



Stereotactic arrhythmia radioablation (STAR) – A systematic review and meta-analysis of prospective trials on behalf of the STOPSTORM.eu consortium

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The STOPSTORM project brings together top European medical centers to work on a new treatment for Ventricular Tachycardia (VT), a dangerous heart rhythm disorder with a very fast heartbeat. Normally used to treat cancer, a special radiation therapy called Stereotactic Radiotherapy (SRT) is now being tested as a new option for people with VT who haven't responded to other treatments. The project, known as STOPSTORM, is funded by the European Union and includes more than 35 partners across over 10 countries.

In this study, Marcin Mischczyk and Wiert Hoeksema, along with other members of the [STOPSTORM.eu](https://stopstorm.eu) consortium, conducted a detailed review and analysis of research on STAR (Stereotactic Arrhythmia Radioablation), a new treatment method for VT. They used a systematic review, which is a methodical and clear approach to gathering and summarizing all available research on a topic, to ensure the data is of high quality. They also performed a meta-analysis, which combines the results of multiple studies to provide a single, stronger conclusion.

The goal of their work is to help doctors make better treatment decisions, improve future research, and assist health policy makers. By collaborating with the [STOPSTORM.eu](https://stopstorm.eu) team, they were also able to include valuable unpublished data in their analysis.

Current Publication Overview: This study compiles data from clinical trials on a new treatment called Stereotactic Arrhythmia Radioablation (STAR), aimed at treating ventricular tachycardia (VT), a serious heart rhythm disorder that can be life-threatening, especially when it doesn't respond to standard treatments.

Objectives of the Publication: The main goal of this study was to gather and analyze data from clinical trials to evaluate how effective and safe STAR is for treating VT. The researchers focused on key outcomes like how long it takes for the disease to return, overall survival rates, and the occurrence of severe side effects from the treatment.

Methods: The authors conducted a systematic review, which involves following a clear, standardized process to find and evaluate relevant studies published in scientific journals. They took extra steps to improve the quality of the data, such as reaching out to study authors for additional details and using mathematical techniques to refine the data.

Meta-Analysis: The authors used a statistical method called meta-analysis to combine the results from different studies, allowing them to calculate average outcomes across all the data.

Key Findings:

1. **Safety:** STAR treatment had some side effects, but they were mostly mild to moderate. About 10% of patients experienced serious side effects within 90 days, mainly related to existing heart conditions, and it's unlikely that STAR was the direct cause of these issues.
2. **Effectiveness:** STAR significantly reduced VT episodes in most patients. 61% saw a reduction of 95% or more in their symptoms, while 90% had at least a 50% reduction. Although STAR is effective, some patients still experienced occasional VT episodes after the treatment.
3. **Durability of Effect:** One year after treatment, about 20% of patients were both alive and free of VT, indicating that while STAR provides relief for most, the condition can return over time. This is partly because STAR is used for patients with very advanced, treatment-resistant VT, which tends to progress despite treatment.
4. **Survival Rates:** After one year, around 27% of the patients had passed away, likely due to the severe nature of their condition. This aligns with other studies of patients with advanced heart failure, where mortality rates can be high.

Conclusions: STAR shows promise as a treatment for VT when other therapies have failed. It can greatly reduce the frequency of VT episodes, and the risks associated with the treatment are moderate. However, because long-term outcomes are not well understood and there are no large-scale comparative studies yet, STAR should mainly be performed in academic medical centers, ideally within clinical trials.

What This Means for You: If your VT hasn't responded to standard treatments, STAR could be a potential option to discuss with your doctor. Keep in mind that while STAR is promising, it is still considered experimental. Your doctor can help you weigh the pros and cons based on your specific condition and may guide you to an academic medical center where STAR can be considered as part of a clinical trial.