

Nephrology

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I] History taking :-

cc The pt. may be

← asymptomatic → symptomatic



accidentally discovered

Functional or Structural

Kidney damage



Functional eg. U/A → Proteinuria , hematuria
↑KFT → Cr 2.3

Structural eg. solitary kidney , polycystic kidney , atrophic kidney

II] Symptomatic :-

I] urinary tract symptoms:-

- Urine output:-
oliguria , polyuria , anuria
- color of urine:-
dark , coca cola like , foamy ⇒ (massive proteinuria)
- dysuria • nocturia
- frequency
- Supra pubic pain • Flank pain • tenderness

[2] Buffy face , Buffy eyelid at morning ⇒ Nephrotic #

[3] LL swelling

II] Uremic manifestations:-

- Uremic encephalopathy in the form of loss of concentration , agitation , ↓ conscious level
convulsion , coma

- Uremic gastritis
↳ epigastric pain, nausea, vomiting
- Uremic pericarditis
↳ chest pain, dyspnea
- Itching

[5] Bleeding tendency → (ecchymosis) due to P_{II} dysfunction

[6] Pulmonary renal §
↳ hemoptysis, ANCA associated vasculitis
goodpasture §, Wegener granulomatosis
Churg-Strauss §, SLE (lupus nephritis)
URTI (IgA or post infection nephropathy)

[7] History of deafness ⇒ Alport §

[8] Stone formation, Flank pain
↳ may be the cause of hematuria

[9] Underlying systemic disease

- SLE $\xrightarrow{\text{renal}}$ alopecia, photosensitivity, oral ulceration, arthritis
- DVT
- Abortion
- sepsis → multiorgan failure

[10] Drugs: NSAIDs
↳ non dose dependent kidney injury
(: acute volume lampule
acute volume → ip)

[11] Gout: gout arthritis, Cr. nephropathy

[12] Chronic diseases.

HTN $\rightarrow$ ACEIs, ARBs $\rightarrow$ with $\uparrow$ KFT $>30\%$
must stop these drugs

DM Diuretics $\rightarrow$ hypovolemia

[13] upper GI bleeding melena, hematemesis

$\rightarrow$ Past history of

- Liver cirrhosis $\rightarrow$ hepatorenal
- cardiorenal
- tumor lysis $\$$
- abdominal compartment $\$$

$\rightarrow$ Family history

Alport, PCK, stones

- Endstage kidney disease:-

analysis

★
of the kidney transplant

- 1- what is the cause?
- 2- How many session per wk? کمر مریض کی سیشن
- 3- the time of every hemodialysis session
- 4- If there is any intradialytic complications
- 5- Interdialytic weight $\rightarrow$ $\text{مابین سیشنوں کے درمیان وزن}$
 $\text{نقارہ فیروز کے مطابق}$ ✓ 1-1.5 kg compliance of pt. with مریض کی امتثالیت
Rood
- 6- previous history of kidney transplant
- 7- planning of " "
- 8- History of blood transfusion
- 9- hemodialysis vascular access

* If the pt. is candidate of kidney transplant
avoid blood transfusion
↳ contain Abs → autoantibody formation

* Volume Status Examination:

- Buffy eyelid , Buffy face
- congested neck vein
- muffled heart sound
- stony dullness
- decrease breath sound
- crepitation
- sacral edema
- abdominal distention
- Pitting abdominal wall edema → $\rightarrow$ نَبْضًا بِالسَّاعَةِ
↳ severe hypoalbuminemia < 2.5
- + shifting dullness
- genital edema - LL edema

* complication of prograph?!

- new onset of DM.
- HTN
- nephrotic
- hepatotoxicity
- gum hyperplasia
- hirsutism
- hyperlipidemia
- hyper — — .

* Case with CKD , do general Examination

كُلُّ بِرٍّ قَلِيٌّ
Stigmata of CKD or Uremic manifestation

دلائل

- Signs of ↑ volume
- earthy face
- uremic frost

Renal Examination :-

① General Examination.

①

Exami. قبل البسي به هو :

(on Rt side)

- 1) Introduce your self.
- 2) Explain what you want to do.
- 3) take Permission.
- 4) ensure Privacy.
- 5) Wash your hand.

