Fig1a-c. Adrenocortical adenoma in a 45yr old woman with Cushing Syndrome.

1a.Axial precontrast CT image demontrastes a homogenous, well-defined right adrenal mass(blue arrow) with HU of 7. *Imaging could have stopped here as the unenhanced CT density(HU<10) is consistent with a lipid-rich adenoma.*

1b. At 60seconds postcontrast, the HU measures 43(blue arrow).

1c.Delayed postcontrast image at 15minutes demonstrates a HU of 18. The corresponding APW is 69%, confirming the diagnosis of an adenoma(blue arrow).

Fig2. Axial In-phase(IP) and Opposed-phase(OP) chemical shift MRI images of a lipid rich adenoma. Intralesional signal loss is demonstrated on the opposed-phase image(red arrow) compared to the in-phase image(blue arrow); S=spleen

Fig3. Longitudinal ultrasound image demonstrating a well-defined, solid hypoechoeic left suprarenal mass(blue arrow), which was a pathologically confirmed adenoma.

Fig4a,b. Adrenal metastases in a 56yr old woman with advanced breast carcinoma.

4a.Axial unenhanced CT scan image shows bilateral ill-defined adrenal masses(blue arrows) and a large hypodense hepatic lesion(red arrow)

b.Axial PET image demonstrates intense FDG uptake in both adrenal (blue arrows) and liver lesions(red arrows) consistent with metastases.

Fig5. Histologically proven Adrenocortical Carcinoma.

5a.Axial enhanced CT image demonstrating a large heterogeneous left adrenal mass(blue arrow) with inferior vena cava(IVC) invasion(red arrow).

5b.Coronal PET image showing marked FDG activity in the left adrenal tumour(blue arrow) and within the IVC tumour thrombus(black arrow).

*(By courtesy of Dr I Francis)*

Fig6. Familial Phaeochromocytomas in a 23yr old woman.

Axial T2-weighted image demonstrating bilateral phaeochromocytomas. A large heterogeneous right adrenal mass(blue arrow) with central necrosis(yellow arrow) and a smaller well-defined, homogenous left adrenal mass(red arrow) are shown.

Fig7.Benign Phaeochromocytoma in a 57yr old woman.

7a.Contrast enhanced CT scan demonstrates a well-encapsulated heterogeneous left adrenal mass representing a phaeochromocytoma(blue arrow) with peripheral enhancement(red arrow) and a central area of low attenuation due to necrosis(yellow arrow). K=displaced left kidney. F=incidental uterine fibroid.

7b.MIBG image shows accumulation of radiotracer in the left phaeochromocytoma(blue arrow). Photopenic area(red arrow) is consistent with necrosis.

Fig8. Histologically proven Phaeochromocytoma in a 56yr old man.

8a. Coronal T2-weighted image showing a heterogeneous right suprarenal mass(blue arrow) with central necrosis(red arrow), displacing the kidney inferomedially(yellow arrow).

8b. Axial gadolinium-enhanced T1weighted image demonstrates intense enhancement(blue arrow).Central non-enhancing area corresponds to the area of central necrosis(red arrow).

Fig9. Malignant Phaeochromocytoma in a 28yr old man.

a.Axial postcontrast CT scan image demonstrates a large phaeochromoctoma(blue arrow) with central necrosis(red arrow) and invasion into the IVC(yellow arrow).Enhancing tumour thrombus is noted to expand the intrahepatic IVC(blue arrow in b) and extend into the right atrium of the heart(blue arrow in c).

Fig10. 50yr old woman with non-Hodgkin’s Lymphoma. Coronal reformatted enhanced CT scan demonstrates bilateral soft tissue masses with preservation of the adreniform shape of the adrenal gland(blue arrows)

Fig11. Myelolipoma

Fig11a. Axial unenhanced CT scan image showing a well-defined right adrenal mass with macroscopic fat(red arrow). The myeloid elements have a higher soft-tissue density(blue arrow).

Fig11b. Longitudinal ultrasound image demonstrating a heterogeneous predominantly echogenic adrenal mass abutting the superior pole of the right kidney(blue arrow).

Fig11c. Axial opposed phase MRI image demonstrating “India-ink” artifact(blue arrow).

Fig12. 48yr old man with a background history of disseminated tuberculosis. Axial contrast enhanced CT scan demonstrates dense calcification of the right adrenal gland(blue arrow).

Fig13.American College of Radiology White Paper recommended algorithm for the management of an adrenal incidentaloma(*By courtesy of Dr L.L Berland*)[15].

Fig.14 – Adrenal Incidentaloma

A 72yr old woman had a CT Scan performed for non-specific lower abdominal discomfort.

The CT findings were unremarkable except for an incidentally detected left adrenal mass.

Fig. 14a- Pre-contrast axial CT image shows a left adrenal mass with a CT density measuring 14HU (blue arrow).

Fig. 14b- Post-contrast 60 seconds- measures 87HU (blue arrow)

Fig. 14c- Post-contrast 15 minutes delay - 32HU (blue arrow)

The lesion is indeterminate by unenhanced CT attenuation criteria (HU>10) alone and does not permit accurate characterization of the lesion.

Washout Analysis:

$$APW= \frac{E-D}{E-U} = \frac{87-32}{87-14} = \frac{55}{73} X 100 = 75.3\%$$

*APW- Absolute percentage washout*

*E- enhanced CT attenuation value at 60seconds; D- delay 15minute CT attenuation value*

*U- unenhanced CT attenuation value*

The washout parameters (APW> 60%) indicate benign disease, consistent with a **lipid-poor adenoma**.