



Why is FerriScan[®] Superior to Other Tests in the Estimation of Body Iron Loading?

1. Advantages of FerriScan over serum ferritin

2. Advantages of FerriScan over other MRI-based methods (including liver T2* methods)

3. Advantages of FerriScan over liver biopsy

1. Advantages of FerriScan over serum ferritin

- Other factors present in patients with iron overload such as infection, inflammation, fever, cancer or liver damage may result in significant elevation of serum ferritin (SF) concentrations in the absence of iron overload.
- SF has poor accuracy for measuring body iron loading in patients with thalassaemia major¹
- SF levels in patients with thalassaemia intermedia are significantly lower than in patients with thalassaemia major despite them having comparable Liver Iron Concentration (LIC) levels (as determined by biopsy), suggesting that SF significantly underestimates iron loading in patients with thalassaemia Intermedia²
- SF is an imprecise and potentially misleading parameter on which to base clinical management decision in patients with sickle cell disease³
- The relationship between total body iron stores and SF in patients with hereditary haemochromatosis is very weak^{4, 5}.

2. Advantages of FerriScan over other MRI-based methods (including liver T2* methods)

- FerriScan has been used to non-invasively measure LICs in over 30,000 patients.
- FerriScan has been calibrated against liver biopsy to measure LICs from 0.3 to 42.7 mg Fe/g dry tissue in a trial of 105 subjects with hereditary haemochromatosis and thalassaemia disorders using 5 different MRI scanners. This range is larger than is achievable using any other published MRI-based method. For example, published T2* methods measured LICs up to 236, 27.67 and 32.98 mg/g dry tissue, respectively, whereas SIR methods only measured LICs up to 20.99 mg Fe/g dw.
- A separate study has been conducted to validate FerriScan using a separate cohort of 233 subjects (data on file; submitted for publication). This is a larger number of patients than any other similar study.
- Every scanner used for FerriScan is first validated using a set of standards (or phantoms) and undergoes further validation every 12 months.
- FerriScan has been validated on GE, Philips and Siemens scanners.
- FerriScan has regulatory clearance from the FDA, TGA, and European CE mark.
- FerriScan has been independently validated by third parties.
- FerriScan is the method of choice for measuring LIC in clinical trials of iron chelators.
- There is no requirement to purchase any new software or hardware, and there are no annual licensing fees.
- Data analysis is performed at a central location which is quality assured and certified. This enables comparisons to be made over time and between MRI centres.

3. Advantages of FerriScan over liver biopsy

- Non-invasive
- Painless
- No risk of bleeding or infection
- More cost effective
- Provides information about the distribution of iron in the liver
- FerriScan measures iron in a volume of liver that is thousands of times greater than liver biopsy
- Results are available within two business days
- Biopsy is not suitable in patients with myelodysplastic syndrome (MDS) due to risk of bleeding
- The size of the biopsy specimen only represents 1/50,000th of the total mass of the liver; therefore, the location where the biopsy is taken from will affect the result, and may not be representative of the entire liver.

“The R2-MRI method is the most thoroughly validated and calibrated non-invasive MRI-based method for measurement of LIC” and “has been shown to possess sufficient reproducibility, accuracy and dynamic range to yield clinically useful estimates of the LIC”¹⁰.

References

1. Brittenham, G et al. Am J Hematol. 1993;42 (1):81-5.
2. Taher, A. et al. Haematologica, 2008. 93. 1584-6.
3. Kwiatkowski, J. et al Hematol Oncol Clin North Am, 2004. 18. 1355-77, ix.
4. Olynyk, J. et al Am J Gastroenterol, 1998. 93. 346-50
5. Gordeuk, V. Am J Hematol, 2008. 83. 618-26.
6. Anderson, L. et al Eur Heart J, 2001. 22. 2171-9.
7. Hankins, J. et al Blood, 2009. 113. 4853-5.
8. Wood, J. et al Blood, 2005. 106. 1460-5.
9. Gandon, Y. et al Lancet, 2004. 363. 357-62.
10. Jensen, P.-D., Current Hematologic Malignancy Reports, 2007. 2. 13-21.

