Disease of the kidney and ureter

Introduction

The kidney as an organ has a lot of important functions some are secretory and others are excretory functions .the secretory regulatory functions of the kidney are more important than the execrtory functions ,in the fact that that humans can survive weeks of lack of excretory functions but losing the regulatory function cam be leathal if the patient lack it for hours.

The excretory function of the kidney include disposing nitrogemous waste products in the form of blood urea nitrogen,were as the regulatory function include regulating water balance in the body ,maintain electrolytes in the safe range in the circulation ,acid base regulation and control of blood pressure .

Anatomy

The kidneys are paired organs bean shaped roughly about the size of the fist of the hand measuring 10-12 cm length and 5-6 cm width ,covered by a tough connective tissue capsule the kidney capsule .the surface of the kidney is adherently covered on both sides by fat that cushon the kidney.the right kidney is lower down than the right ,the diaphragm cover the upper third of the kidneys were it is in close relation to the plura.

The blood supply to the kidney is by the renal artery in 75% of cases it is single and it arise from the lateral border of the aorta just caudal to the origion of the superior mesenteric artery.

Congenital anomalies of the kidney

Absence of one kidney

Incidence is 1:1400 individuals it can be discovered accidently or in the path of investigation of the urinaty system for other problem by radiography or ultrasound

Renal ectopia

Incidence is 1:1000 individuals were the kidney is set away from its normal position in the same side or might be in the posit side and called cross ectopia

Horse shoe kidney

Incidence is 1:1000 individuals there will be fusion of the lower pole of each kidney with it contalateral one at the level of L4 the patient might be asymptomatic or he might present with recurrent UTI caused by the staisis of urine due to the angulation of the ureter crossing the fused lower poles as it cross over.

Unilateral fusion

In this condition the lower pole of one kidney will fuse with the upper pole of the contralateral kidney as it will be situated in the opposite side

Congenital cystic kidney

Also called polycystic kidney usually associated with cystic liver pancreas and lung rarly present befor forth decade of life the patient might present with loin pain ,haematurea,renal failure ,UTI,hypertension or palpable mass due to enlargement of thekidney

The treatment is by either expectant or surgical removal of the cyst pressing on the parenchyma

Other types of cysts in the kidney include sigle simple solitary cyst ,and the unilateral multicystic disease and infentile polycystic kidney having the same pathology but to a lesser scale.

Aberrant renal vessels

Common in female more on the left side more unilateral it will cause hydronephrosis and it is treated by division if the aberrant vssel is a vein but for aberrant arteries division will result in infarction ,so it is treated by dismembering the pelvis and reconstructing it infront of the vessel

Duplication of therenal pelvis and ureter

Incidence is 4% with a resultant reflux of urine from one to another ending in repeated UTI the treatment is by diltating the stenosed ureter or resecting the damaged segment og the kidney by heminephrectomy

Hydronephrosi

It is aseptic diltation of the pelvis and calycis.by obstructing or non obstructing fsctors such as reflux or megaureter

Causes could be

PUJ obstruction like abberent vessel or stenosis aperstaltic segment

Stone in the ureter

Tumor incidee the ureter

Inflamation with or without stricture formation

Mass compressing the ureter from outside

Uretrocel

BPH urethral stricture bladder neck obstruction by tumor or infection

The clinical presentation vary from a symptomatic to renal failure or intermittent colic

Ultrasound and imaging may be useful in diagnosis

The treatment depend on the underlying cause

Infection of the kidney

Renal infection is more common in female the common causative organism is E.coli and Proteus.

The infetive organisim reach the kidney either through blood stream or it might ascend from lower ot upper tract.

It can rapidly cause septicemia or more commonly acute pyelonephritis

* Clinicaly
* Fever
* Pain
* Headache
* Nausea
* Urgency
* Frequency
* Dysurea
* uraemia

investigation

* Midstream urine sample
* Culture and senstivity
* Ultrasound
* Renal function test
* Blood culture
* Cystoscope
* Contrast study

Treatment is by treating the underlying cause and cultur and sensitivity to give the proper treatment

Gentamycin and amoxicilline is the first line in the treatment options

chronic pyelonephritis

Interstial inflamation and scaring

Pyonephrosis is a hydronephrosed infected kidney

Renal carbuncle abscess formation in the kidney parenchyma

Perinephric abscess

Renal neoplasm

* Benign tumors
* Adenoma
* Angioma
* angiomyolipoma

malignat tumors

it is divided in to two groups

the first affect age 1-7 children group

the second adult group above age of 40

**Wilms tumor**

Age below five

Lower pole

Unilateral

The child present with renal mass,hypertension,haematurea and loin pain

**Disease of the kidney and ureter second lecture**

**Renal tumors**

**It could be benign or malignant**

**Benign tumors could be adenoma ,angioma ,angiomyolipoma and oncocytoma**

**Incidentally found tumors are in 25% benign type,found in the coarse for investigating other medical problems**

**It is usually difficult to differentiate between benign and malignant tumors by imaging .**

**Most people do not have signs and symptoms in benign tumors,later on when the tumor extend to adjacent tissues and organs it will cause symptoms . haematurea might be a presenting symptom.**

**Another possible presentation is pain or lump.**

**Investigations**

**Ultrasound ,CT scan**

**If any imaging show a mass above one cm it should be considered malignant until prove otherwise and thus should be followed for six months**

**Treatment**

**The patient should be surveillance actively by CT**

**Or surgical approach in the form of partial or radical nephrectomy**

**Malignant tumors**

**In children it is the wilms tumor or nephroblastoma ,in adults it could be adeno carcinoma ,transitional carcinoma,lymphoma and sarcoma**

**Adeno carcinoma is the commonest type representing 85%of all malignant tumors**

**It represent 5%of all adult malignancies**

**It originate from the proximal renal tubular epithelium**

**The age incidence is 40-60**

**Male :female ratio 3:1**

**It is of unknown etiology,although an increase risk by smoking ,and family history**

**Histology it is clear cell type =renal cell carcinoma**

**Clinical presentation**

**Haematurea 40%,pain 40% ,mass 25%**

**Symptoms might be due to metastesis like in lung =haemoptysis dysponea,back pain ,wt loss ,apetite loss**

 **,fever ,malase, night sweat and jaundice**

**Paraneoplastic syndrom**

**Non metastatic symptoms due to tumor factors**

**In the liver it will cause increase in liver enzymes and jaundice,stauffer syndrome.**

**The patient might have anaemia or polycythemia,hypercalcaemia,hypertension,or even diabetis**

**Investigation**

**Gue ,blood picture,liver function test**

**Ultrasound ,CT ,MRI,chest x ray**

**Staging**

**TNM**

**Stage 1=confined to capsule**

**Stage 2=confined to gerota**

**Stage 3=to renal vein or lymph nodes**

**Stage4=adjacent organs or distant metastesis**

**Treatment by nephrectomy**

**Wilms tumor**

**It is a mixed tumor contain blastemal ,stromal and epithelial elements of embryonal nephrogenic origin**

**Age incidence less than 5years if occur older it carry bad prognosis**

**An interesting finding is the child looks healthy while the tumor rapidly grow**

**Clinical the child might present with fever nausea vomiting pain or a mass**

**The child might present with hypertension**

**When the child present with haematurea it indicate extension metastesis Usually to the lung ,rarly to liver and bones**

**Investigation**

**Gue blood picture ,renal function ,liver function**

**Ultrasound ,CT,MRI**

**Treatment by chemotherapy and surgery**