Haematuria

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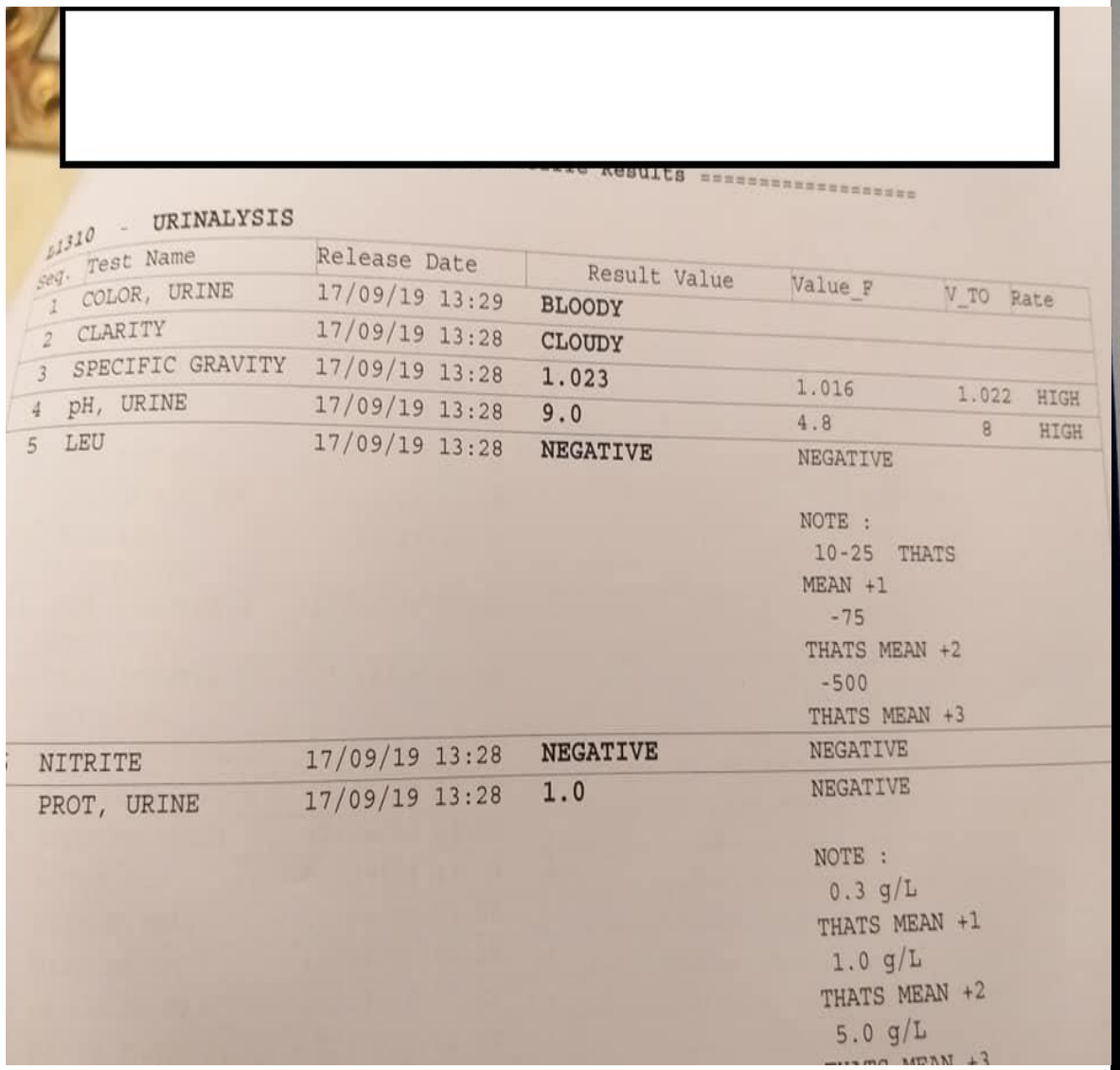
Objectives

1. Definition and criteria to establish **Hematuria**
2. classification
3. Causes ,Clinical reasoning and important Epidemiological data
4. Approach and Investigations
5. Management and follow up

