT symptoms or colic.
- Clots
- Suggest site but not cause and help direct investigations
- False hematuria
 - Genital bleed.
 - Colored urine

Causes

Pathology

- Trauma
- Tumor
- Infection
- Stone

Site

- Kidney
- Ureter
- Bladder
- Prostate (male)
- Urethra

Causes

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- In addition, in the kidney cystic diseases – specifically polycystic disease; NOT simple cyst!

Causes

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- Kidney
- Ureter
- Bladder
- Prostate (male)
- Urethra

- In addition, in lower urinary tract – Foreign body

Other Causes

- Medical renal diseases
- Renal vascular diseases
- Systemic diseases

Medical Causes

A. Glomerular Disease

- Glomerulonephritis
- IgA Nephropathy (Berger's Disease)
- Scleroderma
- Familial Nephritis (Alport's Syndrome)
- Benign Familial Hematuria
- Post-Exercise
- Severe Hypertension:
Malignant Hypertension /
Emergency or Renal Crisis

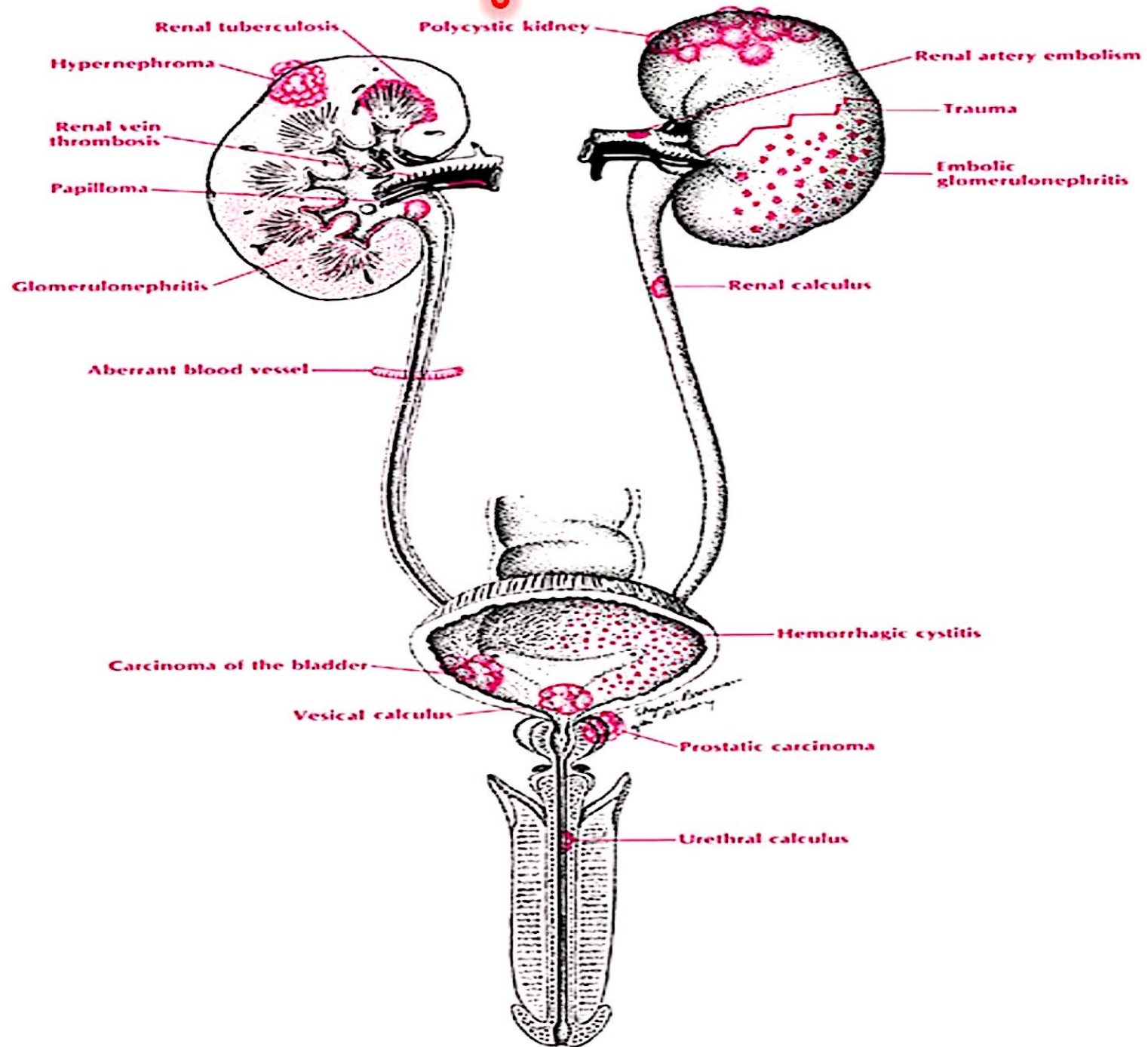
B. Interstitial Renal Disease

- Polycystic Renal Disease
- Papillary Necrosis
- Renal artery embolism
- Lymphoma
- Multiple Myeloma
- Amyloidosis
- Vascular Malformations

