

- Title** Selective Internal Radiation Therapy (SIRT) Using Yttrium-90 Microspheres for Hepatocellular Carcinoma
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- Reference** Technology Review Report 003/2016, online:
http://www.moh.gov.my/index.php/database_stores/store_view_page/30/296

Aim

To assess the effectiveness, safety and cost-effectiveness of SIRT using yttrium-90 microspheres for the treatment of hepatocellular carcinoma (HCC).

Conclusions and results**i. Primary HCC**

- There was limited fair level of retrievable evidence to demonstrate that yttrium-90 radioembolization increased clinical response rates (partial response and stable disease) and successfully downstaging tumour for resection or transplant in patients with unresectable primary HCC
- Better prognosis (overall survival) was demonstrated in patients presented with early staging of HCC without portal vein thrombosis.

ii. Liver Metastasis**a) Metastatic Colorectal Cancer (mCRC)**

There was limited fair level of retrievable evidence to suggest that:

- The use of yttrium-90 radioembolization in combination with systemic chemotherapy as first line with floxuridine (FUDR) and 5-fluorouracil with leucovorin (5-FU/LV) in patients with unresectable mCRC of the liver showed improvement in clinical response rates, longer median time to liver progression and overall survival
- Limited fair level of retrievable evidence on the use of yttrium-90 radioembolization in combination with systemic chemotherapy as second line (failed 5-FU) and third line (failed oxaliplatin and irinotecan)

Salvage treatment for chemotherapy refractory disease also demonstrated improvement in clinical response rates, median time to tumour and liver progression and overall median survival in patients who had failed a median of three lines of chemotherapy.

b) Metastatic Neuroendocrine Tumour

There was limited low level of retrievable evidence to suggest the use of yttrium-90 radioembolization improved clinical response rates (partial response and stable disease) and overall survival.

Safety

There was sufficient fair level of retrievable to suggest that yttrium-90 radioembolization is a safe and well-tolerated procedure. However, generally radioembolization with Y-90 was associated with common symptoms which included nausea, vomiting, fatigue, and mild abdominal pain.

Radioembolization specific complications include gastrointestinal ulceration cholecystitis, radiation induced liver disease and hepatotoxicity. The majority of laboratory toxicities were low-grade and included derangements of alkaline phosphatase, grade 3/4 bilirubin toxicity and transaminases. However, there was one death related to radiation hepatitis. Both glass and resin types of microsphere had received approval from US FDA for treatment of unresectable primary HCC and liver mCRC concurrent with fluorodeoxyuridine (FUDR) respectively.

Cost/Cost-Effectiveness

There was no retrievable evidence on the cost-effectiveness of the yttrium-90 radioembolization in the treatment of unresectable primary or secondary HCC. In MOH hospitals, the estimated cost for SIRT is RM [REDACTED] while the approximate cost in private hospitals is RM [REDACTED] to RM [REDACTED].

Recommendations (if any)

Selective internal radiation therapy (SIRT) using yttrium-90 microspheres may be used for unresectable primary hepatocellular carcinoma and liver metastasis from colorectal cancer. Strict criteria should be applied for patient selection and treatment shall be delivered through multidisciplinary team approach.

Methods

Electronic databases searched through the Ovid interface using MEDLINE (R) In-Process and Other Non-Indexed Citations and Ovid MEDLINE (R) 1946 to present, EBM Reviews- Cochrane Central Registered of Controlled Trials February 2016, EBM Reviews- Database of Abstracts of Review of Effects – 1st Quarter 2016, EBM Reviews- Cochrane Database of Systematic Reviews - 2005 to Feb 2016, EBM Reviews- Health Technology Assessment – 1st Quarter 2016, EBM Reviews- NHS Economic Evaluation Database – 1st Quarter 2016. Searches were also run in PubMed. Google was used to search for additional web-based materials and information. No limits were applied. Additional articles were identified from reviewing the references of retrieved articles. Last search was conducted on 25th February 2016.

Further research/reviews required

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