

## EFFECTIVENESS AND SAFETY OF IRREVERSIBLE ELECTROPORATION FOR TREATMENT OF PANCREATIC AND HEPATIC CANCER. A SYSTEMATIC REVIEW

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[SPANISH FULL TEXT](#)

### SUMMARY

**Introduction:** Irreversible electroporation (IRE) is a non-thermal, tissue-ablation technique which brings about cellular destruction by means of a series of short high-voltage electric pulses. The absence of a thermal effect means that IRE can be effective in the ablation of tumours in the proximity of main blood vessels, nerve structures and, in the case of the liver, biliary conduits.

**Objectives:** To assess the effectiveness and safety of tumour resection by irreversible electroporation in the treatment of pancreatic cancer and metastatic primary liver cancer, compared to other ablation techniques and the standard treatment.

**Methods:** A search stipulating no time limit was made of the scientific literature until December 2013, in the following databases: Medline; Embase; Health Technology Assessment; Database of Abstracts of Reviews of Effectiveness; NHS Economic Evaluation Database; Reporter; Cochrane Database; *Índice Bibliográfico Español de Ciencias de la Salud*; *Índice Médico Español*; ISI Web of Knowledge; Biomed Central; Clinical Trials Registry; CenterWatch; and Current Controlled Trials. Of the papers yielded, only those that met the selection criteria were selected. The data were then extracted using a purpose-designed form and summarised in evidence tables. The studies were classified according to their methodological quality using the SIGN (Scottish Intercollegiate Guidelines Network) scale.

**Results and discussion:** Twelve studies, all of an observational nature, met the selection criteria and were included in the review (1 prospective matched study, 1 retrospective comparative study and 10 case series). Some studies had methodological limitations which could affect the results on effectiveness and safety, as well as potential conflicts of interest. In the treatment of pancreatic tumours, IRE achieved a higher survival rate -both overall and free of local and distal recurrence- than did the standard treatment (chemoradiotherapy). Other studies reported event-free survival of 6.7 months, and local-disease-free survival of 5.5 and 12.6 months (in patients with and without recurrence respectively). Specific adverse effects of pancreatic IRE were portal vein thrombosis (7.4%), ascites (5.6%), and biliary and pancreatic leaks (3.7%). In hepatic tumours, no differences were observed in post-procedural pain among patients treated with IRE or radiofrequency. In the remaining studies, wide variability was observed in the percentage of complete response, ranging from 53% to 100%. The most frequent complications were transient alanine aminotransferase elevations, pain, urinary retention, bile duct dilatation and cardiac arrhythmias.

**Conclusions:** The available scientific evidence on this technique's effectiveness and safety is based on a small number of observational studies, some with methodological limitations and possible biases that might affect the results. Heterogeneity when it comes to establishing and defining outcome variables, in patient populations and in the approach to IRE, renders inter-study comparison of results difficult. What this means is that no conclusions can be drawn as to whether IRE is more effective and safer than other ablation techniques or the standard treatment, until such a time as there are results yielded by studies having a good methodological design and a long-term follow-up.