False Hematuria

- Vaginal Bleeding
- Rectal Bleeding
- Hemoglobinuria / Myoglobinuria
- Drugs Discoloring Urine: Phenothiazine, Phenazopyridine (Pyridium®), Phenolphthalein, Rifampin

Causes of haematuria



Evaluation

- History
- Examination
 - General
 - Local
- Investigate
 - Lab
 - Imaging
 - Endoscopy

Evaluation

- History – Type of hematuria, other symptoms, past medical history, drug intake (blood thinners), menstrual history, family history
- Examination – General, abdominal
- Also very important – genital, vaginal and rectal

Evaluation

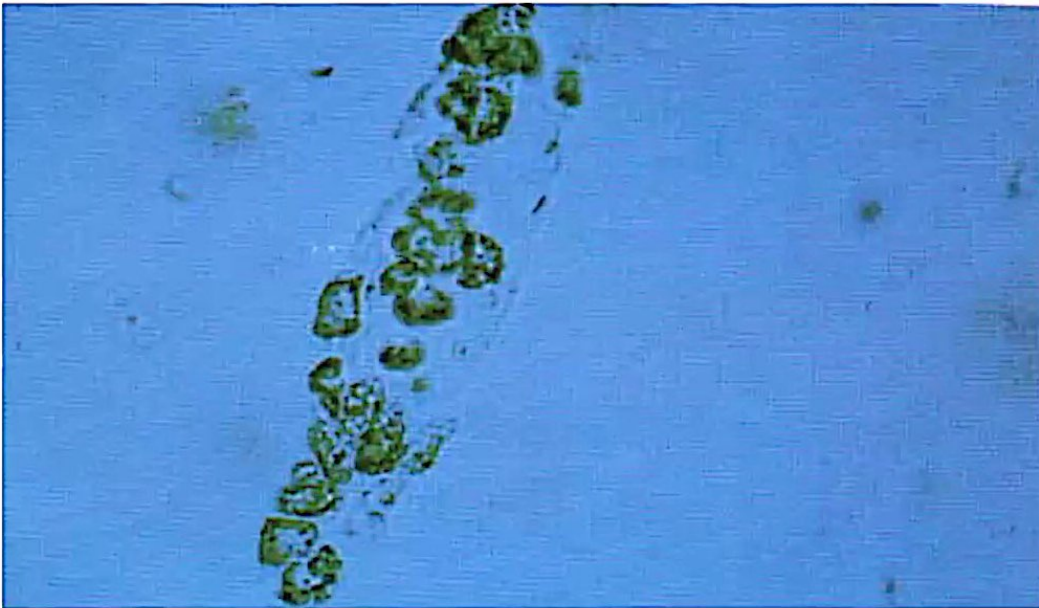
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PV and PR (DRE) – A MUST!!