② A, B, C, D, E ← (on tail of bed).

- A + D
- 1) Conscious / NOT / Semi Conscious.
 - 2) Orientation
 - ↳ Place
 - ↳ Person
 - ↳ time
 - 3) Position
 - ↳ supine , setting
 - ↳ on one Pillow , semi setting.
 - ↳ specific Position
 - 4) Appearance
 - ↳ looks well rill , respiratory distress.
- B
- 5) Body built.
 - ↳ Average weight
 - ↳ underweight (cachectic)
 - ↳ overweight
 - ↳ (I must measure BMI) $\frac{\text{وزن}}{\text{الارتفاع}^2}$
- C
- 6) Apparent Color.
 - ↳ Pale
 - ↳ Cyanosis.
 - ↳ Jaundice

(I'll confirm it later on) ← $\frac{\text{لون}}{\text{اللون}}$
- E
- 7) Environment , see if patient attached to any devices , (cannula , Foley catheter , sputum cup , ventilator)
(موقع + $\frac{\text{موقع}}{\text{موقع}}$)

⑧ Hands

(A & R side)
(((Dorsal side)))

↳ ① Nails → clubbing.

↳ Kolonychia.

↳ leukonychia.

* I E
From central
line

↳ splinter hemorrhage

↳ Half and half nail.

indicate: CKD (Lindsay's nails)

(Proximal half is white & distal half red/brown)

↳ Brown pigmentation.

↳ Muehrcke's lines.

indicate: Hypoalbuminemia / Nephrotic Syndrome

↳ Capillary refill.

↳ cyanosis

↳ ② Dorsum

↳ Muscle wasting (Guttering)

↳ ecchymosis

↳ site

↳ size

↳ Color.

+ ↳ Itching marks.

↳ Temperature

↳ Tenderness

①

((Palmar side))

* dry/wet

↳ Palor — Palmar creases

↳ thinner / Hypothinner wasting / atrophy

↳ deformity.

↳ looking for Steal Phenomena (when Blood flow increase in AV Fistula)

(diameter of fistula.) ↳ causing distal ischemia (cyanosis) (palor) ↳ in distal fingers.

↳ hypo / hyper pigmentation

② Tremors

↳ Fine tremors (Renal) هذا الى حركات في ال

DDX ↳ Hypocalcemia.

↳ Uremic syndrome.

④ Vital Signs

1) Pulse (radial / radioradial)

∴ ملاحظة في النبض في

* Arm

- Scar of previous fistula

sites of fistula { 1- Radial area
2- cubital fossa
3- central line

2) RR

3) ⇒ : ←

I must measure BP + temp.

- unilateral limb swelling
↳ central vein obstruction
~ SC line

⑤ لا يوجد ال Cubital fossa هناك ال

General ال ال (AV fistula) ال ال

↳ If there is AV fistula, I have to say:

(there is swelling) →

↳ Measure Brachial Pulse // ... fistula

AV fistula

⑥ Face

{ one of end stage
CKD complication
is malnutrition

1) General

CKD ال

→ Pigmentations (Abnormal)

→ Rash.

→ Cachexia (temporal wasting)

(Maxillary bone Prominent)

→ Uremic frost → Uremia accumulation

→ earthy look . البنية

(yellow to brown Pigmentation)

on skin of Face.

→ Uremic toxin accumulation
affects the melanocytes

? → urochrome which responsible of discoloration of skin

malar rash → SLE

2) Eyes → xanthelasma → dyslipidemia (Nephrotic).

* dirty sclera due to

uremic toxin

بقع الكلى Jaundice

↳ Palor

↳ Jaundice.

3) Nose → Saddle nose deformity

as in: (Wegener's granulomatosis)

??

→ Nasal crust → vasculitis

4) Ear → Gouty tophus.
↳ any deformity.

5) Mouth → Hyaline

* angular stomatitis

↳ cyanosis (below the tongue)

* Candidiasis

↳ pigmentation

* teeth discoloration

↳ Dental Cries.

