Catheter Ablation of Atrial Fibrillation

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Summary and Conclusions

TECHNOLOGY AND TARGET GROUP Atrial fibrillation is a cardiac arrhythmia, characterized by uncoordinated atrial activation with consequent deterioration of atrial mechanical function, and associated with an irregular, frequently rapid ventricular response. Atrial fibrillation is the most common rhythm disturbance. It is associated with impaired heart function and an increased risk for thromboembolic events. Antiarrhythmic drugs for maintenance of sinus rhythm or heart rate control may be effective in many patients. In patients suffering from highly symptomatic atrial fibrillation despite pharmacological treatment, other interventions may be necessary. Catheter ablation therapy is a new treatment option that involves several different techniques. Heat energy is delivered, via a catheter, to the area of the left atrium, or around the pulmonary veins that are involved in generating or maintaining atrial fibrillation. Since complication rates increase with age, and since experience in treating patients over 70 years of age is limited, the method is primarily intended for individuals below 70 years of age. In Sweden, the potential target group for this method is estimated to include approximately 850 patients per year.

PRIMARY QUESTION How effective is catheter ablation therapy in curing atrial fibrillation?

PATIENT BENEFIT The studies currently available are non-randomised, and are of low quality. Treatment results reported by these studies vary widely. This can partly be explained by differences with respect to patient selection, type of atrial fibrillation, applied method, catheterization experience, criteria for treatment effects, and follow-up time. Results from the only controlled (but not randomized) study showed lower morbidity and mortality among patients who had undergone catheter ablation therapy compared to those treated with medication. Quality of life was influenced more favorably following ablation therapy. Catheter ablation for atrial fibrillation was less effective in patients with persistent than in those with paroxysmal atrial fibrillation. Catheter ablation therapy is associated with risks for serious complications, mainly pulmonary vein stenosis and injury to adjacent structures behind the left atrium, eg, the esophagus.

ETHICAL ASPECTS Patients with severe symptoms comprise the current target group for catheter ablation therapy. It is extremely important for these patients to receive complete information about the most recent evidence on the effects and risks of treatment.

ECONOMIC ASPECTS The cost of the procedure has been estimated at approximately 85 000 Swedish kronor (SEK). To achieve the intended effect, it may be necessary to repeat the procedure, which increases the total average cost per treated patient. Health economic assessments addressing the cost-effectiveness of this method are not available.

SBU's appraisal of the evidence

The method remains in the development phase. There is insufficient scientific evidence for drawing conclusions about benefits for patients and the method's cost-effectiveness (Evidence grade 4)*. Results from randomized controlled trials are necessary to assess fully the positive and negative effects of the method and its cost-effectiveness.

**Grading of the level of scientific evidence for conclusions.*
The grading scale includes four levels;
Evidence grade 1 = strong scientific evidence,
Evidence grade 2 = moderately strong scientific evidence,
Evidence grade 3 = limited scientific evidence,
Evidence grade 4 = insufficient scientific evidence.

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The complete report is available only in Swedish.