



How to Read a Brain MRI

Signal Intensity

High signal intensity = bright

Low signal intensity = dark

An MRI consists of several images, all of which serve different purposes.

T1 Weighted

T1 weighted:

- Fluid = low signal intensity
 - Fat = white
 - White matter = gray
 - Gray matter = darker gray
 - Fluid = very dark gray
 - Air = black
- Good for looking at brain tissue
- Can have gadolinium added, which shows up bright
 - Won't enter normal brain tissue
 - Lights up pathology on T1 imaging
 - Contrast-enhancing: Dark on T1, bright on T1 with gadolinium
 - Can be ring-enhancing or homogeneously enhancing

T2 Weighted

T2 weighted:

- Fluid = high signal intensity
- From lightest to darkest
 - Fluid = white
 - Gray matter = light gray
 - White matter = gray
 - Fat = black
- Good for looking at CSF spaces

Flair

Flair:

- Looks like T2 with dark CSF
- Most sensitive for edema
- Good at seeing pathology

Diffusion Weighted

Diffusion weighted:

- Used to visualize areas of ischemia (visible almost immediately)
- Stroke is light on diffusion-weighted imaging, dark on diffusion ADC map