* Gum hypertrophy

↳ Hydration

→ Phenytoin, cyclosporin, CCB, chronic myeloid leukemia

→ nephrotic, kidney transplant

7

Neck

cyclosporine

Am?

* transverse scar in kidney

↳ Scars

(Site, size, color, healing, Complications)

DP

→ (1) Parathyroidectomy

→ CKD-MBD (mineral bone disorder) → tertiary hyperparathyroidism

→ (2) Thyroidectomy

↳ lymph nodes

↓
بقع الكلى
في جوف الحوض
CKD

↳ Jugular vein pressure.

↳ Eschar of previous central line (internal jugular / subclavian)

8

Chest

Examination

(Full examination)

total parathyroidectomy with reimplantation of parathyroid glands in forearm

-/Nephrotic / Renal Failure/ complications/ as follows

as:-

↳ Dullness (stony) → Pleural effusion.

↳ Pericarditis.

↳ Muffled H. sound.

↳ Pericardial effusion

↳ Pulmonary edema

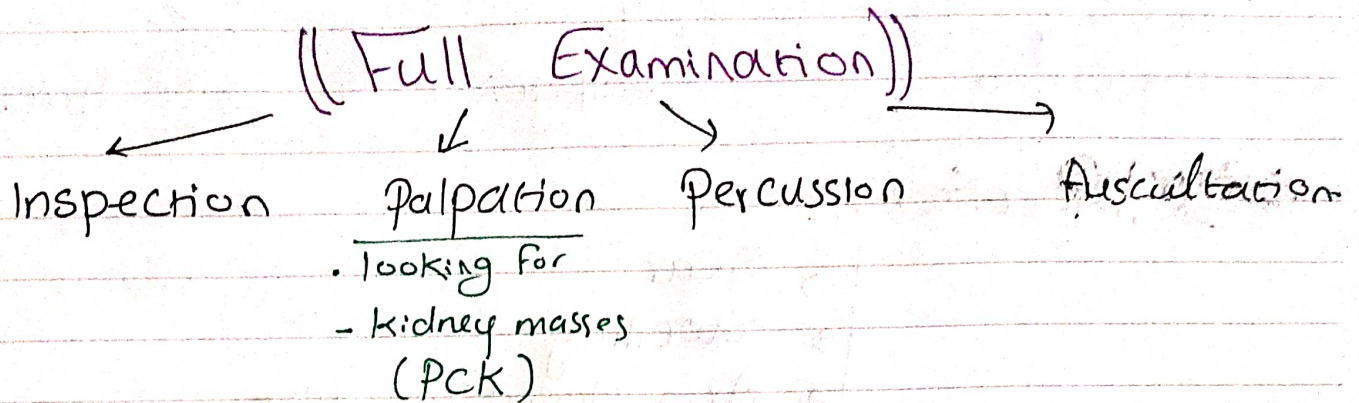
↳ Friction rub

↳ Coarse crackles.

~ dilated veins
central vein obstruction

((Hydration ← Skin turgor test ← Pinch test))

⑨ Abdominal Examination.



Abdominal sign (bell) = Abdominal edema (Paraumbilical / Makberny sign) : 20 sec or Sacral edema.

+ looking for lower limbs edema.

((Medical Malleolus))

↳ lower limbs (looking for):

↳ edema

↳ Scars

↳ rashes

↳ In between toes → Fungal infection.

* To Complete Examination must examine:

↳ PR

↳ External Genitalia.

↳ lower limb edema.

↳ Back

↳ Virchow lymph nodes.

(AV Fistula Examination)

↳ Good exposure

(above level of nipples + 2 upper limbs.)

(Chest + upper limb.)

(AV fistula Examination)

① Inspection

② Palpation

③ Auscultation

① Inspection :-

- ↳ Scar
- ↳ Swelling
- ↳ Arm elevation test

1) Scar

@ L site + (Lt / Rt arm ??)
↳ at rest
↳ at cubital fossa

Basilocephalic

Transverse
Brachiocephalic

longitudinal
Brachio basalic

medially
Jesinuta
axilla J

② L size

③ L 1^{ry} & 2^{ry} intention.

④ L Complications (keloid / Hypertrophied)

⑤ L Color of scar. (New / old).

2) Swelling.

↳ Site

↳ Size

↳ Numbers.

↳ Skin overlying

Hypo

(shiny skin)

Pigmentation.

Hyper

↳ Complications

↳ ulceration.

↳ Pus discharge

↳ Aneurysms (site, size)

↳ ecchymosis. ↳ redness.

↳ Dimpling → Needle stick.

↳ Visible pulsations

eg: There is a transverse scar about 3.4 cm in length, in the Lt cubital fossa, primary intention, not associated with keloid, associated with tortuous swelling with 2 aneurysmal dilatation, the skin overlying the aneurysm show multiple dimpling, which is the area of needle insertion associated with hypo and hyper pigmentation, No ecchymosis, No ulceration, No Pus discharge, there is visible Pulsation, by arm elevation test there is partial collapse → partial out flow obstruction



③ Arm elevation test.

- ↳ (out flow tract obstruction) ((عند الرفع إذا في))
- ↳ ~~the~~ collapse (✓ No obstruction)
- ↳ ~~the~~ Not collapse (there is obstruction)
- Partial → partial outflow obst.

② Palpation ∞

- ↳ soft / Hard
- ↳ compressable / Not
- ↳ Pulsating / Not
- ↳ Thrill / Not

normal fistula:- soft
compressable, pulsating
Thrill

↳ Augmentation test.

(نرف)

((in flow tract obstruction))

بط ادي على ال Scar وبيد عنو و لافة (3-5cm) ← (Proximal) ← وبيد.

(↓ Thrill / ↑ Pulse) → و بجس ؟

⑧ Auscultation ∞

if high pitched ⇒ obstruction.

normal ↳ Continuous low Pitched machinery murmur.

XXXX

∞ inspection الوفا ال Inspection #

- # There is tortuous swelling about 20 cm in length along Lt arm from cubital fossa to shoulder.
- associated with. 2 aneurysmal dilatation &
- skin over aneurysm show Hypo + Hyper pigmentation
- there is multiple dimpling in the site of needle insertion. & No ulceration, No ecchymosis, No pus discharge & No redness.

Diagnosis ∞ [End stage kidney disease on hemodialysis by
Brachiocephalic fistula. & Complicated by Multiple Aneurysms
② out flow / inflow obstruction / Not Complicated]

* Graft Nephrectomy . (حالة إزالة الكلى بعد زراعة)

← حالة أكل كمان لو كان موجود :

→ • Multiaccess failure

لو المريض عامل fistula في أكثر من مكان أو في الـ Both upper limbs.

الأوعية المختلفة تنال ٥٠

✓ ① Fistula Complications.

✓ ② Signs of fistula maturation = rule of 6.

③ Cardiac examination (إلى القلب)

+ باقي الأوعية التي أتت أو انسحبت .
خلال الرواس

✓ ④ Target Hgb level in CKF ? (10-11.5)

⑤ PTH level Target (2-9) upper limit.

* Fistula عبارة عن continuous circulation anastomosis bet. artery and vein

In non dominant hand
Radiocephalic
Brachiocephalic
Basilic
إذا لم ينفع

* when to prepare the Pt. to AV Fistula?

→ if GFR 30 → educate the Pt.
حالتك خلال ٦ شهور - ١ سنة فقل عن
أول شيء كل
First choice → kidney transplant
2nd → dialysis

If GFR 20 $\rightarrow$ Fistula

5 علامات

* Signs of maturing Fistula (Rule of 6):-

- ① within 6 weeks of fistula creation
 - ② length 6cm
 - ③ diameter > 6 mm
 - ④ depth < 6 mm
 - ⑤ blood flow by doppler > 600 ml
- $\rightarrow$ well functioning fistula $\rightarrow$ you can start dialysis

* what are the complications of AV fistula?

