

Magnetic Resonance Imaging

Week 5; Lecture 11; Section 4: Inversion recovery image

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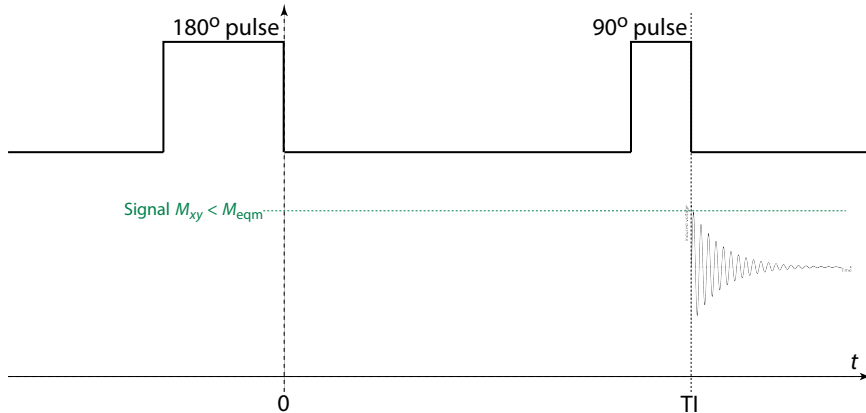
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Section 4

Inversion recovery

Inversion recovery pulse sequence; reminder

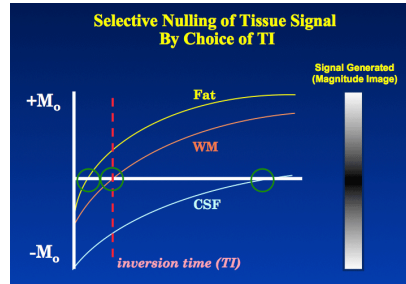
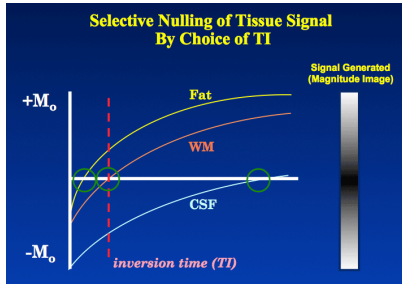


$$M_z(TI) = M_{eqm} \left[1 - 2 \exp \left(-\frac{TI}{T_1} \right) \right]$$

Advantages of inversion recovery

Inversion recovery provides contrast in three ways:

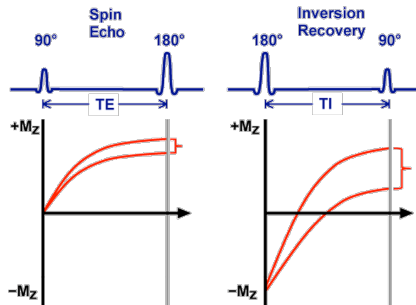
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- 2 Enhanced T_1 contrast
- 3 Additive (rather than competitive) T_1 and T_2 effects



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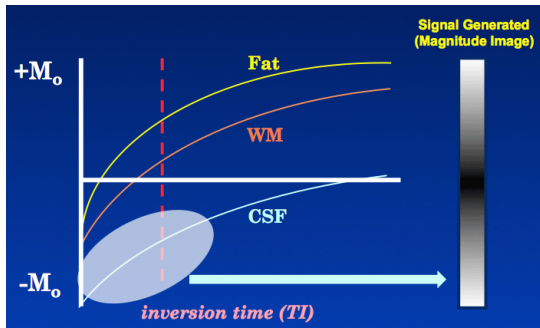


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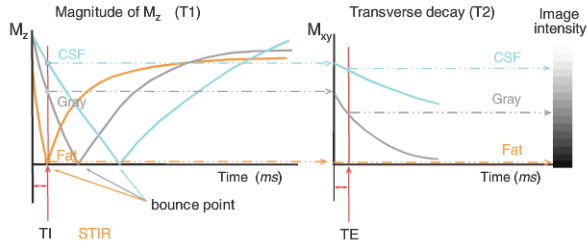
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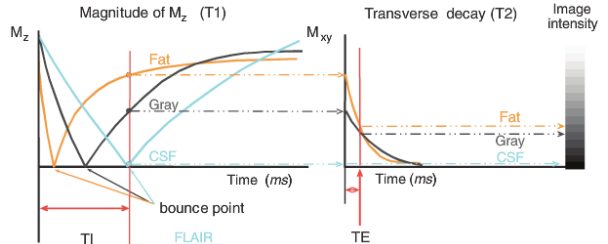
When TI is less than the “null point”, the net magnetisation is the magnetisation of the tissues with long T_1 will remain inverted and enhance the transverse magnetisation the decay of which is characterised by T_2

Inversion recovery image

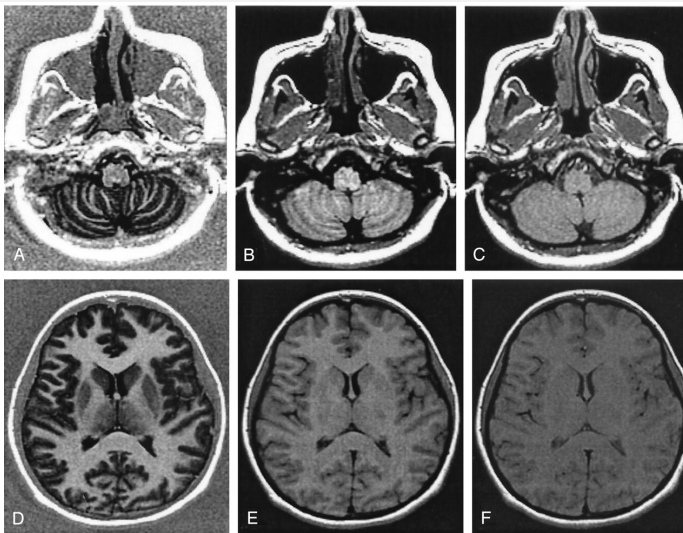


Short TI inversion recovery

Fluid attenuated inversion recovery



Inversion recovery image of brain



Summary of section 4

Inversion-recovery image allows:

- Signal from selected tissues to be suppressed
- T_1 contrast to be enhanced
- Contrast from T_1 and T_2 differences to be used in combination