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| **ADRENAL LESION** | **FREQUENCY %** | **MORPHOLOGICAL FEATURES** | **GROWTH RATE** | **CT FEATURES** | **MRI FEATURES** | **NUCLEAR MEDICINE** | **COMMENT** |
| Adrenocortical adenoma  | Most common 50 -80% | Small 1-3cm Round/ovalHomogenous, well defined, smooth marginsCa+, haemorrhage, necrosis – rare in small lesions | Very slow/stable | Unenhanced CT <10 HU APW >60%RPW>40% | Signal drop off on CSI-OPASII >16.5%ASR <71 | PET- Negative | 30% of adenomas are lipid poor |
| Metastases | 27 – 50% in a patient with a known malignancy | Variable sizeHetrogenous, irregular marginsCa+, haemorrhage, necrosis – variable  | Variable, usually rapid | Unenhanced CT >10HUAPW <60%RPW<40% | ↑T2 signalLack of signal drop of on CSI-OPASII <16.5%ASR >71 | PET-Positive | Non-FDG avid primary tumors have PET negative metastases. Fatty metastases: <10HU |
| Adrenocortical carcinoma | Rare <5% | >4cmHeterogenous, irregular marginsCa+, haemorrhage, necrosis – commonAvid enhancement | Variable, usually slow | Unenhanced CT >10HUAPW <60%RPW <40% | VariableHigh/ intermediate T2 signal intensity | PET-Positive.Detects distant metastases  | Evaluate tumour extension into IVC, renal veins. Assess for distant metastases  |
| Phaeochromocytoma (90% Benign) | 5% | Variable size, shape, homogeneity  | Slow | Unenhanced CT >10 HU APW<60% RPW<40% | VariableHigh/intermediate T2 signal intensity  | MIBG- positive PET-positive | Evaluate clinical and biochemical parameters (+ve urinary VMA , metanephrines) |
| Myelolipoma | 5-10% | Variable size, often largeMacroscopic fat & soft tissue elementsRound,well-encapsulated,smooth contours | Slow/stabe | HU < 0 usually less than -50HU | ↑T1Suppression on fat saturation sequenceIndia-ink artifactVariable drop-off on CSI | PET - Negative | Small amounts of macroscopic fat maybe present in adrenal carcinoma, metastases, phaeochromocytomas |
| Lymphoma | Primary lymphoma – rare; Metastatic lymphoma-common | Variable size & shape Discrete homogenous mass or diffuse infiltration that maintains the adreniform shape.Haemorrhage necrosis, enhancement variable . Ca+ - post treatment | Variable | Unenhanced CT >10 HU APW<60%RPW<40% | Variable- intermediate signal. No signal drop off on CSI | PET- Positive  |  |
| Haemorrhage  | 1% | Variable size Oval/roundSmooth contours Chronic haematomas(>1yr) can calcify | Rapid | ↑ CT attenuation. >10 HU (50-90HU) | Variable- depending on age of heamatoma Acute- ↑ T1Subacute-haemosiderin rimChronic – T1↓T2↓GRE-“blooming” | PET- Negative | Exclude haemorrhagic tumour/ haemorrhage into a pre-existing adrenal lesion  |
| Adrenal cyst | 1% | Variable sizeRound, smooth margins | Stable | Depends on complexitySimple cyst: fluid attenuation, thin walls, no enhancement | ↑T2 ↓T1  | PET- Positive | Differentiate complex cysts from cystic neoplasms |
| Infection  | Common in developing countries | Variable, soft tissue mass/cystic mass, diffuse enlargement of the adrenal gland. Ca+ common. | Variable. Usually slow/intermediate | CT attenuation > 10HUHeterogenous enhancement | Intermediate signal intensity | Variable;Active infection can be PET positive | Granulomatous infections are common. e.g. Tuberculosis, Histoplasmosis |
| KEY: APW- absolute percentage washout ; ASII- adrenal signal intensity index; ASR- adrenal-to-spleen chemical shift ratio; Ca+ - calcifications; CSI-OP - chemical shift imaging, opposed phase; GRE- gradient echo sequence; IVC- inferior venae cava; MIBG- m-iodobenzylguanidine; RPW- relative percentage washout ; VMA- vanillylmandelic acid |