* Local complications:-

- 1- Aneurysm $\rightarrow$ rupture
- 2- Thrombosed Fistula (inflow or outflow obst.)
- 3- Infection
- 4- Ulceration
- 5- redness
- 5- Distal Ischemia $\rightarrow$ steal phenomena

when you make anastomosis $\rightarrow$ distal ischemia
الجل $\rightarrow$ wearing gloves

طريق ايده

if it sever $\rightarrow$ necrosis
الجل ligation
بشماره

* Systemic complication:-

- 1- High cardiac output heart failure
- 2- Pulmonary HTN

لذلك قبل عمل ال fistula لازم نقي base line Echo

→ if $\uparrow$ ejection Fraction $< 30 \Rightarrow$ not recommended to make fistula because it may exacerbate the heart failure
 dyspnea $\rightarrow$ سعال، سعال، سعال (decompensation)

→ if the pt. has HF
 anti failure management $\rightarrow$ Follow up $\rightarrow$ Fistula
 peritoneal dialysis

* Peritoneal dialysis:- $\swarrow$ manual
 $\searrow$ automated

* manual:-
 - tenckhoff catheter $\rightarrow$ bet suprapubic area and umbilicus

$\rightarrow$ has double lumens

$\rightarrow$ 1st lumen $\rightarrow$ has peritoneal fluid 2 L inter abdominal cavity

specific gravity $\rightarrow$ يقيس كثافة السائل

بقية من السائل السابقة ، fluid التي دخلت $\rightarrow$ يخرج

بقية 2 مرات ، تقريباً daily 8-10 hrs

ويخرج المرفق يوم ، يغير باليوم

Peritoneum acts as filter

$\Rightarrow$ most important complication is Peritonitis

Q's
 2 أسئلة $\rightarrow$ fever abdominal pain
 Vomiting
 inflammation around the catheter
 $\rightarrow$ Pus, redness

dangerous
 Sepsis $\rightarrow$ septic shock
 $\rightarrow$ death

+
 - kinking of catheter
 - Perforation

$\Rightarrow$ When to use Peritoneal dialysis?

1- in Pt with no hemodialysis vascular access $\rightarrow$ AVF

2- hemodynamic unstable $\rightarrow$ HF

* Contraindications of peritoneal ^(PD) dialysis ?!

1. skin infections

2. IBD

3. Polycystic kidney disease

intraabdominal pressure $\leftarrow$ PD is

4. Chronic lung disease

COPD

IPF $\rightarrow$ (idiopathic pulmonary fibrosis)

bronchiectasis

5. colostomy

6. Morbid obesity $\rightarrow$ $\uparrow$ risk of infection
(relative contraindication)

$\rightarrow$ hemodialysis, peritoneal dialysis $\rightarrow$ the same effect

* Automated PD:- $\rightarrow$ by machine
manual no

Anaemia of chronic kidney disease

- m.c.c of anemia is EPO def.

other $\left\{ \begin{array}{l} \text{iron} \\ \text{folate} \\ \text{B}_{12} \end{array} \right\}$ def.

or related to lupus, malignancy

drug $\rightarrow$ ACEI, α -methyl dopa, tegretol

UGI bleeding

* target Hgb $\rightarrow$ 10-11.5 $\rightarrow$ why?
 $\rightarrow$ one of EPO side effect is thrombosed fistula, HTN,
hyperkalemia
stop EPO $\leftarrow$ 11.5 $\rightarrow$ $\rightarrow$ $\rightarrow$

* Before starting EPO therapy you must make iron study

iron stores must be full

لو موجود IDA بنفها وبنال EPO طرقاتن ادر stores
بعدا باقى الـتـيـه مع (يعني)

⇒ if Pt. take (Iron + EPO) Full dose and no response think:-

ارجع للعلاج

① bone marrow infiltration

② folate / B₁₂ def

③ UGIB

④ MM

⑤ myelodysplastic

⋮

⇒ It is important to treat the anemia because it causes:-

1- anorexia

2- exacerbation of heart failure

3- affects quality of life

الـتـيـه ⋮ ⇒ ensure the adequacy of dialysis

anemia يعنى

toxin accumulation

↑PTH secondary of tertiary hyperparathyroidism

infection

underdose of EPO

uremic toxin accumulation

inadequate dialysis

compliance

true drugs

labs

treat the underlying cause of anemia