IDEAL IQ: Non invasive, radiation free liver evaluation

IDEAL IQ MRI system, finds favour with **Dr Vijaya Bhaskar Nori, Vista Imaging** – Hyderabad, who finds it useful as a non-invasive tool for all types of fatty liver diseases

IDEAL IQ is a promising MR-based tool for non-invasive assessment of fatty liver disease

Fatty liver disease has captured the attention of specialists recently as it has a high risk of progressing to liver cirrhosis or hepatocellular carcinoma (HCC). In the past, alcohol was the most common cause for accumulation of fat in the liver, now diabetes and obesity are the major concerns as they cause non-alcoholic fatty liver disease (NAFLD) which is emerging as an important cause of liver disease in India. Epidemiological studies suggest prevalence of NAFLD in around 9 per cent to 32 per cent of the general population in India with higher prevalence in those who are overweight or obese and those who are diabetic or pre-diabetic. 1 out of 4 normal Indian adults and 9 out of 10 obese people suffer from fatty liver and carries the risk of progression to severe liver disease including cirrhosis and liver cancer.

NAFLD is also rising in children and adolescents because of these risk factors. Indians are more prone to develop insulin resistance and NAFLD in comparison to other races and this proneness in Indians may have a genetic basis. Indian adults with NAFLD have higher visceral adipose issue responsible for increased abdominal obesity in these patients. A fraction of the patients affected by NAFLD steatosis progresses to inflammation and fibrosis, a condition known as non-alcoholic steatohepatitis (NASH). Since liver cirrhosis and HCC are difficult to treat it is of great importance to identify NAFLD early so that lifestyle interventions and risk factor treatments can slow down the progression of the disease.

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GE'S IDEAL IQ IS A NON-INVASIVE METHOD TO QUANTIFY LIVER FAT CONTENT IN 15-20 SECONDS BREATH HOLD MR EXAM

Since the disease does not manifest any distinguishing signs or symptoms it is difficult to diagnose. However, blood investigations like liver enzyme and routine ultrasound investigations may reveal NAFLD. A confirmed diagnosis of NAFLD can only be made after a biopsy using the histopathologic technique.

Incidentally, many researchers believe that MRI is capable of separating water and fat signals in order to quantify fatty infiltration of the liver (hepatic steatosis). Keeping that in mind, GE launched IDEAL IQ. It provides a non-invasive, quantitative assessment of triglyceride fat content in the liver that can aid in diagnosing steatosis through a 15-20 seconds' breath hold MR exam.

Dr Vijaya Bhaskar Nori, Director & Chief Radiologist, Vista Imaging & Medical Center, Hyderabad, has been using this MRI for the past two months and is very satisfied with its results. Dr Bhaskar says that 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 fraction maps in a non-invasive manner.

Dr Vijaya Bhaskar Nori
Director & Chief Radiologist, Vista Imaging – Hyderabad

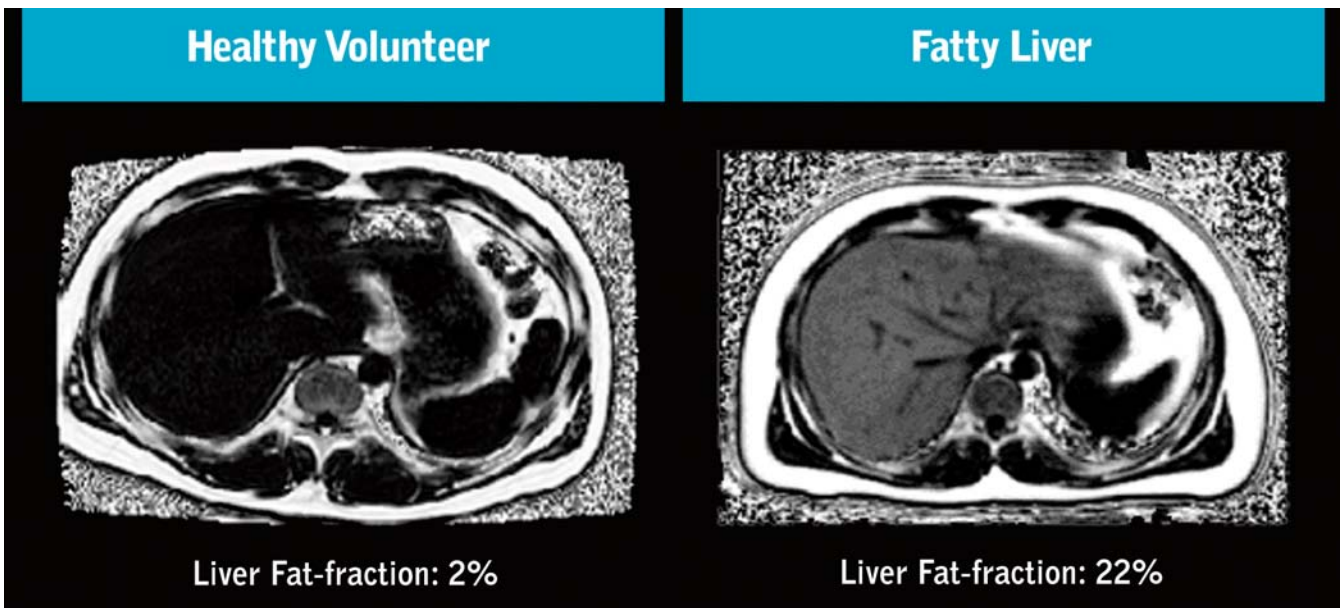
Dr Bhaskar further states that he has used the IDEAL IQ MRI system to scan about four to five patients everyday and the scans correlate with histopathological findings in his patients. He feels that the technique is excellent as a tool for screening patients with fatty liver disease and for accessing the progress of treatment but also insists that biopsy is a must for liver donors. IDEAL IQ is a breakthrough MRI pulse sequence application offered as an option for GE MR scanners. The IDEAL IQ imaging technique (IDEAL:Iterative Decomposition of water and fat with Echo Asymmetry and Least-squares estimation) is a triglyceride fat and water separation technique that acquires multiple images of the anatomy at separate echo times to calculate the phase differences and determine triglyceride fat and water content per pixel. It exploits the resonance frequency differences between triglyceride fat and water, measured as phase differences in multiple echoes, to resolve triglyceride, fat and water.

