SIRT: SELECTIVE INTERNAL RADIATION THERAPY

SIRT targets liver tumours
SIRT (also known as radioembolisation) is a special type of radiotherapy that targets liver tumours with high doses of radiation delivered inside the body. SIR-Spheres® Y-90 resin microspheres are the most commonly used form of SIRT where millions of tiny radioactive resin ‘beads’ called microspheres are injected through a catheter into the hepatic artery that feeds liver tumours with the oxygen-enriched blood they need to grow. These resin beads are only about one third the width of a human hair. They have about the same specific gravity as a red blood cell and flow easily in the blood that is supplying the tumour.

Carried like tiny “Trojan Horses” by the same blood that the tumours require to grow, the microspheres lodge themselves in and around liver tumours where they emit high doses of tumour-killing radiation. However, as the microspheres only emit this radiation over a small area, they can target the tumour with minimal damage to the healthy liver tissue around the tumour. The radiation destroys the tumour cells, causing the tumours to shrink. With SIR-Spheres Y-90 resin microspheres there are a very high number of microspheres (30-60 million) administered which encourages uniform distribution of the radiation to all the liver tumours.

The microspheres irradiate the tumour for about two weeks, after which only three per cent of the initial useful radiation remains. After one month, it is almost completely decayed. The effects of the radiotherapy on the cancer last much longer than this.

Features of SIRT
• Uses the same blood supply that feeds liver tumours to deliver radiation that can kill these tumours;
• Gives much higher doses of radiation to liver tumours over much longer periods of time than would be possible with external beam radiation;
• Delivers only a small dose of radiation to healthy liver tissue.

SIRT shrinks tumours that can’t be removed by surgery
SIRT is used to treat liver tumours that can't be removed by surgery. The two commonest uses are to shrink liver tumours that have spread from the bowel and primary liver tumours that started in the liver. It is also possible to treat a variety of other cancers from other parts of the body that have spread to the liver, for example liver cancer that has spread from the breast, lung or the eye.

What are SIR-Spheres Y-90 resin microspheres?
SIR-Spheres Y-90 resin microspheres are tiny radioactive resin beads that are used in the SIRT procedure. Each microsphere has a radioactive substance called yttrium-90 (Y-90) attached to it.

How are SIR-Spheres Y-90 resin microspheres given?
Administering SIR-Spheres Y-90 resin microspheres is a relatively short and minimally invasive procedure. After a local anaesthetic is administered to the patient, a SIRT-trained interventional radiologist makes a small incision near the groin. A catheter is then inserted through the incision and guided to the hepatic artery that feeds the liver tumours. SIR-Spheres Y-90 resin microspheres are then administered through this catheter. The whole procedure may take around 60–90 minutes. After the procedure is completed, patients may be sent to have a scan to check the level of radioactivity in the liver tumours. Patients will be monitored for a few hours after the procedure. Depending on local regulations, SIRT can be given as an out-patient procedure or patients may remain in hospital for a day or two. Most patients soon resume their normal daily activities.
SIR-Spheres Y-90 resin microspheres can extend life and can lead to potentially curative surgery

SIRT using SIR-Spheres Y-90 resin microspheres is currently mainly given to patients that are unresponsive to chemotherapy. In this setting, the therapy has been shown to extend life, and in some cases shrink tumours so much that they can be surgically removed. A summary of the evidence is provided below.

- SIR-Spheres Y-90 resin microspheres are safe to use to treat liver tumours;¹
- SIR-Spheres Y-90 resin microspheres can treat tumours in the liver that cannot be removed by surgery;²–⁴
- SIR-Spheres Y-90 resin microspheres can reduce the size of liver tumours²,³,⁵
- SIR-Spheres Y-90 resin microspheres can improve survival by about five months in patients with bowel cancer that has spread to the liver and who have failed previous chemotherapy³,⁴
- In some cases, SIR-Spheres Y-90 resin microspheres can reduce the size of tumours so much that they can be surgically removed²,⁵–⁸

Side effects are generally mild, including tiredness, loss of appetite, mild fever, stomach pain, sickness, injection site soreness and diarrhoea. There is no hair loss with this treatment.

SIR-Spheres Y-90 resin microspheres are recommended in Europe

The 2014 European Society for Medical Oncology (ESMO) guidelines for physicians recommend the use of SIR-Spheres Y-90 resin microspheres to treat liver tumours that have spread from the bowel and have failed to respond to chemotherapy.⁹

For more information visit www.sirtex.com.

References: