PD 5 Abdominal mass

Child with abdominal mass

AXR

No intestinal obstruction

US

Intestinal obstruction

Contrast study or CT

Abnormal

Normal

Clinical follow up

Gastrointestinal

Hepatobiliary

Renal

Non-renal retroperitoneal

Pelvic

Intussusception

Appendix abscess

Enteric/ duplication/ mesenteric cyst

Mass

Reduction under imaging guidance

CT

Hepatic/ splenic/ pancreatic mass or complicated cystic lesions

Hepatic/ splenic/ pancreatic simple cysts

Choledochal cyst

CT / MRI

Tc-99m-IDA scan / MRCP

Hydronephrosis / multicystic dysplastic kidney

Solid / complicated cystic lesion

Simple cysts

If diagnosis is neuroblastoma

CT / MRI

US follow up

MIBG scan

For hydronephrosis and / or UTI

Follow up MCU or radionuclide cystogram for more detailed assessment of VUR +/-

Follow up MAG3 or DTPA scan for function monitoring +/-

DMSA scan for acute pyelonephritis or scarring

± MRI to assess IVC extension

If negative

Bone scan

Pelvic

Cystic and benign

• Solid

• Malignant

US follow up

CT

Mass lesion e.g. neuroblastoma/ enlarged lymph node/ cystic lesion e.g. lymphangioma

Serial US

( Neonatal) Adrenal haemorrhage

Hepatic/ splenic/ pancreatic simple cysts

Simple cysts

If diagnosis is neuroblastoma

CT

US follow up

MIBG scan

• Solid

• Malignant

US follow up

CT / MRI
REMARKS

1 Plain radiograph
   1.1 Plain abdominal X-ray (AXR) is useful to exclude intestinal obstruction in children with constipation or abdominal distension, to locate mass, to detect any calcification, and to look for any skeletal involvement.

2 US
   2.1 US helps to determine the organ of origin, to define the mass, to look for any metastases and to assess the vascularity of the mass with colour Doppler. A likely diagnosis can usually be made.

3 Nuclear medicine
   3.1 Technetium 99m - Mercaptoacetyltriglycine (Tc-99m-MAG3) is the preferred radiotracer for renal scan.\textsuperscript{1}
   3.2 Tc-99m-MAG3 renography is able to provide information on renal position, perfusion, differential function and transit times. If hydronephrosis is seen, diuretics can be administered to evaluate functional significance of hydronephrosis.\textsuperscript{1}
   3.3 Indirect radionuclide cystography can be performed in the same setting as renography, although its sensitivity is lower than direct radionuclide cystography (DRC),\textsuperscript{2} therefore follow up DRC or micturating cystourethrography (MCU) is required for patients with hydronephrosis, whether or not vesicoureteric reflux (VUR) was detected on indirect radionuclide cystography.
   3.4 Nuclear medicine cystography carries a lower radiation dose than MCU.\textsuperscript{3}
   3.5 Metaiodobenzylguanidine (MIBG) scan is used in diagnosis, staging and follow up of neuroblastoma.
   3.6 MIBG has higher sensitivity than bone scan for skeletal metastases. However, bone scan is needed for patient whose tumour is MIBG negative.\textsuperscript{4}
   3.7 Dynamic Tc-99m - iminodiacetic acid (IDA) scan may be used to diagnose choledochal cyst.

4 CT
   4.1 CT is used for anatomical and morphological characterization of mass and in assessing the involvement of adjacent structures and distant metastases.
   4.2 Sedation is often required to reduce movement artefacts.

5 MRI
   5.1 MRI provides excellent contrast resolution of soft tissues and is the best study to exclude intradural extension of mass. Status of vasculature can also be evaluated.
   5.2 MRI is nonionizing but expensive. Sedation of the children is required.
   5.3 Magnetic resonance cholangiopancreatography (MRCP) is a non-invasive biliary study.

REFERENCES