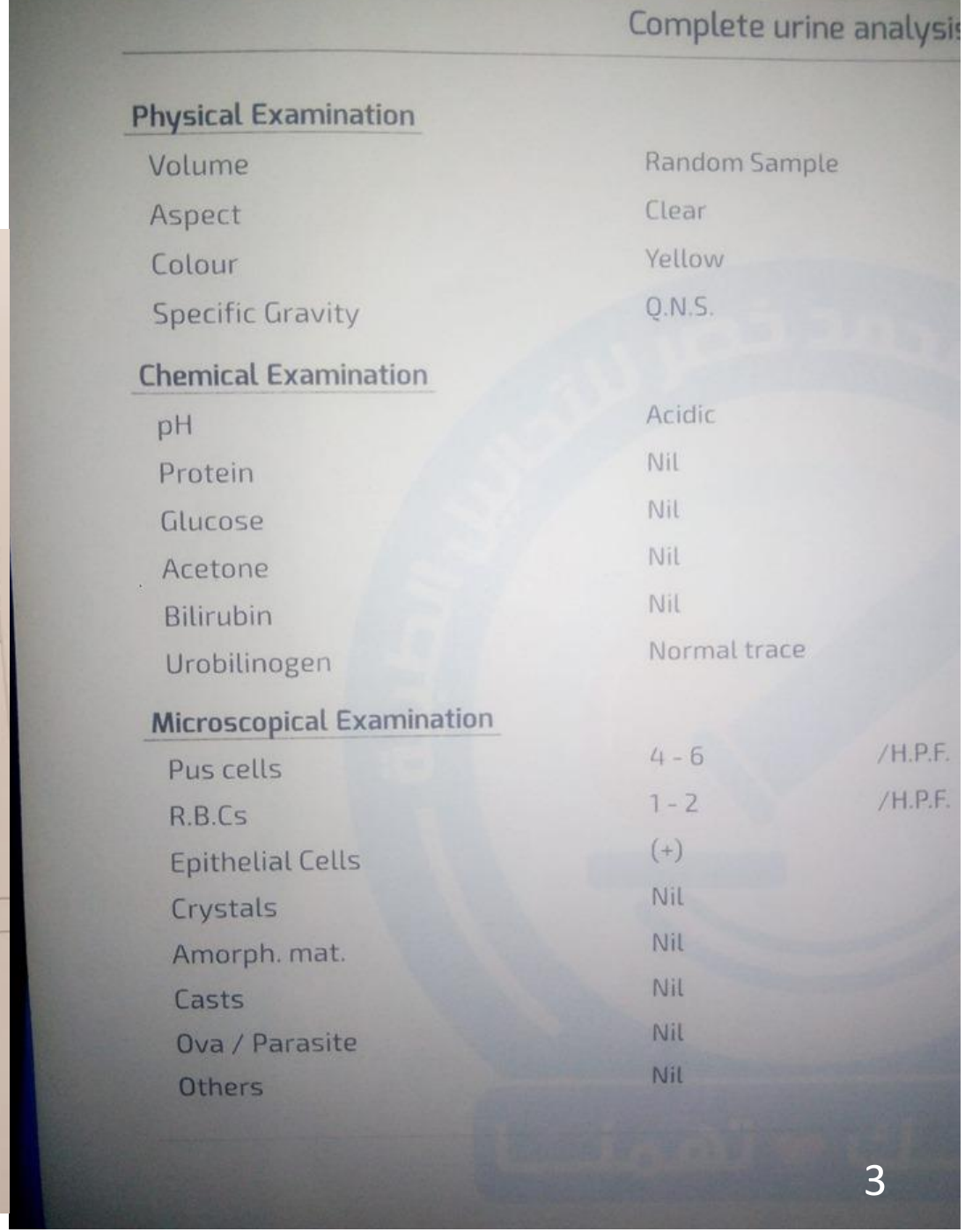
Objective 1 Definition: forms of haematuria



