



## Original article

# Understanding how patients use visualization during ablation of atrial fibrillation in reducing their experience of pain, anxiety, consumption of pain medication and procedure length: Integrating quantitative and qualitative results



Marianne W. Nørgaard<sup>a,\*</sup>, Preben U. Pedersen<sup>b</sup>, Merete Bjerrum<sup>c</sup>

<sup>a</sup> Cardiology Clinic, the Heart Centre, Copenhagen University Hospital, Rigshospitalet, Denmark

<sup>b</sup> Centre of Clinical Guidelines, Health Science faculty, Department of Health Science and Technology, Aalborg University, Denmark

<sup>c</sup> Department of Public Health, Section of Nursing Science, Health, Aarhus University, Denmark

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## ABSTRACT

**Background:** Patients who undergo radiofrequency ablation of atrial fibrillation with a light conscious sedation often feel pain during the procedure which can be difficult to relieve with pharmacological pain treatment alone. In a quasi-experimental study, it was found that visualization together with usual pain medication reduced the amount of analgesics used. In addition, patients spontaneously expressed pain significantly fewer times outside the scheduled measurements. No difference was found in the perception of pain intensity or anxiety and procedure length in the study. In a subsequent qualitative study with patients from the intervention group in the quantitative study, patients reported visualization as a positive experience which helped them manage pain and anxiety by supporting their individual strategies and without inconvenience.

**Aim:** To examine patients' experiences with the effect of visualization during ablation of atrial fibrillation and its association with pain intensity, anxiety, pain medication and procedure length.

**Methods:** A mixed-method study with explanatory sequential design including a quasi-experimental study with a control and an intervention group and a qualitative interview study with semi-structured interviews. The results from the two studies in the mixed method study have been integrated by merging and constructing follow-up joint displays.

**Results:** Three themes were identified from the integration of the results from the quantitative and qualitative studies when analyzing and interpreting the results: "Zero pain is not always the goal"; "Not a real procedure time reduction but a sense of time shrinkage" and "Importance of the nurse's presence, visualization or not".

**Conclusion:** Visualization can help patients to manage procedural pain when going through ablation of atrial fibrillation but the effect of an intervention such as visualization cannot be measured by pain intensity because the effect of visualization helps patients to cope with the pain and not to reduce the experience of pain intensity. It was shown that the patients had a feeling of reduced procedure time, although it was not reduced statistically significantly by using visualization. Finally, patients did not feel high anxiety during the procedure which was in line with very low values of anxiety measured in the quantitative study but at the same time the presence of the staff was of great importance to them in providing a feeling of security. A reduction of analgesics as found in the study is not only a matter of safety, it is also important in the patient's perception.

## 1. Introduction

Radio frequency (RF) ablation of atrial fibrillation (AF) can be painful if the patient is undergoing the procedure with conscious sedation. It can be difficult to relieve the pain with pharmacological pain treatment alone because the doses required for full pain relief result in serious side effects.

Some patients underwent ablation of AF thus had negative experiences arising both from unrealistic expectations mainly due to being in more pain or being more awake or due to the result of inadequate provision of periprocedural analgesia and sedation. Furthermore, it has been shown in a survey (n = 158) that 67% of the patients experienced pain during RF ablation of AF (Ezzat et al., 2013).

\* Corresponding author at: Cardiac Cath. lab., The Cardiology Clinic, the Heart Centre, Copenhagen University Hospital, Rigshospitalet, Denmark.  
E-mail address: [mwnorgaard@gmail.com](mailto:mwnorgaard@gmail.com) (M.W. Nørgaard).

RF ablation of AF is a common and well established invasive cardiac procedure, which is carried out ever more frequently worldwide (Haegeli & Calkins, 2014). A survey study including 85 Heart Centers from 24 countries in four continents showed that the median number of procedures per center was 245 (range 2 to 2715) from 2003 to 2006 (Cappato et al., 2010). Compared to treatment with anti-arrhythmia drugs, RF ablation results in superior outcome with regards to cure and subsequent enhanced quality of life (Pappone et al., 2011). However, the RF ablation procedure can last several hours and often causes varying degrees of pain and discomfort to the patients despite pharmacological analgesia (Carnlof, Insulander, & Jensen-Urstad, 2014; Laish-Farkash et al., 2016). The procedure can be performed under either general anaesthesia or with conscious sedation with opioids and sedatives according to patient characteristics, experience, and protocols of the different institutions. No gold standard exists for conscious pain management during RF ablation of AF (Thomas, Thakkar, Koor, Thiagalingam, & Ross, 2014). Opioids and sedatives, however, have a risk of side effects with cardiovascular and respiratory complications. In addition side effects such as nausea, vomiting and over-sedation can be seen even with usually well tolerated doses of these drugs (Pachulski, Adkins, & Mirza, 2001; Smith & Laufer, 2014). Generally, optimal pain relief requires a combination of a variety of pain medications and the use of a non-pharmacological intervention as a supplement (Given, 2010; Skott, 2009).

