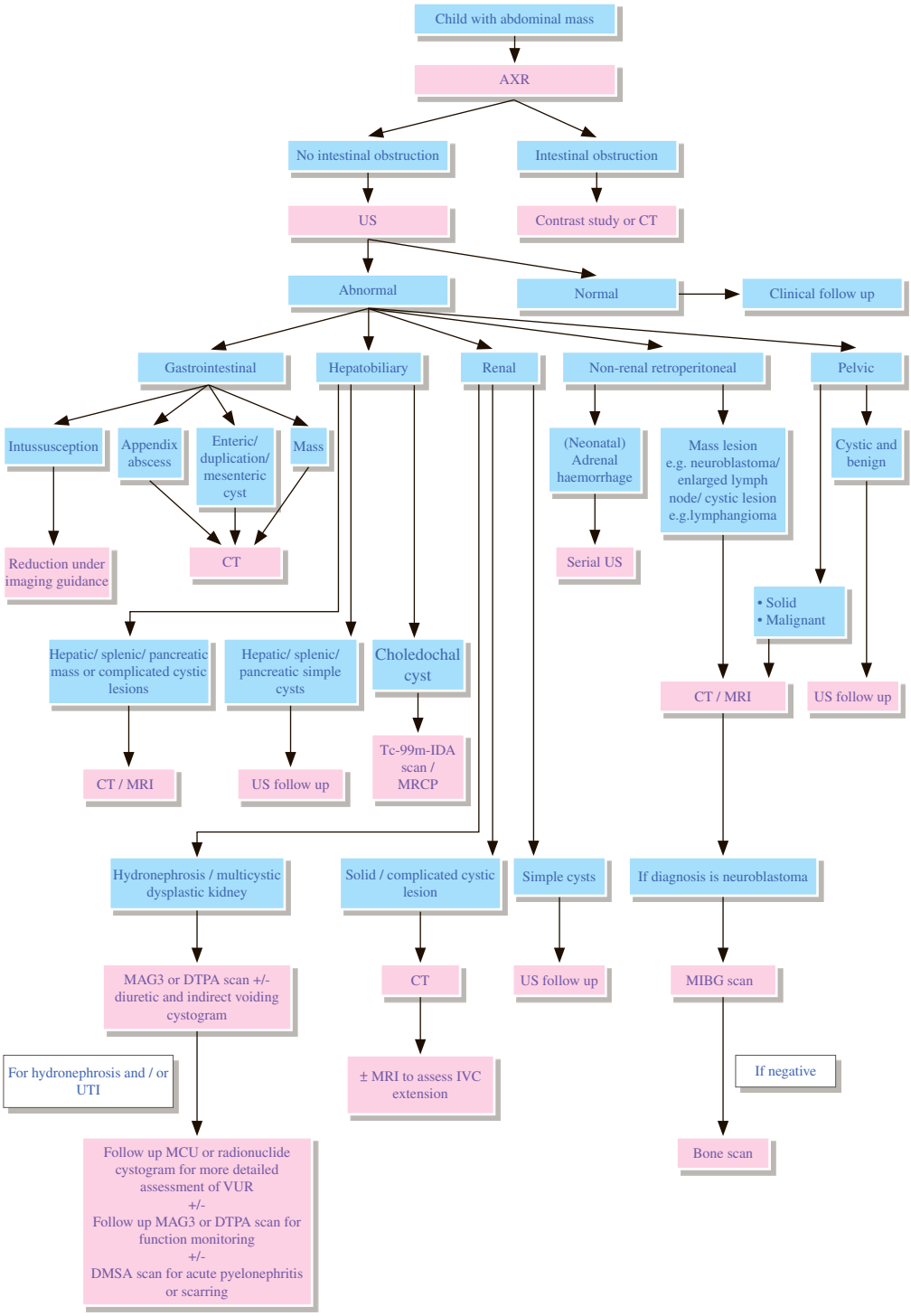
PD 5 Abdominal mass



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.[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.[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),[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.[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.[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

1. Shulkin BL, Mandell GA, Cooper JA, Leonard JC, Majd M, Parisi MT, et al. Procedure Guideline for Diuretic Renography in Children, Journal of Nuclear Medicine Technology. 2008, 36: 162-168.
2. Lim R. Vesicoureteral Reflux and Urinary Tract Infection: Evolving Practices and Current Controversies inPediatric Imaging. AJR Am J Roentgenol. 2009; 192: 1197–1208.
3. The Royal College of Radiologists. iRefer: Making the best use of clinical radiology. 7th ed. London: The Royal College of Radiologists; 2012. Section P21-P30.
4. Matthay KK, Shulkin B, Ladenstine R, Michon J, Giammarile F, Lewington V, et al. Criteria for evaluation of disease extent by 123I-metaiodobenzylguanidine scans in neuroblastoma: a report for the International Neuroblastoma Risk Group (INRG) Task Force. Br J Cancer. 2010; 102: 1319–1326.
5. Stein R, Doqan HS, Hoebeke P, KocVara R, Nijman RJ, Radmayr C, et al. Urinary tract infections in children: EAU/ESPU guidelines. Eur Urol. 2015; 67: 546-558.
6. Gordon I, Piepsz A, Rune S. Guidelines for standard and diuretic renogram in children.Eur J Nucl Med MolImaging. 2011; 38: 1175-1188.