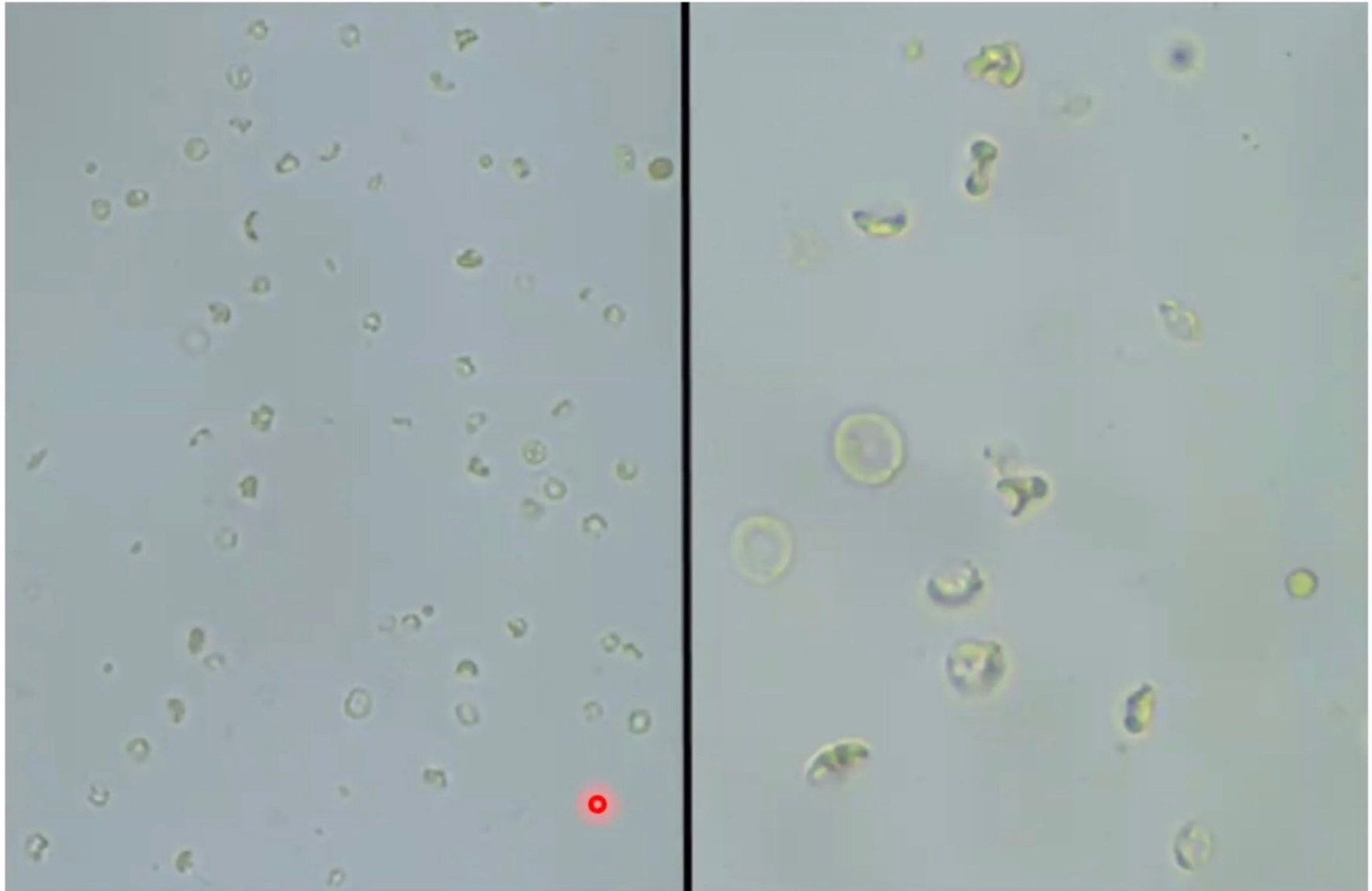
Investigations - Lab

- Blood – Hb, blood counts, blood urea & serum creatinine,
- Urinalysis - dipstick method
- Should be confirmed by microscopic evaluation.
- High protein, dysmorphic RBC, RBC casts – glomerular.
- Urine culture – Aerobic culture.
- Urine cytology – for cancer.
- Bladder or kidney biopsy

