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Title **RADIOFREQUENCY ABLATION FOR CANCER TREATMENT**

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http://www.moh.gov.my/index.php/database_stores/store_view_page/30/278

Aim

To assess the effectiveness, safety and cost-effectiveness of radiofrequency ablation for cancer treatment

Conclusions and results

Liver cancer

Good level of retrievable evidence to suggest that radiofrequency ablation has comparable outcomes with surgical resection in terms of survival rates in patients with early stage hepatocellular carcinoma. In terms of recurrence, radiofrequency ablation has been found to be as effective as surgical resection for a solitary lesion < 3cm in size with a favourable location within the liver. The use of radiofrequency was safe with lower complication rates compared to surgical resection.

Colorectal cancer liver metastases

Limited good level of retrievable evidence to suggest that surgical resection was associated with better three-year and five-year survival rates as well as greater three-year and five-year disease-free survival rates compared to radiofrequency ablation in patients with colorectal cancer liver metastases. Rradiofrequency ablation was safe and associated with lower post-operative morbidity compared to surgical resection.

Lung cancer

Limited fair level of retrievable evidence to suggest that radiofrequency ablation was effective in the treatment of primary non-small cell lung carcinoma and pulmonary lung metastases in terms of survival. However, there was significant difference found in risk of local progression for tumours larger than 4 cm (P = 0.039).

Bone cancer

Limited fair level of retrievable evidence to suggest that radiofrequency ablation was effective for pain reduction in patients with painful bone metastases and osteoid osteoma located in the upper and lower extremities. Minor complications reported were mainly skin burn at the entry point.

Pancreatic cancer

Limited good level of retrievable evidence to suggest that radiofrequency ablation may have survival benefit in patients with stage III unresectable locally advanced pancreatic cancer. Radiofrequency ablation-related morbidity ranged from 10% to 37% which included pancreatic fistulae, portal vein thrombosis, gastrointestinal bleeding and acute pancreatitis. Radiofrequency ablation-related mortality ranged from 0% to 19% with the cause of death included gastrointestinal bleeding and sepsis.

Renal cancer

Limited fair level of retrievable evidence to suggest that radiofrequency ablation was effective for local tumour control in patients with early-stage renal cancer, particularly for tumours < 3.5 cm. Median post-treatment survival was seven years for patients with tumours < 4 cm and five-year overall survival was 80%. Limited evidence showed radiofrequency ablation was associated with higher local progression rates in patients with clinically localized, sporadic renal tumours compared to cryoablation. Major complications reported were mainly injuries to the collecting system resulting in urinary stricture or urine leak. Minor complications included perinephric haematoma not requiring transfusion, transient neuropathy, transient arrhythmia and transient hypertension.

Cost-effectiveness

Based on the cost-utility analysis, for very early hepatocellular carcinoma and in the presence of two or three nodules ≤ 3 cm, radiofrequency ablation was more cost-effective than hepatic resection while for single larger early stage hepatocellular carcinomas, hepatic resection remains superior with better survival rates at an acceptable increase in cost.

Recommendations (if any)

Radiofrequency ablation can be used in early stage hepatocellular carcinoma, for pain reduction in bone tumour, for primary non-small cell lung carcinoma and pulmonary lung metastases < 4 cm and potentially used for tumour control in early-stage renal cancer, and in stage III unresectable locally advanced pancreatic cancer with caution on side effects. Patient selection should be done by multidisciplinary team and radiofrequency ablation should be performed by trained and experienced interventional radiologist.

Methods

Electronic databases were searched, which included PubMed, Medline, Journal @ Ovid full text via OVID, OVID EBM Reviews - Cochrane central register of controlled trials, EBM Reviews - Cochrane database of systematic review, FDA website, and from non-scientific database - Google search engine. In addition, a cross-referencing of the articles retrieved was also carried out accordingly to the topic. Relevant articles were critically appraised and evidence graded using US/Canadian Preventive Services Task Force.

Further research/reviews required

Patient selection should be carried out by multidisciplinary team and that radiofrequency ablation should be done by experienced and trained interventional radiologists.

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