Results

L1310 - URINALYSIS

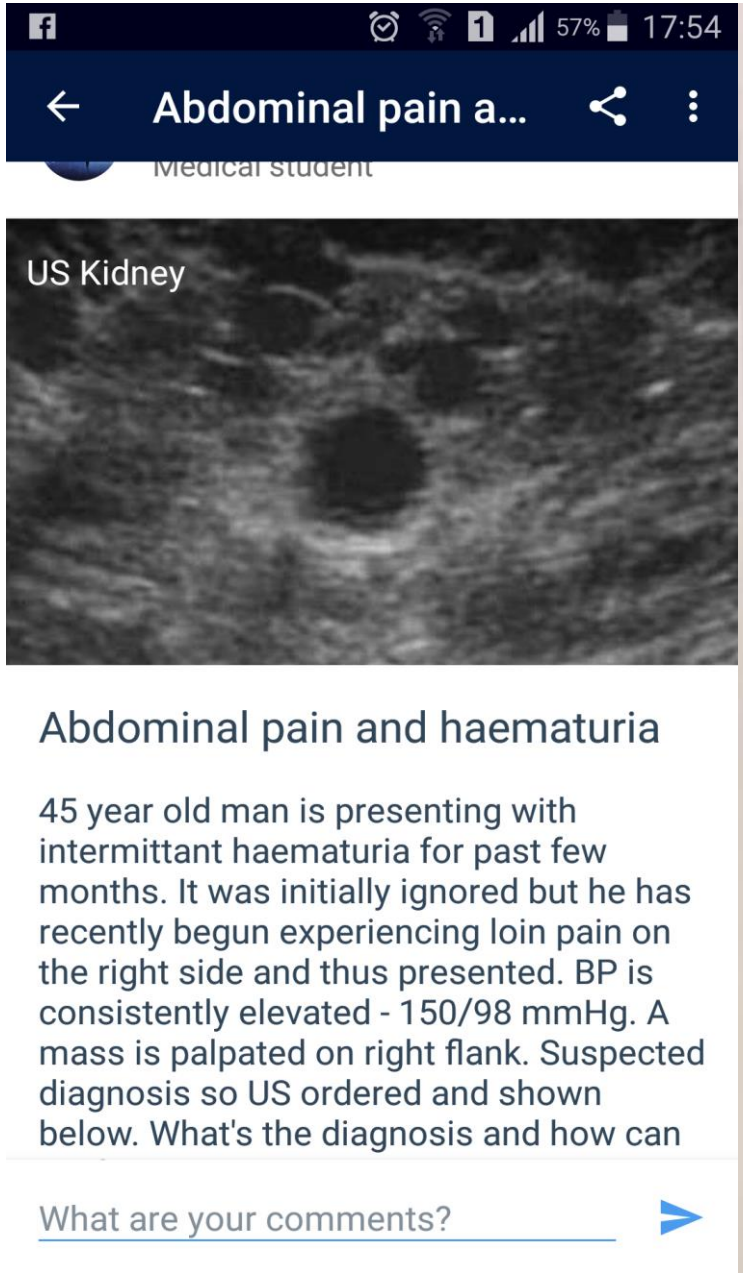
Seq.	Test Name	Release Date	Result Value	Value_F	V_TO	Rate
1	COLOR, URINE	17/09/19 13:29	BLOODY			
2	CLARITY	17/09/19 13:28	CLOUDY			
3	SPECIFIC GRAVITY	17/09/19 13:28	1.023	1.016	1.022	HIGH
4	pH, URINE	17/09/19 13:28	9.0	4.8	8	HIGH
5	LEU	17/09/19 13:28	NEGATIVE	NEGATIVE		
				NOTE : 10-25 THATS MEAN +1 -75 THATS MEAN +2 -500 THATS MEAN +3		
	NITRITE	17/09/19 13:28	NEGATIVE	NEGATIVE		
	PROT, URINE	17/09/19 13:28	1.0	NEGATIVE		
				NOTE : 0.3 g/L THATS MEAN +1 1.0 g/L THATS MEAN +2 5.0 g/L		

