Publications on the Clinical Use of SIR-Spheres® microspheres

Since the first experimental patients were treated in the late 1980s, numerous reports detailing the use of SIR-Spheres microspheres have appeared in the literature. These papers have been from a variety of clinical trial and experiential settings and are presented here as a bibliography in different tumor types and in chronological order (latest first).

Review articles, technical papers and books or chapters on selective internal radiation therapy (SIRT) or radioembolization that are useful sources of information on areas related to treating patients with SIR-Spheres microspheres are also listed, again in chronological order in each section.

This information concerns uses that have not been approved or cleared by the Food and Drug Administration (FDA). SIR-Spheres microspheres are indicated in the USA for the treatment of unresectable metastatic liver tumors from primary colorectal cancer with adjuvant intra-hepatic artery chemotherapy using floxuridine. SIR-Spheres microspheres are approved in Australia, the European Union (CE Mark) and several other countries for the treatment of unresectable liver tumors.

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Colorectal Cancer Liver Metastases

Prospective Clinical Studies in Colorectal Cancer Liver Metastases


Retrospective Studies in Colorectal Cancer Liver Metastases


Chua TC, Bester L, Akther J, Morris DL. Successful right hepatectomy after four treatments of yttrium-90 microspheres (SIR-Spheres(R)) and concomitant FOLFOX as bridging therapy to resection of colorectal liver metastases. Anticancer Research 2010; 30: 3005–3007.


Stubbs R, Cannan R. Active treatment of colorectal hepatic metastases. *New Zealand Family Physician* 1999; **26**.


Hepatocellular Carcinoma

Prospective Clinical Studies in Hepatocellular Carcinoma


Retrospective Studies in Hepatocellular Carcinoma


Wigg A. Yttrium 90 therapy for HCC; is it any better than conventional external beam radiotherapy? *Hepatology* 2012; 55: 981.


Neuroendocrine Tumor Liver Metastases

Prospective Clinical Studies in Neuroendocrine Tumor Liver Metastases


Retrospective Studies in Metastatic Neuroendocrine Tumor Liver Metastases


Cao CQ, Yan TD, Bester L et al. Radioembolization with yttrium microspheres for neuroendocrine tumour liver metastases. *British Journal of Surgery* 2010; **97**: 537–543.


Ho K. Malignant insulinomas with hepatic metastases successfully treated with selective internal radiation therapy. *Clinical Endocrinology (Oxford)* 2006; **65**: 410–411.

Breast Cancer Liver Metastases

Prospective Clinical Studies in Breast Cancer Liver Metastases

Retrospective Studies in Breast Cancer Liver Metastases

Pancreatic Cancer Liver Metastases

Prospective Clinical Studies in Pancreatic Cancer Liver Metastases

Retrospective Studies in Pancreatic Cancer Liver Metastases
Cholangiocarcinoma

Prospective Clinical Studies in Cholangiocarcinoma

Retrospective Studies in Cholangiocarcinoma

Melanoma Liver Metastases

Retrospective Studies in Melanoma Liver Metastases

Lung Cancer Liver Metastases

Retrospective Studies in Lung Cancer Liver Metastases
Cervical Cancer Liver Metastases

Retrospective Studies in Cervical Cancer Liver Metastases
Desmoplastic Small Round Cell Tumor Liver Metastases

Retrospective Studies in Desmoplastic Small Round Cell Tumor Liver Metastases

Renal Cell Carcinoma Liver Metastases

Retrospective Studies in Renal Cell Carcinoma Liver Metastases

Hemangioendothelioma Liver Metastases

Retrospective Studies in Hemangioendothelioma Liver Metastases


Testicular Liver Cancer Metastases

Retrospective Studies in Testicular Cancer Liver Metastases

Primary or Metastatic Soft Tissue Sarcomas of the Liver

Abstracts on Retrospective Studies in Primary or Metastastic Soft Tissue Sarcomas of the Liver

