

It is seen that fatty liver disease is a growing cause of concern. An estimated 20 to 80 million Americans have nonalcoholic fatty liver disease (NAFLD), which is the most common chronic liver disease in the United States.¹ Recent evidence has shown that 5% to 15% of patients with NAFLD present with established cirrhosis on liver biopsy and that 4% to 5% of individuals with isolated steatosis eventually develop cirrhosis.² Therefore, it is imperative that these conditions are diagnosed early

IDEAL IQ is a promising MR-based technique that provides volumetric, whole-liver coverage in a single breath-hold and generates estimated T2* and triglyceride fat. It provides volumetric whole-liver coverage in a single breath-hold and generates estimated T2* and triglyceride fat fraction maps in a non-invasive manner. It is intended for breath-held abdominal imaging to evaluate diffuse liver diseases such as hepatic steatosis of the liver and corrects for challenging confounding factors such as T2* decay. The technique is designed for water-triglyceride fat separation with simultaneous T2* correction and estimation based on the IDEAL technique.

Acquisitions Parameters: IDEAL IQ

Imaging Mode:	3D
Sequence:	Fast SPGR
Slice Thickness:	8 mm
Frequency:	160
Phase:	160
Bandwidth:	111.11 NEX-1
No of echoes:	6
Scan time:	14 sec in breath hold
Location per slab:	32

A case of Clinical Utility of Ideal IQ

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"IDEAL IQ is an effective technique to estimate the fat fraction in a non invasive manner"

Case 1:

Patient history

- A 5-year-old male patient presented with complaints of abdominal pain and anemia

Technique & findings

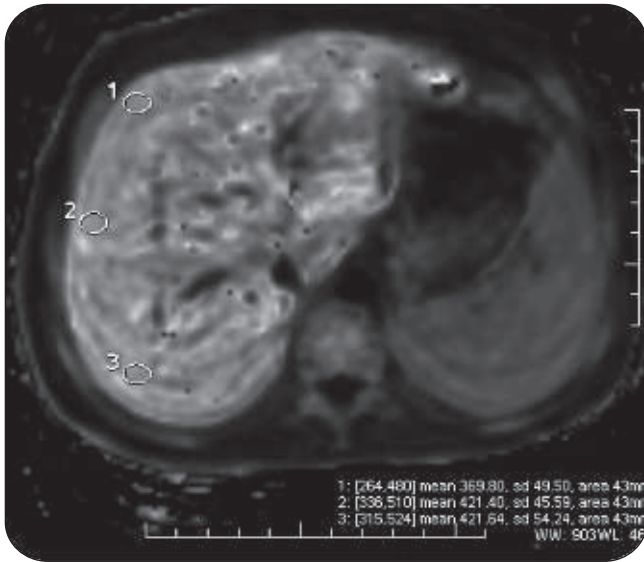
Liver protocol included Axial T1, T2, Fiesta, STIR, DWI and IDEAL IQ. IDEAL IQ provides 4 sets of an image (FF, R2*, In phase, Out of phase). R2* revealed high iron content with average value max up to 546.57, suggestive of severe iron overload. The patient was further worked up and diagnosed of Thalassemia major.

Diagnosis

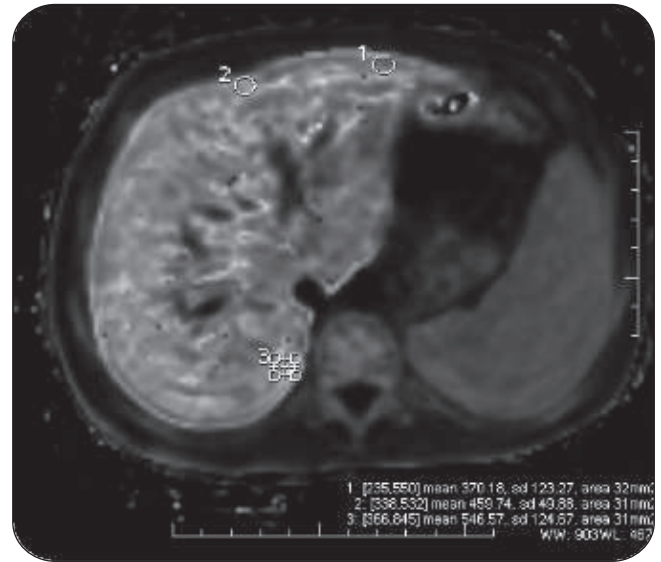
The blood investigation report confirmed the same, that it is Thalassaemia