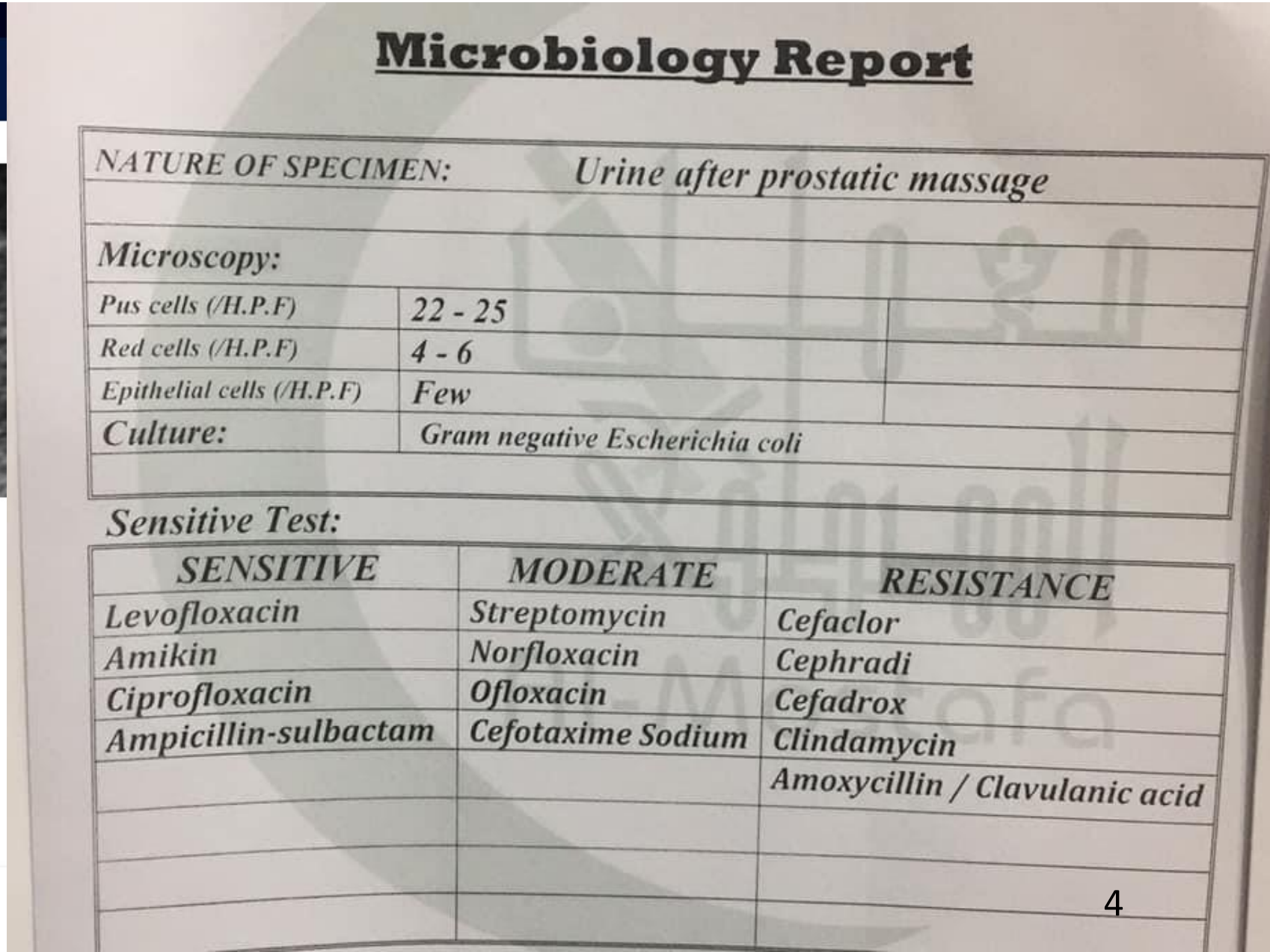


Complete urine analysis

Physical Examination	
Volume	Random Sample
Aspect	Clear
Colour	Yellow
Specific Gravity	Q.N.S.
Chemical Examination	
pH	Acidic
Protein	Nil
Glucose	Nil
Acetone	Nil
Bilirubin	Nil
Urobilinogen	Normal trace
Microscopical Examination	
Pus cells	4 - 6 /H.P.F.
R.B.Cs	1 - 2 /H.P.F.
Epithelial Cells	(+)
Crystals	Nil
Amorph. mat.	Nil
Casts	Nil
Ova / Parasite	Nil
Others	Nil

Objective 1: examples 2 and 4





Microbiology Report

NATURE OF SPECIMEN:	Urine after prostatic massage
Microscopy:	
Pus cells (/H.P.F)	22 - 25
Red cells (/H.P.F)	4 - 6
Epithelial cells (/H.P.F)	Few
Culture:	Gram negative Escherichia coli

Sensitive Test:

SENSITIVE	MODERATE	RESISTANCE
Levofloxacin	Streptomycin	Cefaclor
Amikin	Norfloxacin	Cephradi
Ciprofloxacin	Ofloxacin	Cefadrox
Ampicillin-sulbactam	Cefotaxime Sodium	Clindamycin
		Amoxycillin / Clavulanic acid

Objective 1: agreed upon Definitions

- Haematuria is defined as two to five RBCs per high-power field (HPF) microscopy and can be detected by dipstick.
- Significant/persistent microscopic Haematuria: The excretion of more than 3 RBC/HPF, in 3 of 3 consecutive centrifuged specimens obtained at least 1 week apart
- but
  not enough RBCs to make the urine visibly red

- Macroscopic haematuria is the presence of red or brown urine or tea coloured visible by the naked eye.