Casts



Normal and dysmorphic RBC

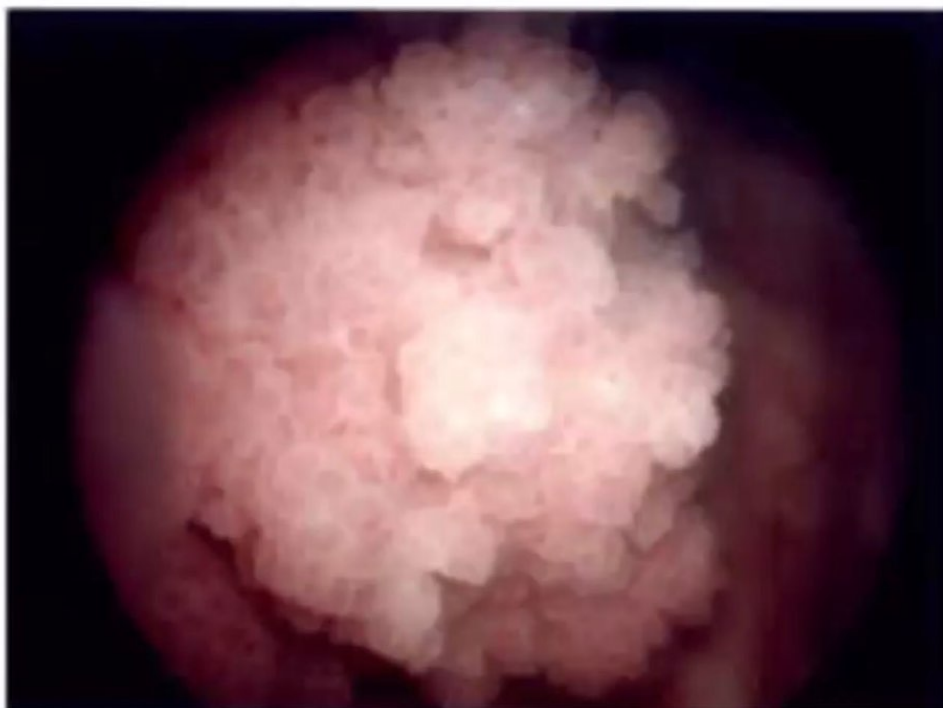
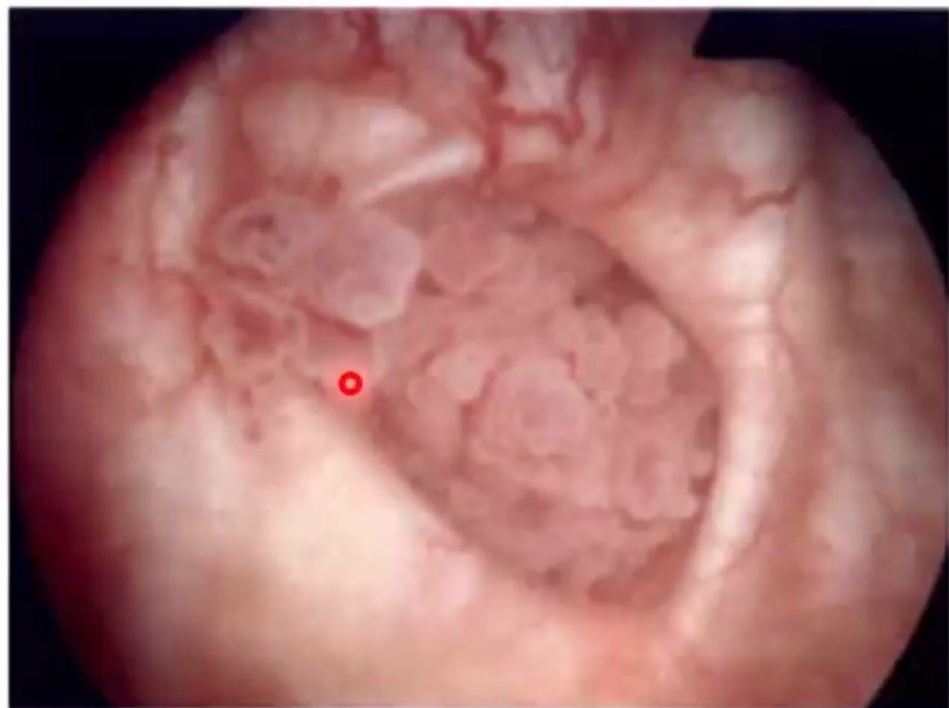