IDEAL IQ(R2*MAP)

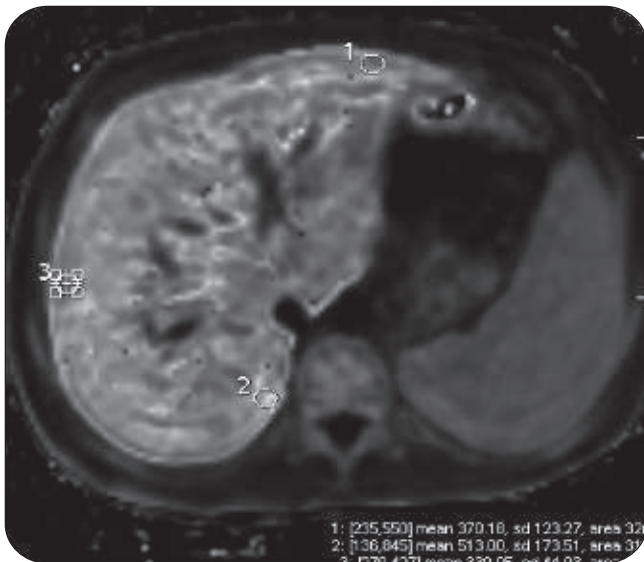


R2* MAP

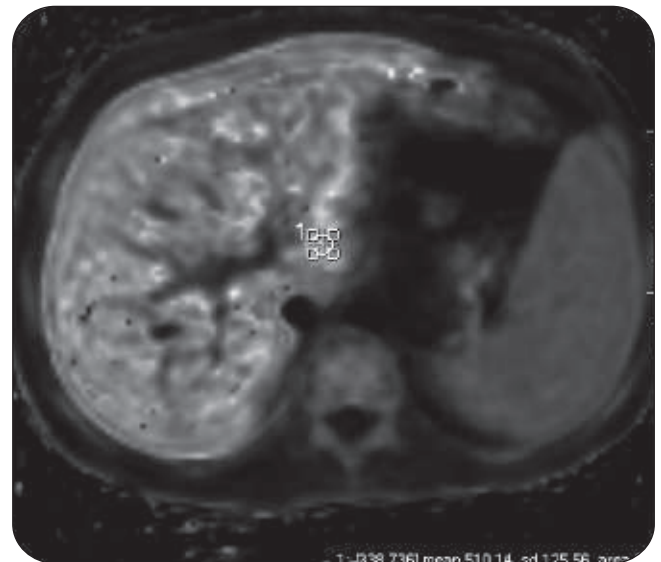


R2* MAP

R2* Average Value Max = 546.57



R2* MAP



R2* MAP

R2* Average Value Max = 546.57

Case 2:

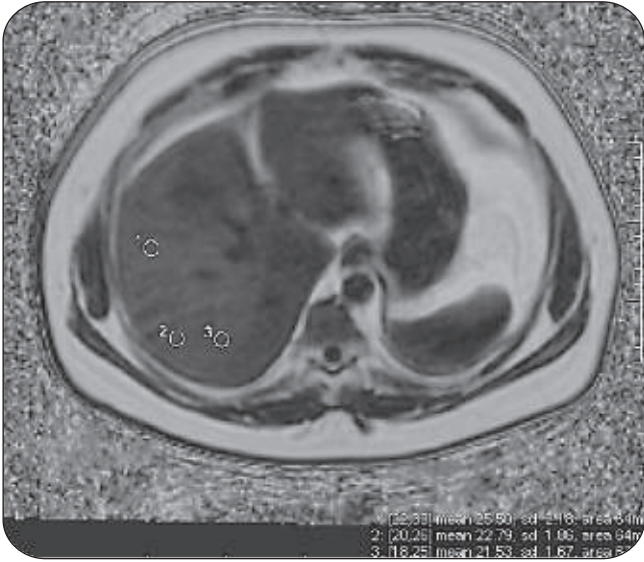
Patient history:

- A 41-year-old male patient presented with complaints of abdominal pain and indigestion. The patient was fond of eating fatty and spicy foods.