- Isolated Haematuria: macroscopic haematuria+ otherwise normal parameters and imaging studies
- *Isolated microscopic hematuria:* Haematuria + normal RFT and imaging studies asymptomatic patient with no obvious cause

Objective 2 classifications

1. By visibility macroscopic microscopic
2. By chronicity Acute or chronic
3. Pattern transient or persistent
4. Clinically Symptomatic asymptomatic
5. Epidemiologically known cause or unknown cause

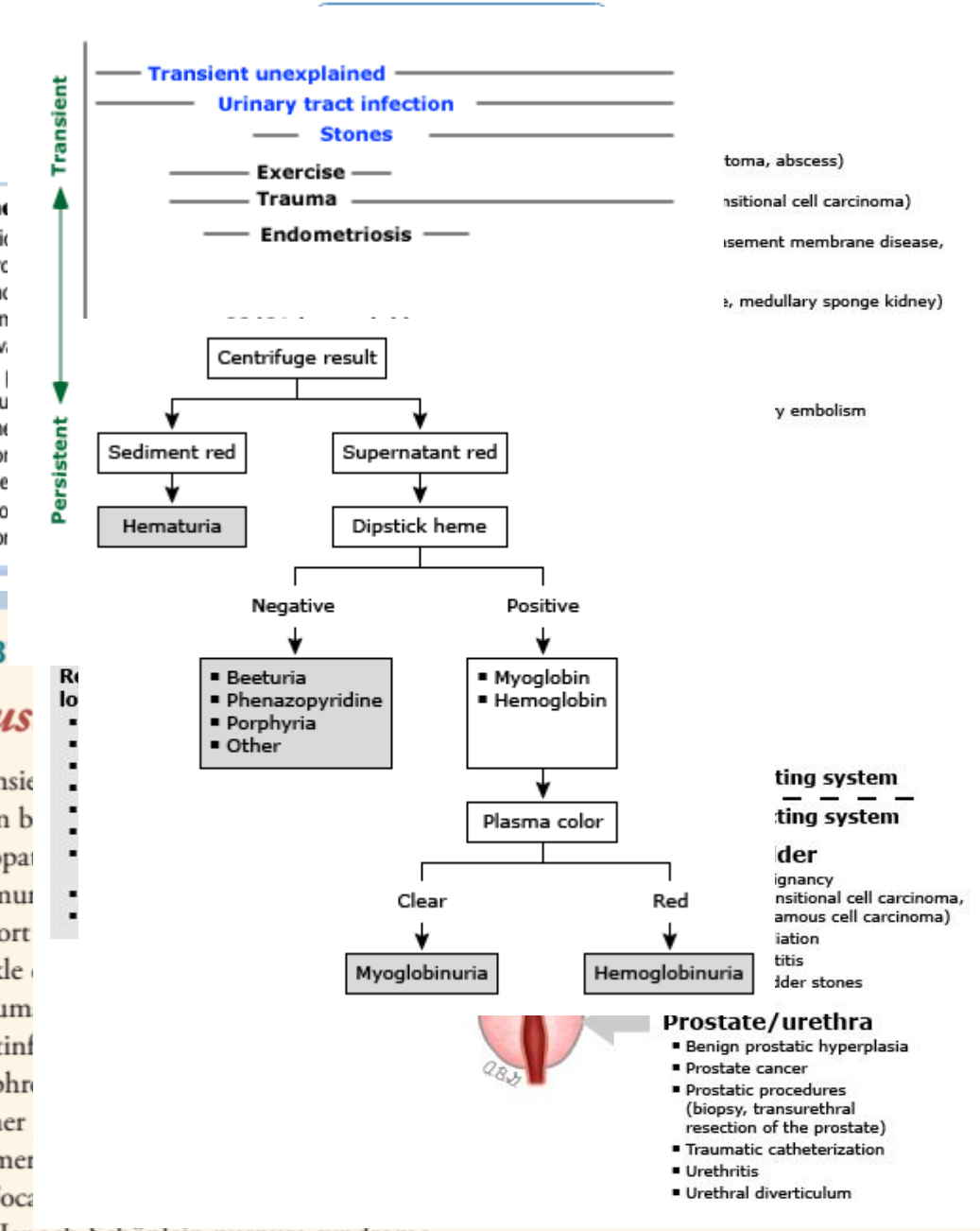
Objective 3 Causes

Nonglomerular and Glomerular Causes of Hematuria

Nonglomerular	*Think*
Lower urinary tract source	Urethritis, prostatitis
	Benign prostatic hypertrophy
	Cystitis
	Bladder carcinoma
	Prostate carcinoma
	Exercise induced
Upper urinary tract source	Ureteral calculus
	Renal calculus
	Hydronephrosis
	Pyelonephritis
	Polycystic kidney disease
	Hypercalciuria, hyperuricosuria, without
	Renal trauma
	Papillary necrosis
	Interstitial nephritis (drug-induced)
	Sickle cell trait or disease
	Renal infarct (embolic, eg, secondary to subacute bacterial endocarditis or atherosclerosis)
	Renal tuberculosis
	Infection with *Schistosoma haematobium*
	Renal vein thrombosis
Glomerular	*Think*
Primary glomerulonephritis	Immunoglobulin A (IgA) nephropathy
	Postinfectious
	Idiopathic (eg, focal glomerulosclerosis)
Secondary glomerulonephritis	Systemic lupus erythematosus