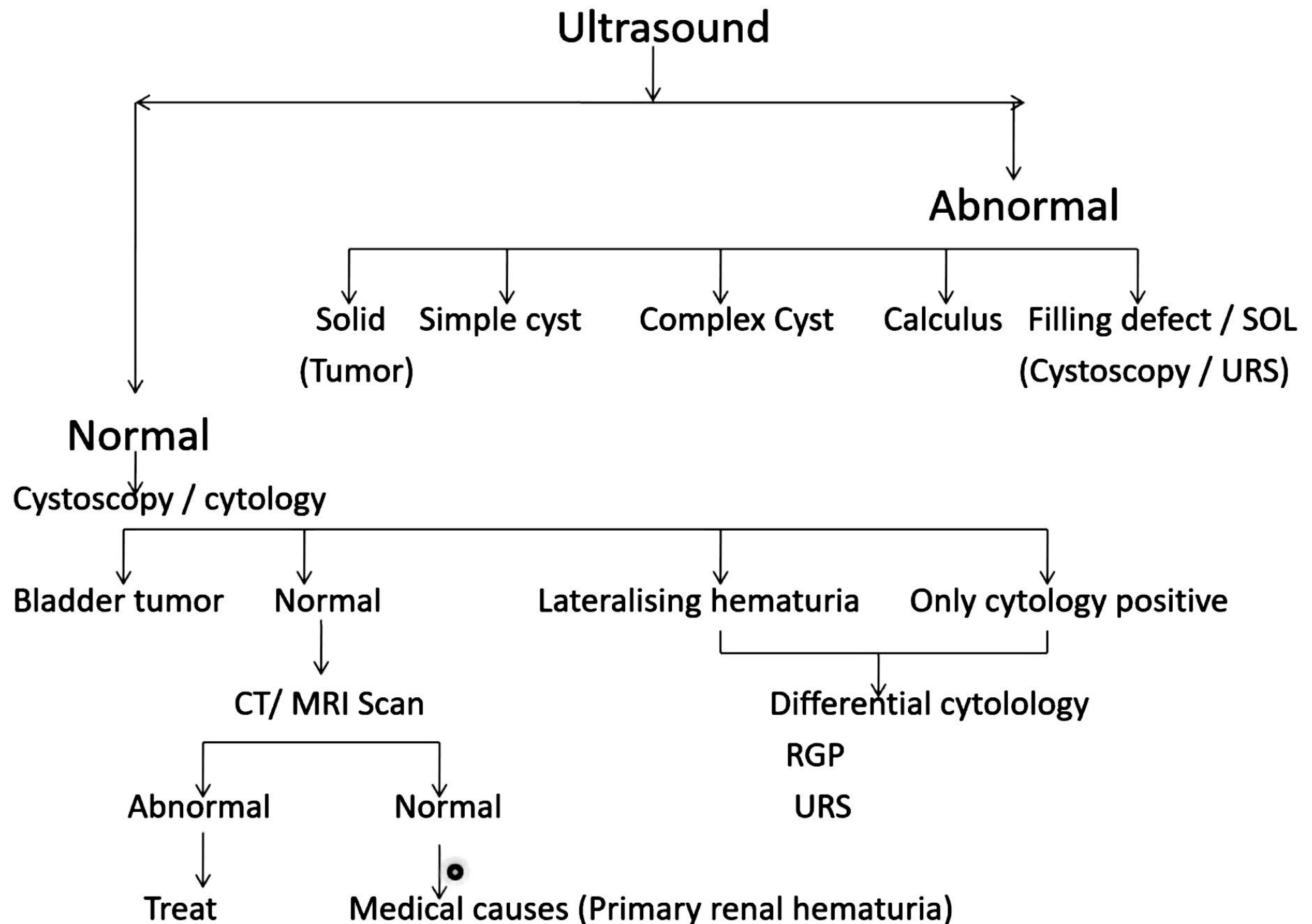
Investigations – Imaging

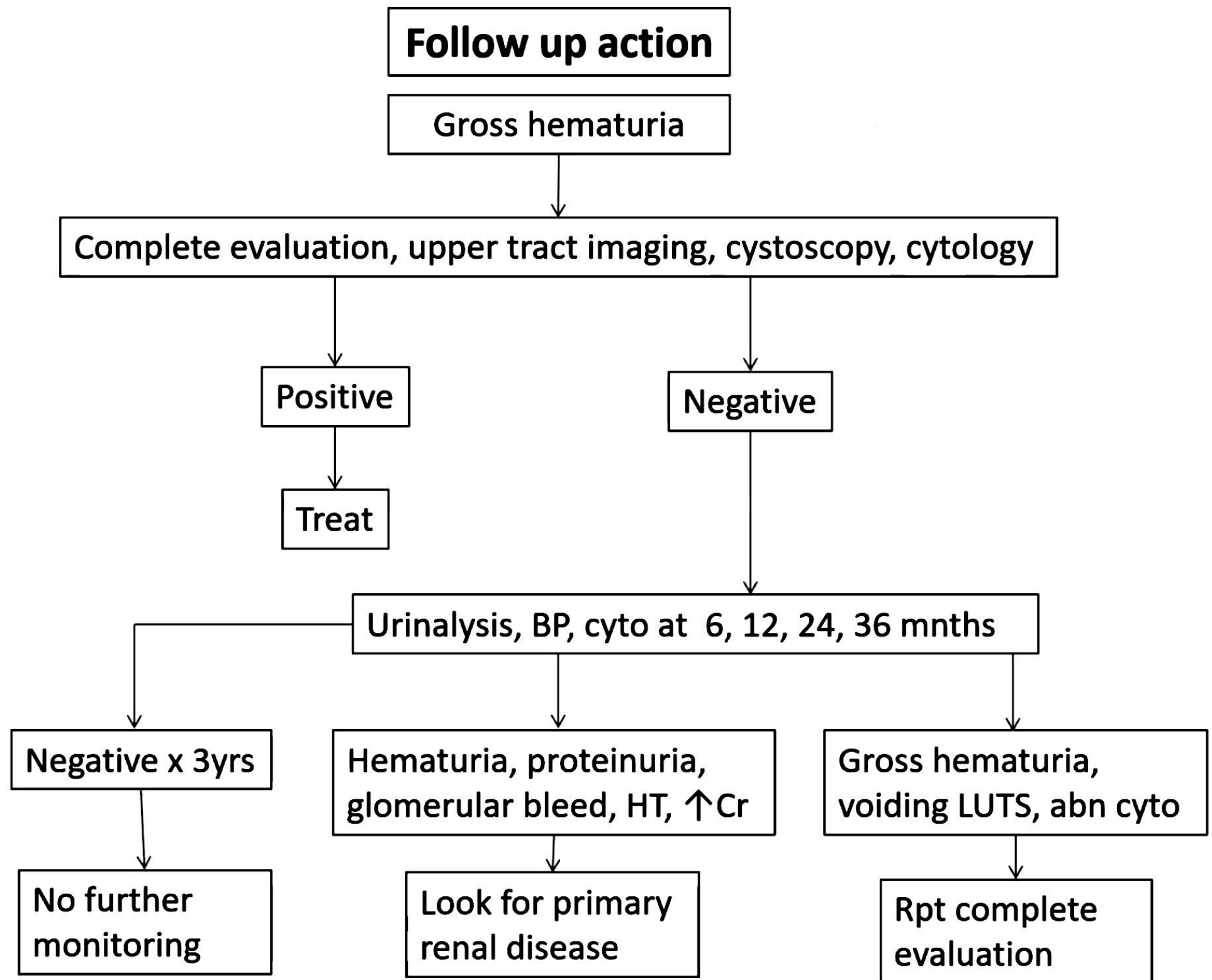
- Ultrasound
- IVU
- CT Scan
- MRI
- Retrograde ureteropyelography (during cystoscopy if needed)