Thyroid Cancer Liver Metastases

Retrospective Studies in Thyroid Cancer Liver Metastases
Liver Metastases from Cancer of Unknown Primary

Retrospective Studies in Liver Metastases from Cancer of Unknown Primary
Liver Tumors from Various Cancer Sources

Prospective Studies in Liver Tumors from Various Cancer Sources


Retrospective Studies in Liver Tumors from Various Cancer Sources


Brock H; Günther RW; Haage P. Leberzirrhose als folge selektiver hepatischer radioembolisation mit $^{90}$Yttrium-mikrosphären. *Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren* 2006; 178: 538–549. [in German]


**Lung Malignancies**

**Retrospective Studies in Lung Metastases**


**Haematological Malignancies**

**Retrospective Studies in Malignant Lymphomatous Splenomegaly**


**Primary Renal Cancer**

**Preclinical Studies in Primary Renal Cancer**

Consensus Statements / Guidelines

Colorectal Cancer Guidelines

Hepatocellular Carcinoma Guidelines

Neuroendocrine Tumour Guidelines


**General Consensus Statements / Guidelines**


American College of Radiology (ACR), American Society for Therapeutic Radiology and Oncology (ASTRO), and the Society of Interventional Radiology (SIR). Practice guideline for radioembolization with microsphere brachytherapy device (RMBD) for treatment of liver malignancies. 2008; Res. 2: http://www.acr.org/SecondaryMainMenuCategories/quality_safety/guidelines/iv/RMBD.aspx


Review Articles

Colorectal Cancer


de Baere T, Deschamps F. Arterial therapies of colorectal cancer metastases to the liver. *Abdominal Imaging* 2011; 36: 661–670.


**Hepatocellular Carcinoma**


Poon RT. Recent advances in management of hepatocellular carcinoma. Hong Kong Medical Diary 2010; 15: 18–22.


**Neuroendocrine Tumors**


Yang TX, Chua TC, Morris DL. Radioembolization and chemoembolization for unresectable neuroendocrine liver metastases – A systematic review. *Surgical Oncology* 2012; 21: 299–308


Saxena A, Chua TC, Morris DL. Surgical management and emerging therapies to prolong survival in metastatic neuroendocrine cancer. *Annals of Surgical Oncology* 2011; **18**: S222–S223.


Nazario J, Gupta S. Transarterial liver-directed therapies of neuroendocrine hepatic metastases. *Seminars in Oncology* 2010; **37**: 118–126.


Auernhammer CJ. Aktuelle standards und perspektiven in diagnostik und therapie von neuroendokrinen tumoren des gastroenteropankreatischen systems. *Journal Onkologie* 2008; 04–08. [in German]


Breast Cancer


Cholangiocarcinoma


Ocular Melanoma


Desmoplastic Small Round Cell Tumor


General


Carr BI. Regional hepatic therapy for cancer. *Seminars in Oncology* 2010; 37: 82.


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Kennedy AS. Intraarterial yttrium-90 microspheres for hepatic malignancies. ASCO Educational Book 2009; 251–255.

Kennedy A. Targeted therapies address hard-to-treat liver tumors. Oncology News International 2009 March 23; 18:


Hoffmann RT, Jakobs TF, Tatsch K, Reiser MF. Selektive interne radiotherapie (SIRT) bei fortgeschrittenen lebertumoren und metastasen. Deutsche Medizinische Wochenschrift 2008; 133: 1–4. [in German]

Tatsch K, Hoffmann RT, Pöpperl G. Selektive interne radiotherapie (SIRT) inoperabler lebertumoren mit radioaktiv markierten mikrophären / Selective internal radiotherapy (SIRT) with radioactive microspheres in unresectable liver tumors. Nuklearmediziner 2008; 31: 101–113. [in German]


Mechanistic Aspects of Treatment

Papers on Mechanistic Aspects of Treatment

Zade AA, Rangarajan V, Purandare NC et al. 90Y microsphere therapy: Does 90Y PET/CT imaging obviate the need for 90Y Bracksstrahlung SPECT/CT imaging? Nuclear Medicine Communications 2013 Aug 12; ePub doi: 10.1097/MNM.0b013e328364aa4b.