	Wegener's granulomatosis
	Other vasculitides
Familial	Thin basement membrane disease (benign familial hematuria)
	Hereditary nephritis (Alport syndrome)

253. Which of the following is most likely to cause hematuria?

a. Femoral hernia
b. Hydrocele
c. Nephrotic syndrome
d. Renal artery stenosis
e. Cryoglobulinemia
f. Renal tubular acidosis



Objective 3: Organizing the causes through clinical reasoning and important epidemiological data

Red flags :

1. older age
2. constitutional symptoms
3. Smoking
4. work
5. fever
6. deafness
7. Family history
8. flank pain
9. Recent sore throat

- Epidemiological data:

1. Locally common or recent upshot in incidence
2. Demographics age and gender: adult (UTI, CA, STONES)

- children (renal trauma 3% of all traumas in children ,
- infections 7% of children yearly nearly 500,000 visits every year , malignancy 15,000 per year USA , stones 3% of all reported stones are children CTD 25-50 cases per 100,000 population, haematological 12 per 100 000 yearly)

3. Statistical statements Most common presentation of x disease , X disease is most prevalent cause of haematuria

4. Pre-test probability: is determined by pathognomic data+ information that favours a diagnosis such as demographic data and

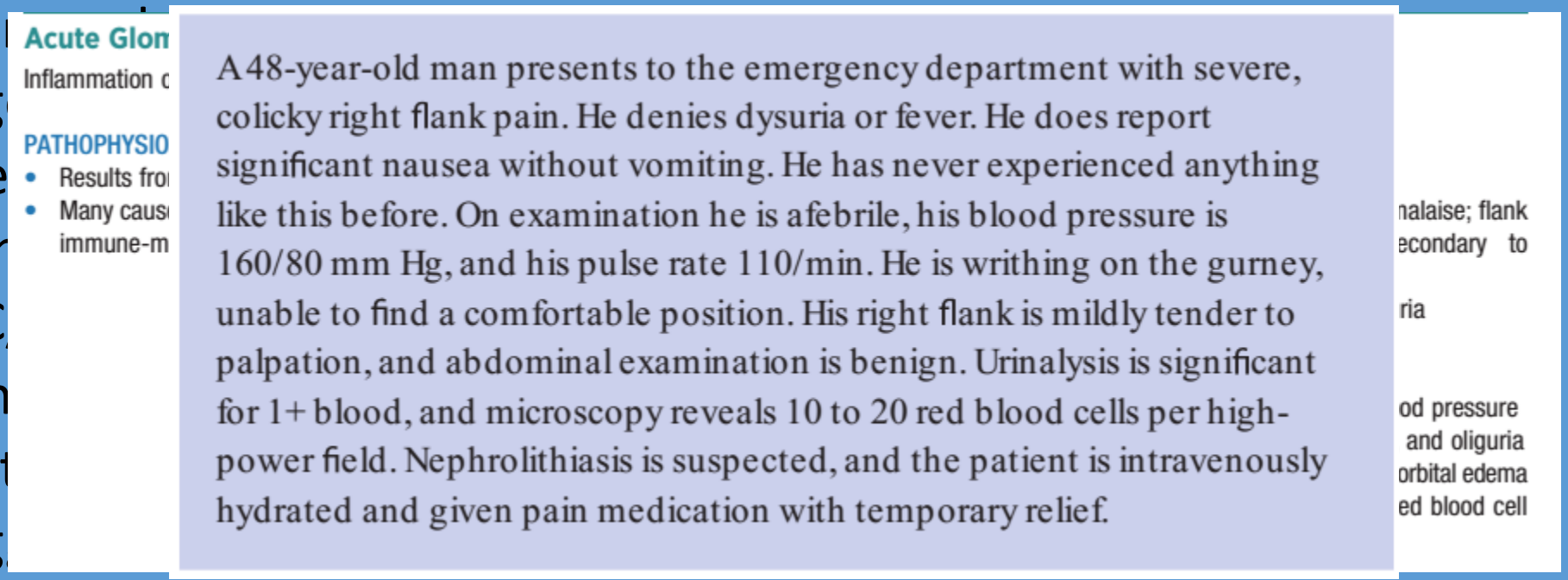
- Risk factors for certain causes examples:

1. Old male hot climate IBD case kidney abnormalities doesn't drink water loves protein previous history of stones (stones)
2. old UTI female poor education low social economical status (pyelonephritis)
3. child family history of haematological disease present with haematuria (bleeding disorder)
4. Child protein in urine strep throat in PMH (PSGN)

OBJ 4:Approaching

1. Pe
2. Ag
3. Ge
4. Eth
5. CC
6. On
7. Pat
8. Ag
9. Associated
10. Previous episodes

- **systemic review**
1. ***Haematological***
2. ***Immunological***


Acute Glom
Inflammation c
PATHOPHYSIO
• Results fro
• Many caus
immune-m

A 48-year-old man presents to the emergency department with severe, colicky right flank pain. He denies dysuria or fever. He does report significant nausea without vomiting. He has never experienced anything like this before. On examination he is afebrile, his blood pressure is 160/80 mm Hg, and his pulse rate 110/min. He is writhing on the gurney, unable to find a comfortable position. His right flank is mildly tender to palpation, and abdominal examination is benign. Urinalysis is significant for 1+ blood, and microscopy reveals 10 to 20 red blood cells per high-power field. Nephrolithiasis is suspected, and the patient is intravenously hydrated and given pain medication with temporary relief.

nalaise; flank
econdary to
ria
od pressure
and oliguria
orbital edema
ed blood cell

- **Family**
- clinically correlated diseases

Examination

- General exam

1. *General appearance*
2. *Haematological signs*
3. *Jaundice*
4. *Pulses*
5. *BP*

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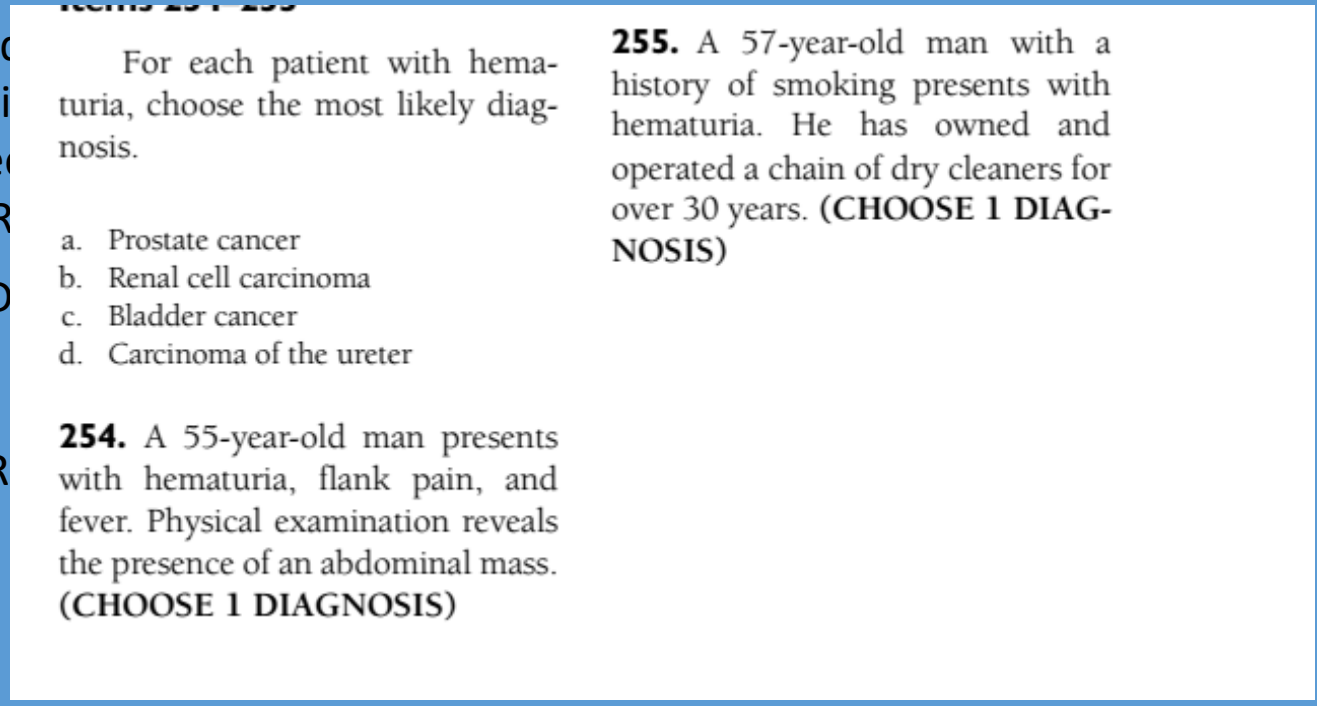