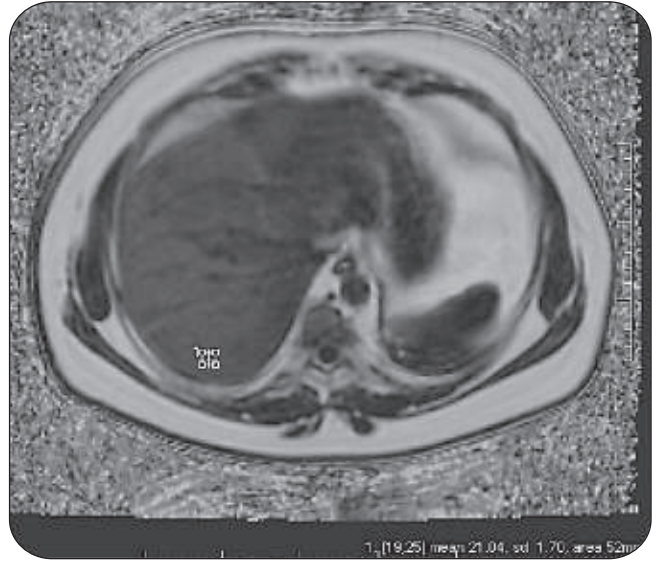
Technique & Finding:

Liver protocol included Axial T1, T2, Fiesta, STIR, DWI and IDEAL IQ. IDEAL IQ provides 4 sets of images (FF, R2*, In phase, Out of phase). Fat fraction revealed high percentage of triglycerides in the liver parenchyma with average value max up to 25%, suggestive of fatty liver disease.

IDEAL IQ (Fat Fraction)



