

Selective Internal Radiation Therapy (SIRT)

ERPAN-Meeting in Paris, May 27th 2009

TOP 5c



Baden-Württemberg

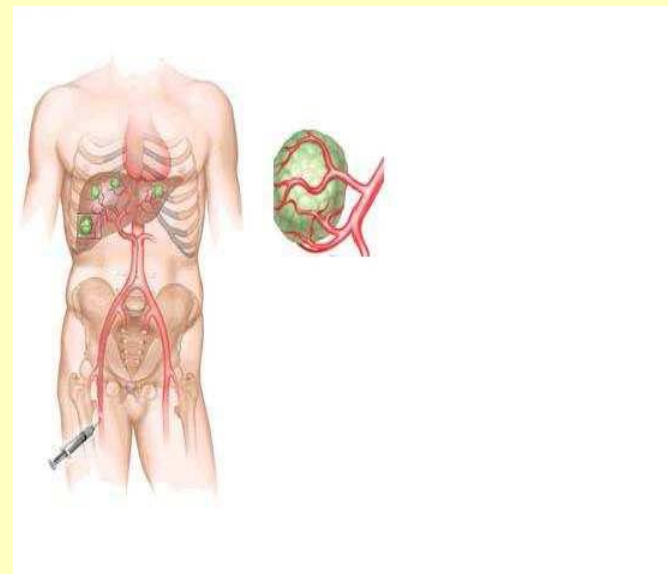
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1. The **Selective Internal Radiation Therapy (SIRT)** is for treatment unresectable liver-tumours disease.

There is brought a very high radiation dose to all tumours within the liver.

The given activity is from 185 - 275 MBq.

2. Infusion via hepatic artery

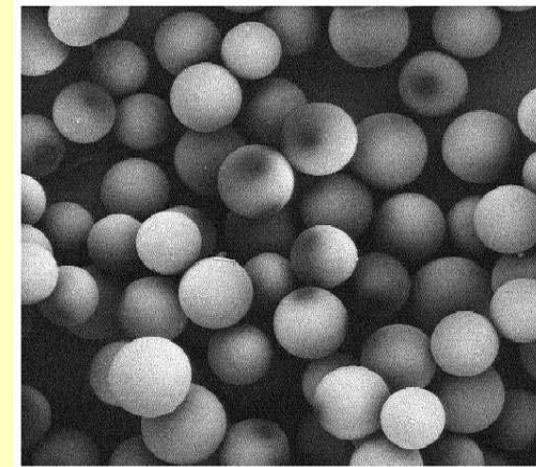


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3. Yttrium-90-labelled Sir-Spheres

- Diameter approx. 30 μm (microns)
- Achieves doses of 100-1.000 Gy to the tumour
- Half life: 64 hours
- Beta: 0,93 MeV



50 Bq per sphere

4. Pre-Treatment with Tc-99m to clear the liver-lung shunt and a hepatic angiogram



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5. Equipment from SIRTEX Medical



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6. Preparation of the Sir-Spheres



a) pull up the spheres (Yttrium-Citrat)

b) shake the spheres



c) re-inject the spheres



d) controll of the activity



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7. Distribution of the dose

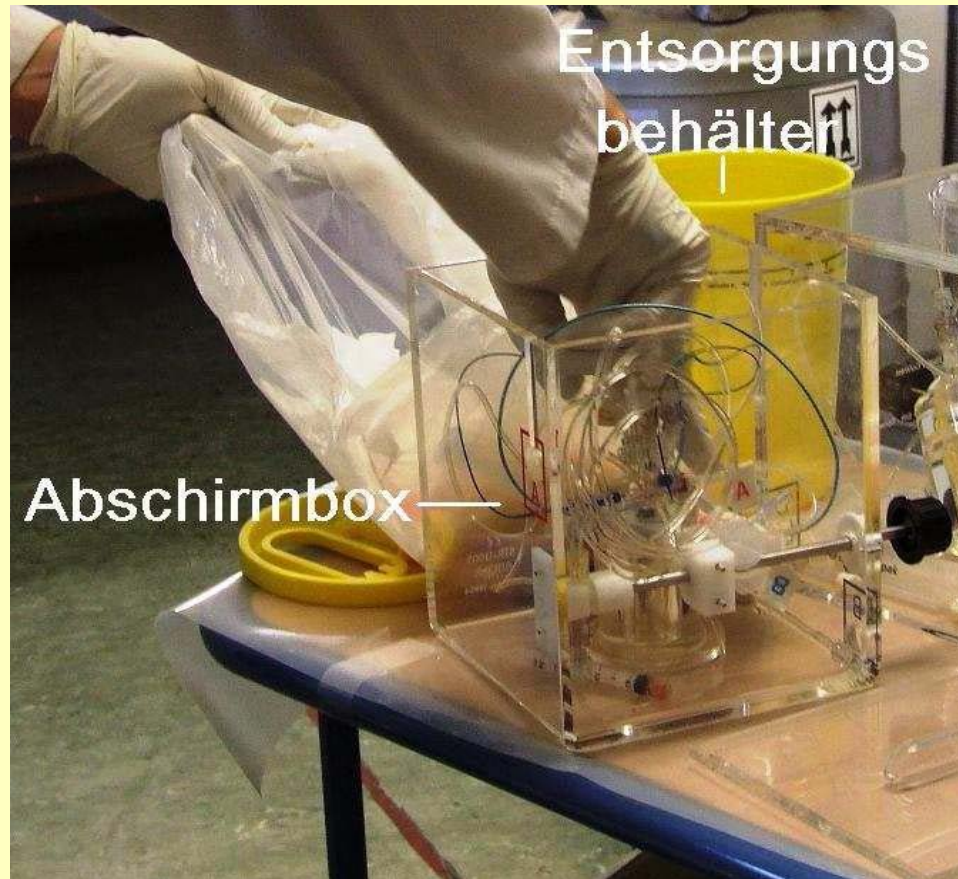


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8. Application



9. Waste disposal



partial doses hand/finger

Dosis [mSv]	Hand	Finger
1,0	links	Daumen Innenkuppe
1,0	links	Zeigefinger Innenkuppe
1,0	rechts	Daumen Innenkuppe
1,0	rechts	Zeigefinger Innenkuppe



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10. Partial doses on the hands (all persons)

Krankenhaus	Personal	maximaler Dosiswert pro Vorbereitungs-schritt [mSv]	Ort	Wert Dosimetertragestelle [mSv]	Ort	Korrektur Faktor
Stuttgart	MTA	3,7	rechts, Zeigefinger, Innenkuppe	0,4	rechts, Mittelfinger, Grundglied (innen)	9
Karlsruhe	MTA	0,8	links, Zeigefinger, Innenkuppe	0,1	rechts, Zeigefinger, Grundglied (innen)	8
Stuttgart	Nuklear-Mediziner	0,8	links, Mittelfinger, Innenkuppe	–	–	–
Stuttgart	Radiologe	1,0	rechts, Mittelfinger, Innenkuppe	–	–	–
Karlsruhe	Nuklear-Mediziner	0,8	links, Zeigefinger, Innenkuppe	0,8	links, Zeigefinger, Innenkuppe	1



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11. Developments – guidelines

- strengthen the lid of the vial with another soft material
- put in a plexiglas-shielding



- to stabilize the mixing-procedure in combination of injection-plexiglas-shielding and transport-vial
- to intense supervision
- separate beta-dosimetry with a ring-dosimeter and multiply the dose with two
- add the beta-ring-dose to the normal personal dose per month



Beta-ring-dosimeter



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