For each patient with hematuria, choose the most likely diagnosis.

a. Prostate cancer
b. Renal cell carcinoma
c. Bladder cancer
d. Carcinoma of the ureter

254. A 55-year-old man presents with hematuria, flank pain, and fever. Physical examination reveals the presence of an abdominal mass. **(CHOOSE 1 DIAGNOSIS)**

255. A 57-year-old man with a history of smoking presents with hematuria. He has owned and operated a chain of dry cleaners for over 30 years. **(CHOOSE 1 DIAGNOSIS)**

Investigating the established haematuria

- Rules of investigation:

1. Red flags
2. Primary leading hypothesis
3. Secondary and tertiary (Must not miss)
4. Diagnosis of exclusion
5. Evidence of progression and complications/ remission

Distinguishing extraglomerular from glomerular hematuria

	Extraglomerular	Glomerular
Color (if macroscopic)	Red or pink	Red, smoky brown, or "Coca-Cola"
Clots	May be present	Absent
Proteinuria	<500 mg/day	May be >500 mg/day
RBC morphology	Normal	Some RBCs are dysmorphic
RBC casts	Absent	May be present

RBC: red blood cell.

Graphic 54067 Version 3.0

35. A 24-year-old woman's urinalysis is positive for blood on dipstick measurement. This is repeated twice between menstrual periods and it remains positive. Microscopic evaluation reveals RBCs, some of which are deformed and some in the form of casts. **Which of the following is the most likely cause of the hematuria?**

(A) urinary tract stones
(B) GN
(C) trauma
(D) benign renal tumor

Investigations

1. CBC with peripheral blood film as indicated
2. Urinalysis if not alread and confirmed
3. Urine sample for gram culture
4. Abdominal ultrasoun abnormalities bladde abnormalities liver al
5. Renal function test
6. Inflammatory markers and specific markers as indicated
7. Cystoscopy as indicated

Common Vignette 1

A 59-year-old man complains of urinary frequency, urgency, and dysuria for several days. He denies the presence of hematuria or penile discharge, but does have 3 episodes of nocturia most nights. His past medical history includes benign prostatic hyperplasia (BPH). The patient is in a monogamous relationship with his wife.

Common Vignette 2

A 70-year-old man, who has been an inpatient for 4 days with an exacerbation of congestive heart failure, is now complaining of unilateral back pain. He has had an indwelling urinary catheter to strictly monitor urine output since admission. He also relates a history of increasing suprapubic discomfort for the last 24 hours. Examination confirms fever, suprapubic tenderness, and costovertebral angle tenderness.

Management

- Treating underlying cause as per specific tailored evidence based guidelines
- Management of complications such as anaemia, shock, sepsis as indicated
- Consult a specialist as needed
- Explain to the patient the management strategy and emphasize important points that are critical
- Offer educative sources about their problem
- Confirm follow-up appointment and what should be done for it

Follow up

- Urinalysis
- Culture results
- CBC
- Others as per case

- Thank you

REF
UPTODATE
MEDSCAPE
Davidson's Principles and Practice of Medicine 23rd Ed
Kumar and Clark's Clinical *Medicine* - 8th Edition.
Harrison's Principles of Internal Medicine

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