Investigation – Cystoscopy & • Ureteroscopy

- Cystoscopy - Must in
 - All patients with gross hematuria
 - High risk patients with microscopic hematuria.
- If cystitis ruled out, cystoscopy done during active hematuria helps localisation of source
- Ureteroscopy performed if
 - Bleeding noted from upper tract on cystoscopy
 - Filling defect or SOL in upper tract on imaging
 - Not performed during active bleed.







Evaluation of microscopic hematuria

Exclude benign causes including

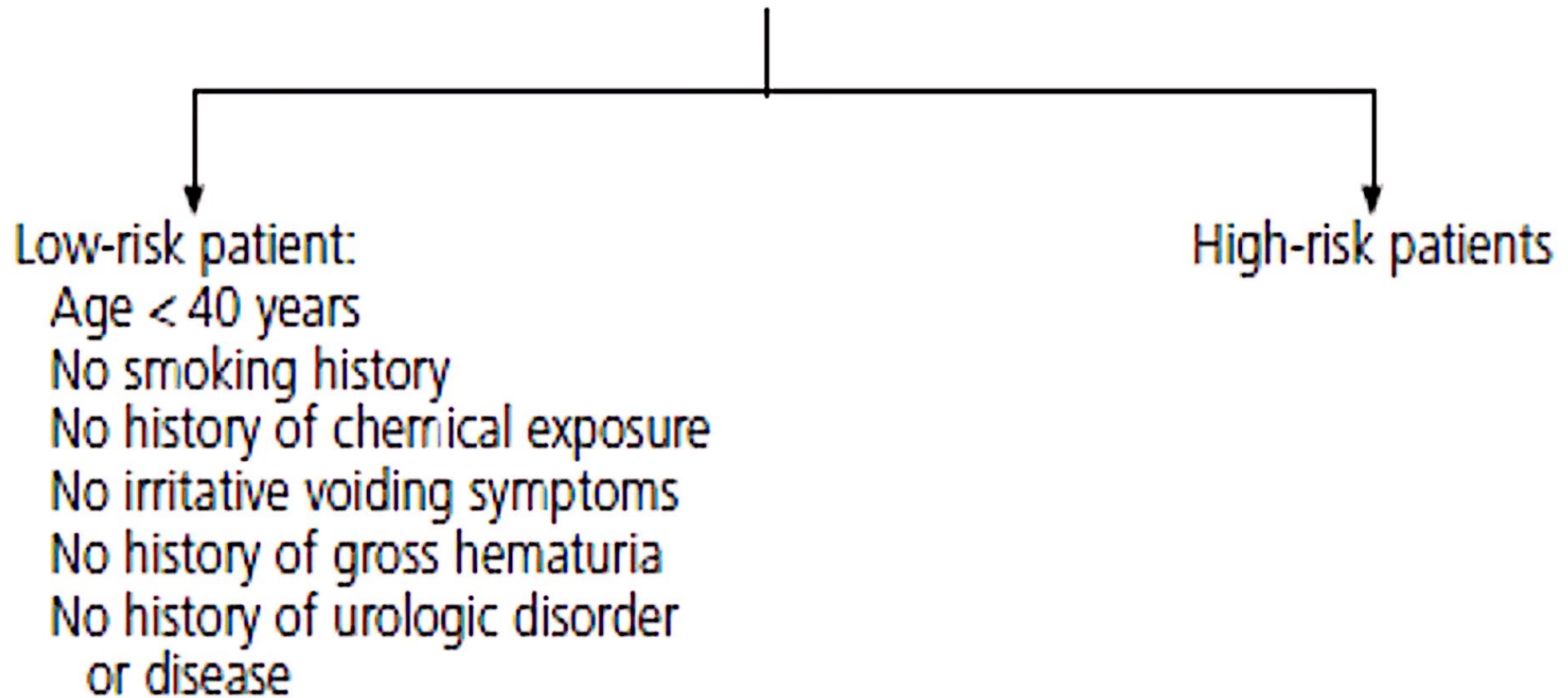
- Menstruation
- vigorous exercise
- sexual activity
- viral illness
- trauma
- infection.

Risk Factors for Significant Disease in Patients with Microscopic Hematuria

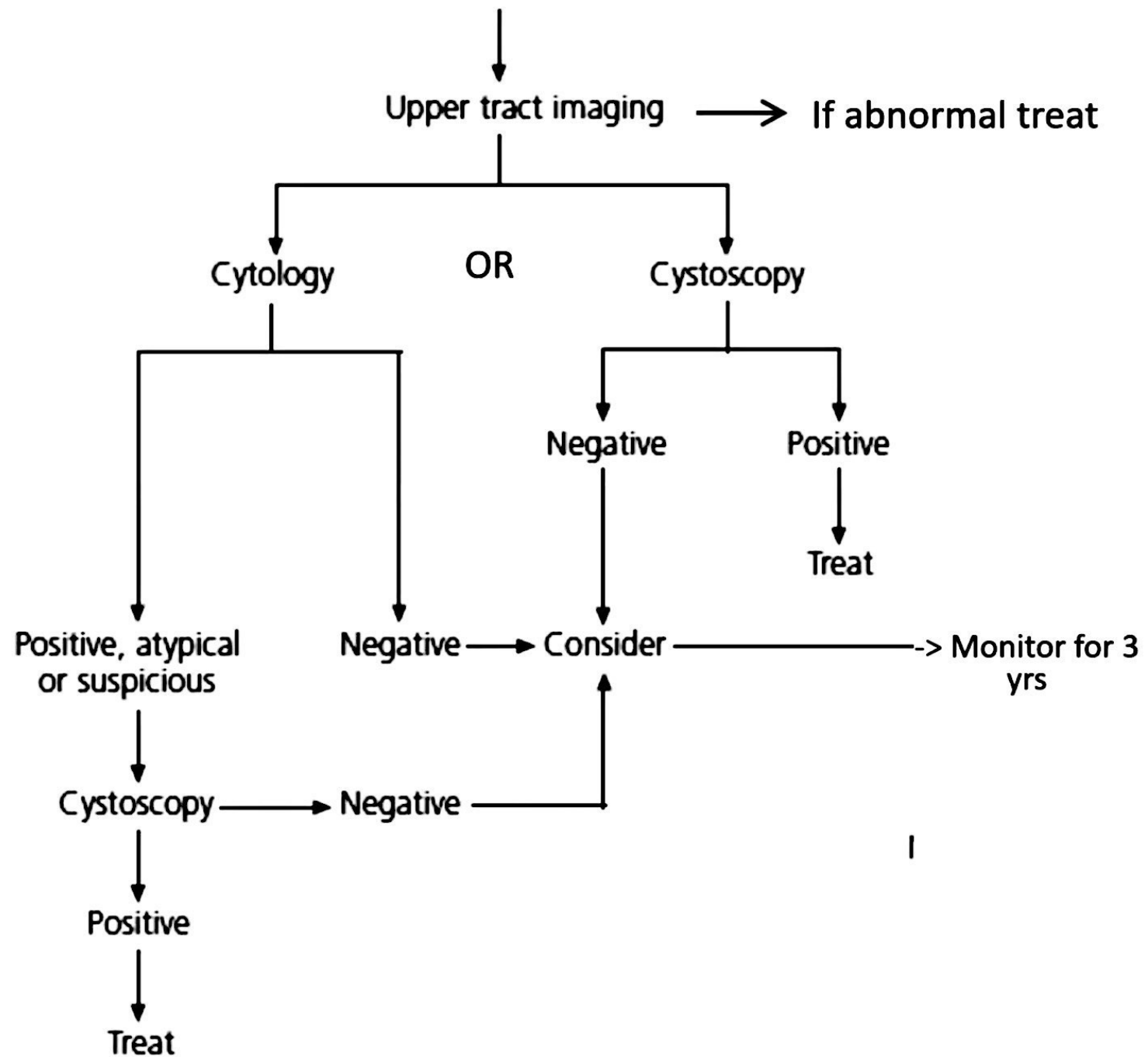
- Smoking history
- Occupational exposure to chemicals or dyes (benzenes or aromatic amines)
- H/O of gross hematuria
- Age >40 years
- H/O of urologic^o disorder or disease
- H/O of irritative voiding symptoms (Storage LUTS)
- H/O of urinary tract infection
- H/O Analgesic abuse
- H/O of pelvic irradiation