Gulec SA. Considerations in Y-90 microsphere administration via hepatic arterial pump. *Journal of Interventional Oncology* 2008; **1**: 38–42.


Selwyn RG, Avila-Rodriguez MA, Converse AK et al. $^{18}$F-labeled resin microspheres as surrogates for $^{90}$Y resin microspheres used in the treatment of hepatic tumors: a radiolabeling and PET validation study. *Physics in Medicine and Biology* 2007; **52**: 7397–7408.


Papers on Hepatic Arterial Anatomy


Burgmans MC, Too CW, Kao YH et al. Computed tomography hepatic arteriography has a hepatic falciform artery detection rate that is much higher than that of digital subtraction angiography and $^{99m}$Tc-MAA SPECT/CT: Implications for planning $^{90}$Y radioembolization? *European Journal of Radiology* 2012; **81**: 3979–3984.


**Papers on Reduction of Lung Shunting**


Imaging

Papers on Imaging


Zade AA, Rangarajan V, Purandare NC et al. 90Y microsphere therapy: Does 90Y PET/CT imaging obviate the need for 90Y Bremsstrahlung SPECT/CT imaging? *Nuclear Medicine Communications* 2013 Aug 12; ePub doi: 10.1097/MNM.0b013e328364aa4b.

Mamawan MD, Ong SC, Senupe JM. Post-90Y radioembolization PET/CT scan with respiratory gating using time-of-flight reconstruction. *Journal of Nuclear Medicine Technology* 2013; 41: 42.


Soyal C, Kucuk ON, Geçim EI et al. The prognostic value of quantitative parameters of $^{18}$F-FDG PET/CT in the evaluation of response to internal radiation therapy with yttrium-90 in patients with liver metastases of colorectal cancer. *Nuclear Medicine Communications* 2013 Mar 7; ePub 10.1097/MNM.0b013e32835f9427.


Burgmans MC, Too CW, Kao YH et al. Computed tomography hepatic arteriography has a hepatic falciform artery detection rate that is much higher than that of digital subtraction angiography and $^{99m}$Tc-MAA SPECT/CT: Implications for planning $^{90}$Y radioembolization? *European Journal of Radiology* 2012; **81**: 3979–3984.


Weber K, Berger F, Mustafa M et al. [SPECT/CT for staging and treatment monitoring in oncology: Applications in differentiated thyroid cancer and liver tumors.] *Der Radiologe* 2012 Jun 20; ePub doi: 10.1007/s00117-011-2267-y. [in German]


Dudeck O, Wilhelmsen S, Ulrich G et al. Effectiveness of repeat angiographic assessment in patients designated for radioembolization using yttrium-90 microspheres with initial extrahepatic accumulation of
radioembolization: semiautomated determination of liver volume and volume of tumor necrosis in patients with

Monsky WL, Garza AS, Kim I


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Werner MK, Brechtel K, Beyer T et al. PET/CT for the assessment and quantification of $^{90}$Y biodistribution after selective internal radiotherapy (SIRT) of liver metastases. *European Journal of Nuclear Medicine and Molecular Imaging* 2010; 37: 407–408.


Managing Side Effects and Complications

Papers on Managing Side Effects and Complications


Thamboo TP, Wai CT, Lim LG, Wang SC. Late gastric ulceration and cytomegalovirus infection following selective internal radiation therapy (SIRT) of the liver. *Pathology* 2008; 40: 303–305.


Brock H; Günther RW; Haage P. Leberzirrhose als Folge selektiver hepatischer radioembolisation mit 90Yttrium-mikrosphären. *Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren* 2006; 178: 538–549. [in German]


Books and Book Chapters

Books

Book Chapters
Stubbs R. Local radio ablative techniques for liver tumours. 2nd ed. Sudbury, Massachusetts: Jones and Bartlett; 2003.