XIX. Diseases of the Urinary System

N.B.5:

Uraemia

A clinical syndrome of complex manifestations associated with renal failure produced by intra-renal or extra-renal causes with marked urea-retention in blood (usually but not invariably); and, characterized by variable inconstant changes:

(1) Biochemical (due to decreased glomerular filtration, diminished tubular reabsorption, insufficiency in the detoxifying mechanism, less power in excretion of waste-products and disorder in cɔn3efving some needed substances) and

(2) Clinical manifestations (due to the biochemical changes and the anatomical lesions).

1) Intra-renal: (primary damage to the kidney)

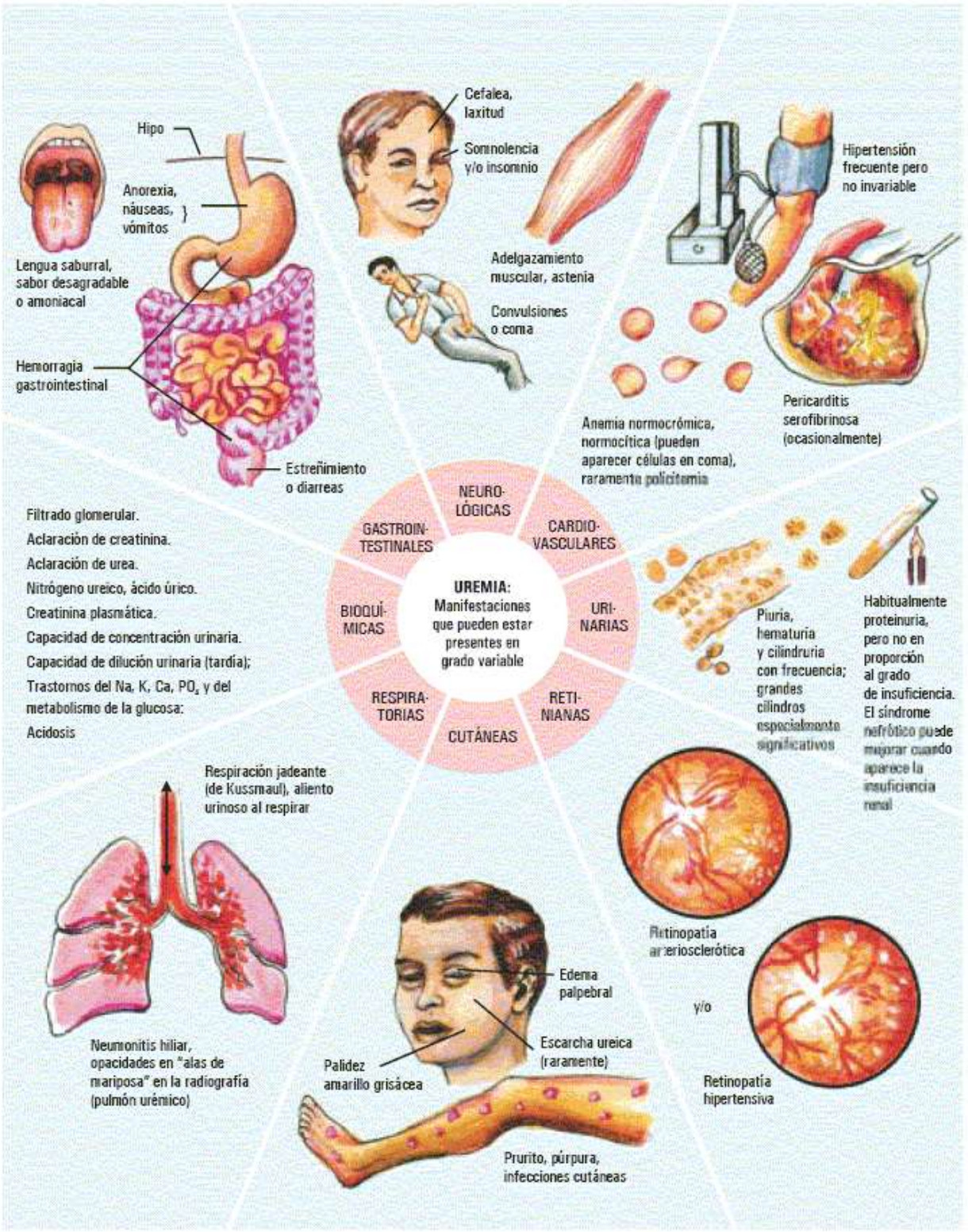
	Very common:	(1) Chronic pyelonephritis, (2) Malignant nephrosclerosis and (3) Chronic glomerulonephritis.
	Less common:	(1) Acute diffuse glomerulonephritis, (2) Polycystic kidney. (3) Tuberculosis and (4) Acute tubular necrosis.
	Other causes:	1. **Myeloma-kidney** (casts of Bence Jones proteoses → blocking of tubules. + Excitation of a foreign body reaction). 2. **Shock-kidney** (following transfusion with incompatible blood → hemoglobinuria → haematin casts in collecting tubules → fatal anuria. 3. **Benign nephrosclerosis** (if the patient survives cerebral and cardiac causes of death).

II) Post-renal:

	(1) Hydronephrosis and pyonephrosis, (2) Tuberculosis of kidney, (3) Calculi, (4) Senile hyperplasia of the prostate and (5) Carcinoma of the bladder, cervix or prostate.

III) Extra-renal (so-called pre-renal azotemia):

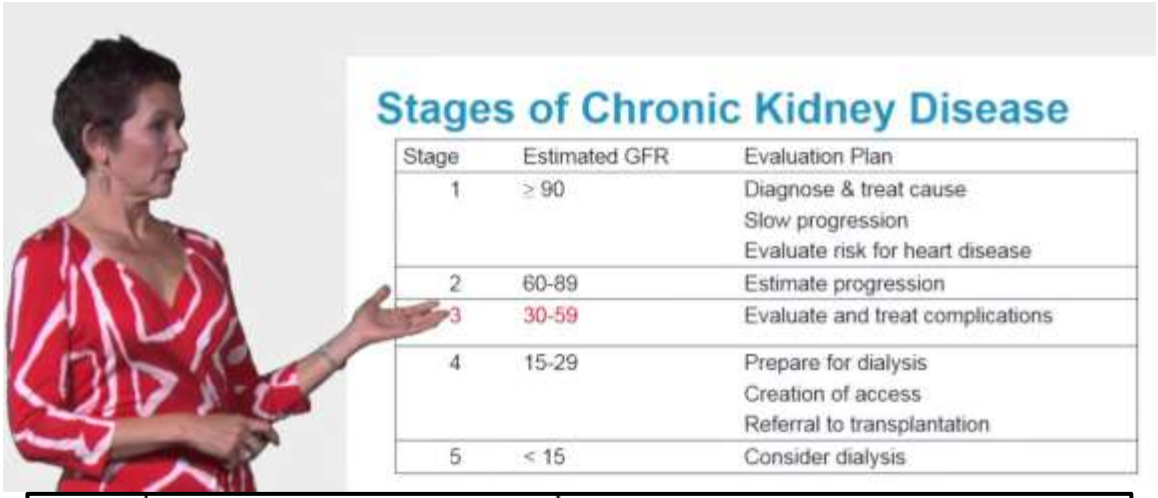
	1. Shock and acute circulatory failure, 2. Profound repeated vomiting + diarrhoea + sweating + inadequate fluid-intake→ dehydration and derangement of fluid and electrolyte metabolism as occur in pyloric stenosis and intestinal obstruction. 3. Multiple large pulmonary infarcts or massive gangrene of limbs → marked tissue-necrosis, 4. Gastric haemorrhage or bleeding into the intestinal tract → absorption of the break-down products and 5. Various toxins (not essentially urea) and 6. Other unknown causes.


