Katheterablation bei Vorhofflimmern: welche Patienten sollten primär abadiert werden?

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Different possible evolutions of AF in relation to substrate remodelling and trigger density.

Subclinical onset
- Many triggers
- Few triggers

Clinical presentation
- Minimal myocardial remodelling
- Substantial myocardial remodelling

Trigger = Symptomatik

Nattel S et al. Eur Heart J 2014;eurheartj.ehu028
Major health modifiers promoting recurrent atrial fibrillation (orange boxes) and the likely intermediary mechanisms causing atrial damage and leading to atrial fibrillation (open boxes, top part, health modifiers taken from Fabritz et al.89).
Survival curves for the primary endpoint.

Rhythm outcome after catheter ablation compared to cardioversion and AAD in patients with persistent or long-standing persistent atrial fibrillation

**Freedom from recurrence of atrial fibrillation or atrial arrhythmias, comparing catheter ablation with antiarrhythmic drug therapy in patients with persistent or long-standing persistent atrial fibrillation**

<table>
<thead>
<tr>
<th>Study</th>
<th>Events</th>
<th>Events</th>
<th>Primary outcome</th>
<th>Freedom from atrial arrhythmias (RR)</th>
<th>95% CI</th>
<th>W(used)</th>
<th>W(random)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forbes</td>
<td>38</td>
<td>35</td>
<td>Ablation</td>
<td>1.87 [1.23; 2.83]</td>
<td>17.5%</td>
<td>27.7%</td>
<td></td>
</tr>
<tr>
<td>Maze 2001</td>
<td>69</td>
<td>101</td>
<td>AAD</td>
<td>1.61 [1.04; 2.50]</td>
<td>27.0%</td>
<td>31.5%</td>
<td></td>
</tr>
<tr>
<td>Cox 2001</td>
<td>17</td>
<td>77</td>
<td>Ablation</td>
<td>1.38 [1.00; 1.93]</td>
<td>49.1%</td>
<td>13.3%</td>
<td></td>
</tr>
<tr>
<td>Taillé 2006</td>
<td>13</td>
<td>26</td>
<td>AAD</td>
<td>2.00 [1.26; 3.19]</td>
<td>0.7%</td>
<td>1.4%</td>
<td></td>
</tr>
</tbody>
</table>

- **Fixed effects model**: 176/171
- **Random effects model**: 1.59 [1.33; 1.94]

AAD = antiarrhythmic drug therapy; CI = confidence interval; N = number of patients; RR = risk ratio; W = study weighting.

Initiation of long-term rhythm control therapy in symptomatic patients with atrial fibrillation

**Initiation of long-term rhythm control therapy to improve symptoms in AF**

- **No or minimal signs for structural heart disease**: Patient choice
- **Coronary artery disease, significant valvular heart disease, abnormal LVH**: Patient choice
- **Heart failure**: Patient choice

- **Dronedarone (IA)**
- **Mecaserine (IA)**
- **Propafenone (IA)**
- **Sotalol (IA)**

- **Catheter Ablation (IA)**
- **Amiodarone (IA)**

Sources:
- www.escardio.org/guidelines
- European Heart Journal - DOI: 10.1093/eurheartj/ehw110
## Complications related to catheter ablation of atrial fibrillation

<table>
<thead>
<tr>
<th>Complication severity</th>
<th>Complication type</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life-threatening complications</td>
<td>Periprocedural death</td>
<td>&lt;0.2%</td>
</tr>
<tr>
<td></td>
<td>Oesophageal injury (perforation/fistula)</td>
<td>&lt;0.5%</td>
</tr>
<tr>
<td></td>
<td>Periprocedural stroke (including TIA/air embolism)</td>
<td>&lt;1%</td>
</tr>
<tr>
<td></td>
<td>Cardiac tamponade</td>
<td>1–2%</td>
</tr>
<tr>
<td>Severe complications</td>
<td>Pulmonary vein stenosis</td>
<td>&lt;1%</td>
</tr>
<tr>
<td></td>
<td>Persistent phrenic nerve palsy</td>
<td>1–2%</td>
</tr>
<tr>
<td></td>
<td>Vascular complications</td>
<td>2–4%</td>
</tr>
<tr>
<td></td>
<td>Other severe complications</td>
<td>≥1%</td>
</tr>
<tr>
<td>Other moderate or minor complications</td>
<td>Asymptomatic cerebral embolism (silent stroke)</td>
<td>5–20%</td>
</tr>
<tr>
<td>Unknown significance</td>
<td>Radiation exposure</td>
<td></td>
</tr>
</tbody>
</table>
Katheterablation – Ready for Prime-Time

• Für symptomatische Patienten
  – Reine PVI

• Achtung:
  – Risikofaktoren
    • Schlafapnoe
    • Adipositas
    • Diabetes mellitus
    • Niereninsuffizienz
    • Art. Hypertonie

  – Cave: low volume centers

Atriales Substrat

Persistierendes Vorhofflimmern

Persistierendes AF

Sequence of ablation targets for persistent AF

1. PROCEDURE
   pulmonary vein isolation
   (target complete isolation)

2. PROCEDURE
   verify isolation of all pulmonary veins

3. PROCEDURE
   additional ablation

PVI incomplete:
   complete PVI

PVI complete:
   additional ablation

Linear lesions
   (verify block)**
   - roof line
   - mitral isthmus
   - posterior LA box

Consider (depending on local expertise***)
   coronary sinus isolation
   veins, cavo isolation
   targeting "rotors", "breakthroughs" or 
   "drivers" of AF

Treat concomitant cardiovascular conditions promoting recurrent AF
   continuously by lifestyle changes and medical therapy

*additional linear lesions should be performed in patients with macroreentrant atrial tachycardia / flutter
** there is little data to inform the choice of linear lesions and other additional ablation targets. Local expertise to achieve the desired ablation target (e.g. choosing short linear) should determine the choice.
*** right atrial isthmus ablation should be considered if isthmus-dependent atrial flutter is documented
Ablation vs. Amiodaron bei HI

AF-Ablation – First Line
Take Home

• Bei symptomatischen Patienten

• Patientenentscheidung

• So früh wie möglich (AA fördern Fibrose)

• Verhindert u.U. Progression der atrialen KMP und weiteren Komplikationen

• Strenge Mitbehandlung der RF (Va. OSA, Adipositas, Hypertonie)

• Ersteingriff (Kryo = HF)

• Zweiteingriff : HF (Substrat)

• Bei Herzinsuffizienz ← TAA (TCMP) frühzeitig