Evaluation of patients with microscopic hematuria

Patient without conditions suggestive of primary renal disease



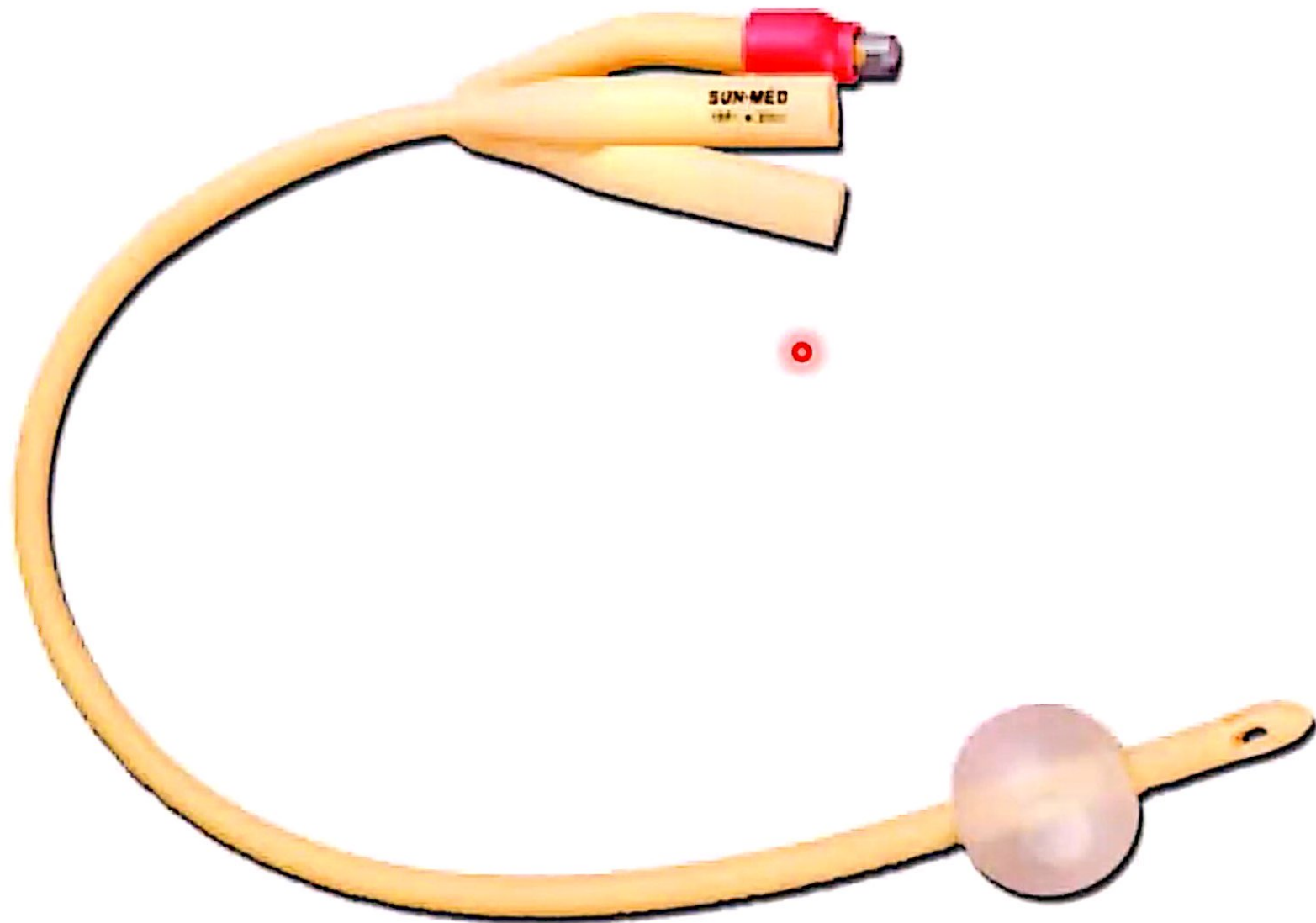
Low risk patients



Management of active hematuria

- Never life threatening except in severe trauma.
- Treat cause.
- Antibiotics.
- Clots can cause retention – catheterisation, clots evacuation, bladder irrigation (3 – way Foley catheter).
- Emergency cystoscopy & clot evacuation in OT
- Blood transfusion (acute) and hematinics (long – term).

3-way Foley catheter



Primary renal hematuria

- Proteinuria ($> 1\text{g}/24\text{hrs}$ or $>500\text{mg}/24\text{hrs}$ with high clinical suspicion).
- Dysmorphic RBC or RBC casts.
- Hypertension.
- Elevated serum creatinine.
- Evaluation by a nephrologist – kidney biopsy if needed