Hipo
Anorexia, náuseas, vómitos
Lengua saburral, sabor desagradable o amoniacal
Hemorragia gastrointestinal
Estreñimiento o diarreas
Cefalea, laxitud
Somnolencia y/o insomnio
Adelgazamiento muscular, astenia
Convulsiones o coma
Hipertensión frecuente pero no invariable
Anemia normocrómica, normocítica (pueden aparecer células en coma), raramente policitemia
Pericarditis serofibrinosa (ocasionalmente)
NEURO-LÓGICAS
CARDIO-VASCULARES
GASTROIN-TESTINALES
BIOQUÍ-MICAS
URI-NARIAS
RESPIRA-TORIAS
RETI-NIANAS
CUTÁNEAS
UREMIA: Manifestaciones que pueden estar presentes en grado variable
Filtrado glomerular.
Aclaración de creatinina.
Aclaración de urea.
Nitrógeno ureico, ácido úrico.
Creatinina plasmática.
Capacidad de concentración urinaria.
Capacidad de dilución urinaria (tardía);
Trastornos del Na, K, Ca, PO_4 y del metabolismo de la glucosa:
Acidosis
Piuria, hematuria y cilindruria con frecuencia; grandes cilindros especialmente significativos
Habitualmente proteinuria, pero no en proporción al grado de insuficiencia. El síndrome nefrótico puede mejorar cuando aparece la insuficiencia renal
Respiración jadeante (de Kussmaul), aliento urinoso al respirar
Neumonitis hiliar, opacidades en "alas de mariposa" en la radiografía (pulmón urémico)
Retinopatía arterioesclerótica
y/o
Retinopatía hipertensiva
Edema palpebral
Escarcha ureica (raramente)
Palidez amarillo grisácea
Prurito, púrpura, infecciones cutáneas

Clinico-pathologic findings:	
1. Cardiovascular:	(a) **Enlargement** of heart, (b) Diffuse **fibrinous pericarditis,** (c) **Hypertension** (majority of cases) (d) **Toxic capillary damage** → purpuric-like petechial haemorrhages and **(e) Vascular retinopathy.**
2. Respiratory:	• **Edema of lungs** and uremic pneumonitis → dyspnea and Cheyne-Stokes her respiration.
3. Gastro-intestinal	(a) **Acute inflammatory**, ulcerative or/and necrotizing mucosal lesions → dry and glazed tongue, non-specific stomatitis, Oesophagitis, gastritis, enteritis and uraemic colitis and **(b) Petechial haemorrhages.** • Clinically, uraemic breath of mouth, nausea, vomiting and diarrhoea or/and constipation.
4. Central nervous system:	• Brain is bulky due to **cerebral oedema** (wet brain) → twitching, convulsions, apathy and coma.
5. Blood:	**(a) Anaemia,** (b) **Increased blood phosphates** → fall in ionized serum calcium (blood calcium → **5 mg. %)** → secondary hyper-Parathyroids, (c) **Raised blood urea** (**over 150 mg. %)** and non-protein nitrogen and (d) **Raised blood-cholesterol** (**120 to 300 mg. %).**
6. Skin :	(1) **Sallow yellow coloration** (urochrome pigment) (2) **Crystalline white deposits on skin of face** (uraemic frost) & (3) **Purpuric-like haemorrhagic** manifestations,
7. Metabolic changes :	**(a) Metabolic acidosis,** (b) **Electrolytic disturbances** (marked decrease in glomerular filtration - > raised blood-sodium and potassium; and, marked failure of tubular reabsorption - > lowered blood-sodium and potassium and excessive water-loss), and **(c) Wasting.**
Certain clinical terms :	
1. Azotemia (rise in blood urea); 2. Traumatic uraemia (after extensive injuries); 3. Acute uraemia (due to marked cerebral oedema → epileptiform convulsions); 4. Latent uraemia (in obstructive anuria without hypertension) and 5. Chronic uraemia (in true uraemia with blood urea over 150 mg. %).	

STAGES OF CHRONIC KIDNEY DISEASE		GFR*	% OF KIDNEY FUNCTION
Stage 1	Kidney damage with **normal** kidney function	90 or higher	90-100%
Stage 2	Kidney damage with **mild loss** of kidney function	60 to 89	60-89%
Stage 3a	**Mild to moderate** loss of kidney function	45 to 59	45-59%
Stage 3b	**Moderate to severe** loss of kidney function	30 to 44	30-44%
Stage 4	**Severe** loss of kidney function	15 to 29	15-29%
Stage 5	Kidney **failure**	Less than 15	Less than 15%

* Your GFR number tells you how much kidney function you have. As kidney disease gets worse, the GFR number goes down.



Stage	GFR (ml/min/1.73m^2)	Terms
1	≥90	Normal or high
2	60-89	Mildly decreased
3a	45-59	Mildly to moderately decreased
3b	30-44	Moderately to severed decreased
4	15-29	Severely decreased
5	<15	Kidney failure