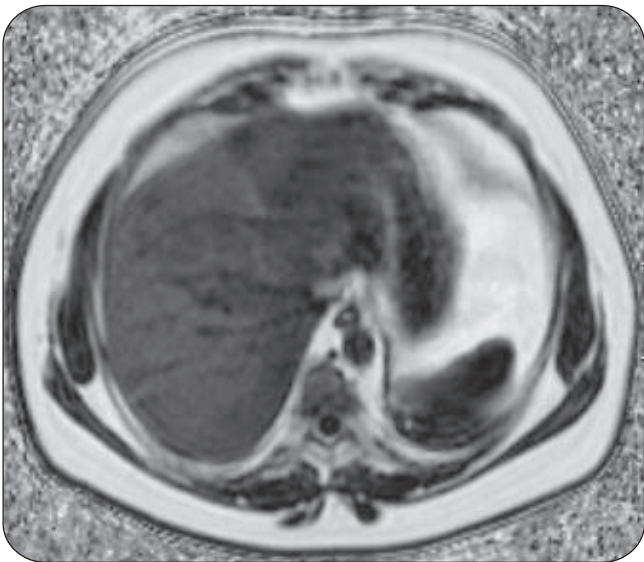
Fat fraction



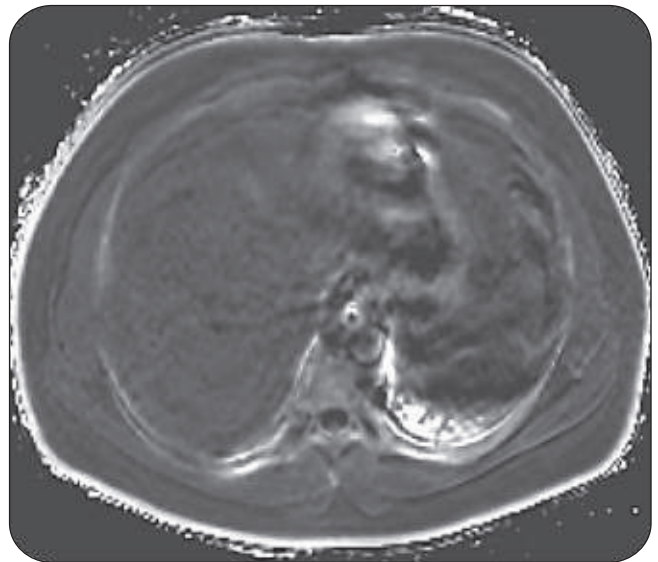
Fat fraction

Fat Fraction Average Value Max = 25.0

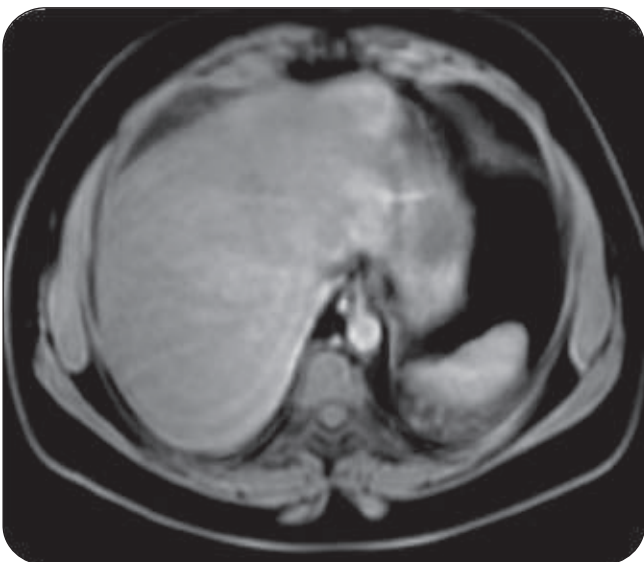
IDEAL IQ



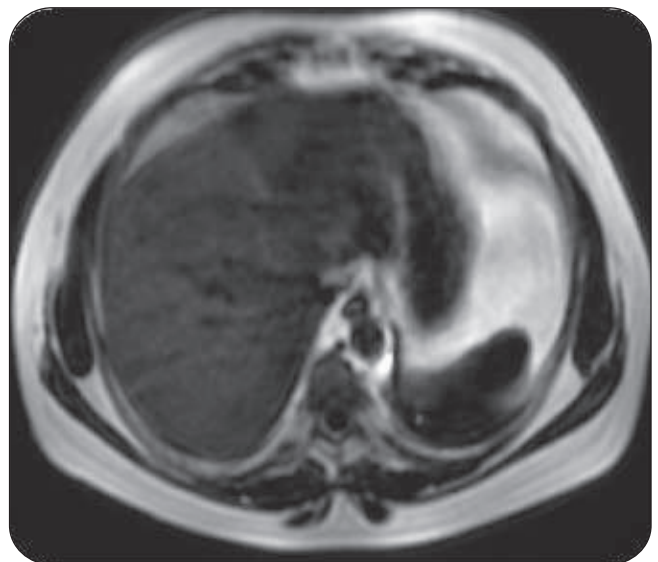
Fat fraction



R* Map



In Phase



Out of phase

Conclusion:

IDEAL IQ is an excellent diagnostic tool in the diagnosis of various liver diseases

Reference:

1. Clark JM, Diehl AM. Defining nonalcoholic fatty liver disease: implications for epidemiologic studies. *Gastroenterology* 2003;124(1):248-50.
2. Matteoni CA, Younossi ZM, Gramlich T, et al. Nonalcoholic fatty liver disease: a spectrum of clinical and pathological severity. *Gastroenterology* 1999;116(6):1413-9.

Image courtesy to Dr O.P Gupta Imaging Centre

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imagination at work