FerriScan®

MRI Measurement of Liver Iron Concentration

FerriScan R2-MRI – Liver Iron Concentration Measurement for Cancer

Iron Overload in Cancer Survivors

Iron Overload is increasingly recognised as an issue in cancer patients requiring multiple blood transfusions for blood cancers and solid tumours. Patients may also be exposed to supplementary iron and be at risk of iron loading. While Serum Ferritin monitoring is used for Haematopoietic Stem Cell Transplantation (HSCT) patients, several guides and opinions[1-5] caution reliance on Serum Ferritin and emphasise using Magnetic Resonance Imaging – Liver Iron Concentration (MRI-LIC) measurement for screening of Iron Overload. Some suggest phlebotomy or chelation for patients with demonstrated LIC > 5–7 mg/g dry weight liver iron and signs of liver dysfunction.

The Importance of Monitoring Iron Overload as Part of Late Effects

Excess iron is deposited in tissues of the body, particularly the liver, eventually causing tissue damage and organ failure. For patients affected by Iron Overload, accurate monitoring of the body iron burden is crucial to the management of their disease. LIC provides the best measurement of total body iron stores, informing clinical decisions on initiation and adjustment of phlebotomy or chelation therapy.

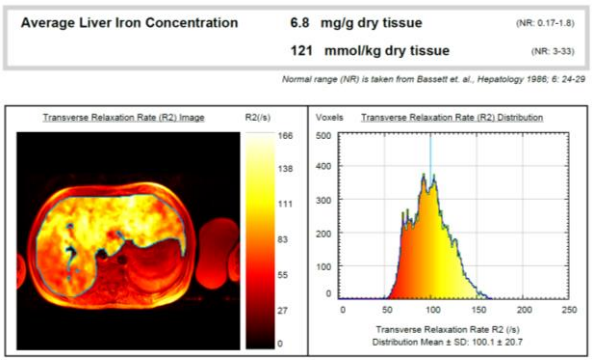
Iron Overload can persist for years after cancer treatment. The duration of exposure to Iron Overload is related to adverse outcomes and therefore requires a reliable, non-invasive, and accurate measure of body iron stores to manage the treatment of iron-related toxicity.[6]

FerriScan (R2-MRI)

- ✓ FerriScan is the only CE Mark, FDA, and TGA-approved MRI-based solution for quantitative measurement of LIC in patients with Iron Overload, including paediatric patients. It provides a reliable measure of a patient's LIC to guide clinical decisions.
- ✓ FerriScan is used in more than 30 countries and over 30,000 scans have been provided globally.
- ✓ FerriScan has been used extensively in multi-centre clinical trials for iron chelation therapies and in clinical practice since 2005.
- ✓ Cancer survivors may also be at high risk of fatty liver as a consequence of their treatments. FerriScan is unaffected by the presence of Fat, Inflammation, or Fibrosis – providing the Gold Standard LIC measure for clinicians to contribute to optimising health outcomes for patients.

Key FerriScan Features

- ✓ FerriScan provides an **accurate, validated** MRI-based measurement of liver iron concentration
- ✓ N**on-invasive**, requires **no contrast agents** and has a scan time of approximately 10 minutes
- ✓ **High sensitivity and specificity** for measuring LIC
- ✓ FerriScan requires **no breath-hold** and may therefore be used for paediatric patients
- ✓ Image analysis and LIC reporting is performed at a **central ISO 13485 certified** Service Centre
- ✓ FerriScan has **international regulatory clearance** (USA, Europe, Australia)
- ✓ FerriScan can measure LIC over the entire range encountered in clinical practice[3]
- ✓ Results are clinically validated to be unaffected by inflammation, fibrosis or cirrhosis
- ✓ Results are not confounded by the presence of fat
- ✓ Results are accurate, reliable, and reproducible over time and between MRI centres and models of scanner
- ✓ Results are available within a target time of two business days
- ✓ There is no requirement for customers to purchase new software or hardware
- ✓ Suitable for 1.5 Tesla MRI scanners
- ✓ FerriScan is charged per analysis only



Resonance Health
Be Better Informed

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Assisting in Optimising Patient Outcomes for Cancer Survivors with Iron Overload

FerriScan can reliably and accurately screen for Iron Overload in cancer survivors with a history of blood transfusions, overcoming the poor sensitivity of Serum Ferritin and avoiding reliance on transfusion records, which can be incomplete.

Attention should be given to monitoring LIC to minimise the duration of exposure to high iron levels over many years into adulthood. FerriScan can be used to audit patients who have received > 10 transfusions in follow up protocols in appropriate patients to assist in managing their Iron Overload burden.

MRI Used to Assess Liver Iron Overload in Transfusion-dependent Cancer Treatments Suggests Iron Overload May Be More Prevalent Than Previously Recognised

24% of patients with a history of allogeneic HSCT have Serum Ferritin > 500 ng/mL[7], but recent MRI studies (see Table) suggest actual Iron Overload rates may be higher.

Study	Iron Overload Prevalence & LIC Cutoff	Patient Group (size)
Trottier 2013[4]	68% LIC > 1.8 mg/g	HSCT- AML, ALL, MDS, lymphoma (88)
Virtanen 2013[8]	78% LIC > 2 mg/g	HSCT- AML, ALL, NHL (67)
Armand 2012[9]	38% LIC > 5 mg/g	HSCT - AML, ALL, MDS (45)
Ruccione 2014[10]	49% LIC > 1.2 mg/g	Leukemia, lymphoma and solid tumour patients (75)

AML – acute myeloid leukemia, ALL – acute lymphoblastic leukemia, MDS – myelodysplastic syndrome

Guidelines and Literature: Conclusions and Recommendations

- ✓ "Now that long-term survival in patients with cancer is a reality and that the technology and treatment of Iron Overload have substantially advanced, it would seem appropriate to focus on iron toxicity as a possible important contributor to the short-term and long-term morbidity of cancer therapy."[11]
- ✓ "As Iron Overload can persist for years after treatment, heavily transfused patients require special follow-up to prove final clearance or persistence of Iron Overload."[12]
- ✓ "Ferriscan can be used to identify patients requiring more aggressive treatment interventions for Iron Overload."[2]
- ✓ "MRI, like the FerriScan used in our patients, has become the gold standard for tracking iron levels because it is accurate, reproducible, well tolerated, and can be used to track iron levels in the liver and other organs of the body."[2]
- ✓ "Long term follow up is recommended in HCST patients to assess iron stores in tissues. While measurement of liver iron concentration is the gold standard, an iron-specific magnetic resonance imaging test (FerriScan) is highly accurate in measuring liver iron and is an alternative to liver biopsy for the measurement of hepatic iron content."[13]

If you are a clinician who treats survivors of cancer or are a patient who thinks they may have received ten or more blood transfusions, please contact Resonance Health at info@resonancehealth.com to arrange a FerriScan at a location near you.

References

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