Visualization or hypnosis interventions have been used as adjuncts to usual analgesics to address procedural pain and anxiety for patients undergoing minimally invasive procedures and have been shown to reduce the amount of strong pain medication used during the procedure without increasing pain and anxiety (Kendrick et al., 2016; Nørgaard et al., 2013).

Visualization or clinical hypnosis is defined as a procedure under which a person [e.g. a patient] is guided by another [e.g. a nurse] to change their subjective experience, feeling, thoughts or behavior [e.g. pain]. Usually visualization starts with an induction, followed by suggestions to integrate sounds and noise from the surroundings in the procedure room and suggestions about analgesia, by using the patients' previous experiences with analgesia (Green, 2003). Hypnotic analgesia interventions are commonly provided before and/or during a minimally invasive procedure, face-to-face by a specially trained person using a manual or as a prerecorded CD using headphones (Kendrick et al., 2016).

In order to investigate whether visualization could be a suitable adjunct to the usual analgesics used during RF ablation of AF to relieve the patient's perceived pain and anxiety during the procedure a clinically controlled study was conducted (Nørgaard et al., 2013). It was found that visualization reduced the amount of analgesics used during the ablation and that the patients in the intervention group spontaneously expressed pain significantly fewer times outside the scheduled pain measurements. No difference was found between patients in the intervention group (IG) and the control group (CG) in the perception of pain intensity and anxiety in contrast to previously published reports (Lang et al., 2000; Lang et al., 2006; Lang et al., 2008).

Subsequently, a qualitative interview study (Nørgaard, Pedersen, & Bjerrum, 2015) including 14 patients in the IG from the study described above, was conducted. In conclusion the patients reported that visualization helped them manage pain and anxiety by supporting their individual strategies and without inconvenience. Furthermore the patients reported that their experiences of pain were reduced in some way and they experienced other benefits not related to pain and thus a high level of treatment satisfaction.

So the quantitative and the qualitative studies separately provided important results. However, by integrating the results from the two studies in a mixed methods study, a deeper and more comprehensive understanding of how visualization could and should help patients through the ablation of AF could be obtained with new insights beyond the information gained from the individual studies and where use could

be made of the shortcomings of each study (Creswell, 2015; Guetterman, Fetters, & Creswell, 2015). This insight might also be very important for the patients' treatment when going through an invasive procedure, as the staff would have a more in-depth understanding of a technique or tool for managing pain during ablation of AF and could inform patients how to use this technique and what they could use it for.

Assumably the results from the qualitative study can provide explanation on some results from the quantitative study, e.g. why the pain intensity could not be reduced when at the same time the amount of pain medication could be reduced significantly and why the patients spontaneously expressed pain fewer times in the IG when the pain intensity was at the same level in both groups. By using quantitative methodology alone which measured the patient-related outcomes pain intensity with instruments that might not capture the true essence of these phenomena the effect of an effective intervention might not be recognized. (Nørgaard et al., unpublished "The effectiveness of hypnotic analgesia in the management of procedural pain in minimally invasive procedures: A systematic review", under preparation).

The present study therefore aims to examine the patients' experiences with the effect of visualization during ablation of AF and its association with pain, anxiety, pain medication and procedure length.

Research questions: 1) what are the patients' experiences with visualization during ablation of AF and the association of visualization with the effect of patients' experience of pain intensity, spontaneously expressed pain, and anxiety measured by NRS during the procedure? 2) What is the association between patients' perception of visualization and the effect of visualization on the consumption of pain medication used and the effect on the length of the procedure during ablation of AF?

No previous studies have, to our knowledge, used a mixed method design to explore an intervention such as visualization used to ameliorate pain and anxiety during ablation of AF.

## 2. Method

### 2.1. Design of the study

A mixed-method study with explanatory sequential design including a quasi-experimental study with a CG and an IG (Nørgaard et al., 2013) and a qualitative interview study with semi-structured interviews was conducted (Nørgaard et al., 2015). The results of the mixed method study are an integration of the results from the quantitative CG and IG with results from the qualitative study by merging and constructing joint display in a follow-up joint display (Creswell, 2015; Guetterman et al., 2015) Fig. 1. Findings from the integration of the mixed method study appeared after initial analysis and during the subsequent interpretation Table 3.

The present mixed method study reports part of the data from the published quantitative trial (Nørgaard et al., 2013) and the published qualitative study of the patients' experiences in relation to pain and anxiety during an intervention consisting of visualization, when undergoing ablation of AF (Nørgaard et al., 2015).

Each study had its specific aims and research questions, in line with mixed methods design (Guetterman et al., 2015).

The quantitative study aimed to test the hypothesis that relaxation and visualization performed in patients during RF ablation of AF, combined with structured attentive behavior from the staff, could reduce the patient's perception of pain: pain intensity; spontaneously expressed pain; the consumption of analgesics and reduce anxiety - as well as the number of adverse events that required extra attention from the staff.

Research questions:

What is the effect of visualization on patients' experiences of pain/pain intensity, spontaneously expressed pain and anxiety?

What is the effect of visualization on the consumption of pain

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