Biopsy vs imaging

Dr Bhaskar further says that a quantitative assessment of liver fat with the help of non-invasive technique is highly desirable for diagnosis and evaluation of fatty liver disease. Pointing out that liver biopsy is a fairly risky procedure, he says that the main contention with biopsy is that it's an invasive procedure with a risk of morbidity or mortality. He says that fat deposits in cell could also be very heterogeneous and may result in the variation of sample. Besides it is expensive, takes longer time and has to be performed under expert guidance and in a hospital set-up whereas an MRI is widely available and can be used to scan patients with minimal discomfort.

Last word

Although Dr Bhaskar is very happy with his MRI and is using it successfully, he says he will wait for another two to three months to gather sufficient data to be able to publish. He also says that IDEAL IQ is a new breakthrough and promising technology and in time it may turn out to be the tool to detect fatty liver diseases.



GE Healthcare

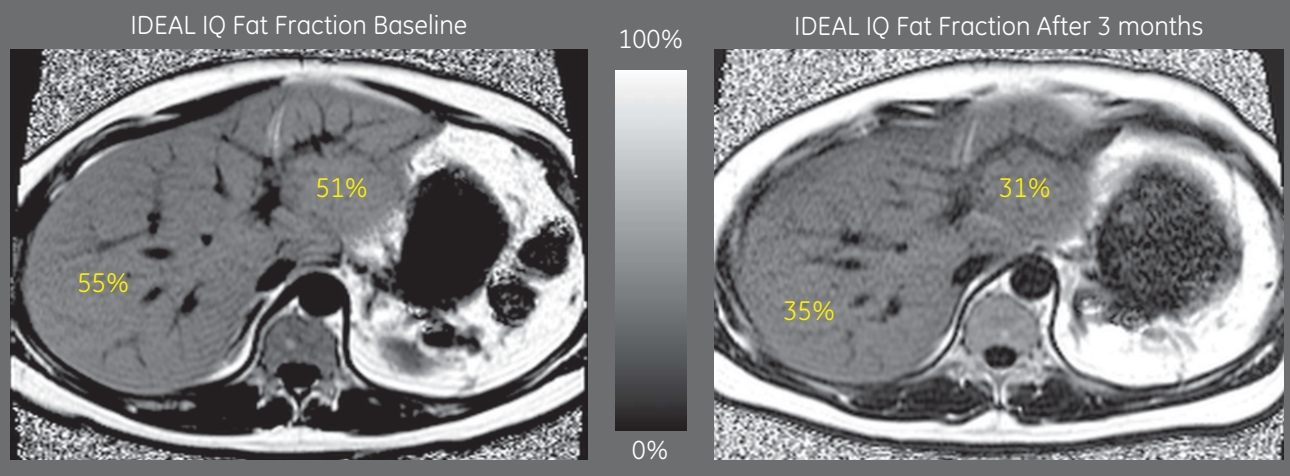
NEEDLE FREE THE WAY MR SHOULD BE

Needles hurt. They're scary. And there is also growing awareness that many procedures involving needles such as biopsies, contrast and sedation can have potentially dangerous side effects to patients, add additional cost to procedures and extend patient recovery times.

So we asked ourselves, how can we strive to reduce the use of needles in certain exams? Our answer is the Needle-Free Suite of MR applications. Whether it's assessing whole liver parenchyma non-invasively, capturing arterial and venous flow in fine detail without contrast or correcting for patient motion to potentially reduce the need for sedation, we're focusing on the way MR should be – obtaining clinical results through non-invasive exams.

GE's IDEAL IQ MR Technology

Biopsies are invasive, painful and may introduce the risk of complications. Liver biopsies also provide information about a very small sample of the tissue. Recognizing a growing need for effective, repeatable, non-invasive tests to accurately assess diffuse liver disease, we've introduced IDEAL IQ, an advanced tool that allows you to quantify fat fraction



Patient with diabetes and dyslipidemia (TG=1022) treated with plasmapheresis
Courtesy: Dr. Scott Reeder, University of Wisconsin Madison, WI

To learn more about GE MR Systems & Applications call our toll free number at **1800 209 9003**

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