



**VŠEOBECNÁ FAKULTNÍ  
NEMOCNICE V PRAZE**



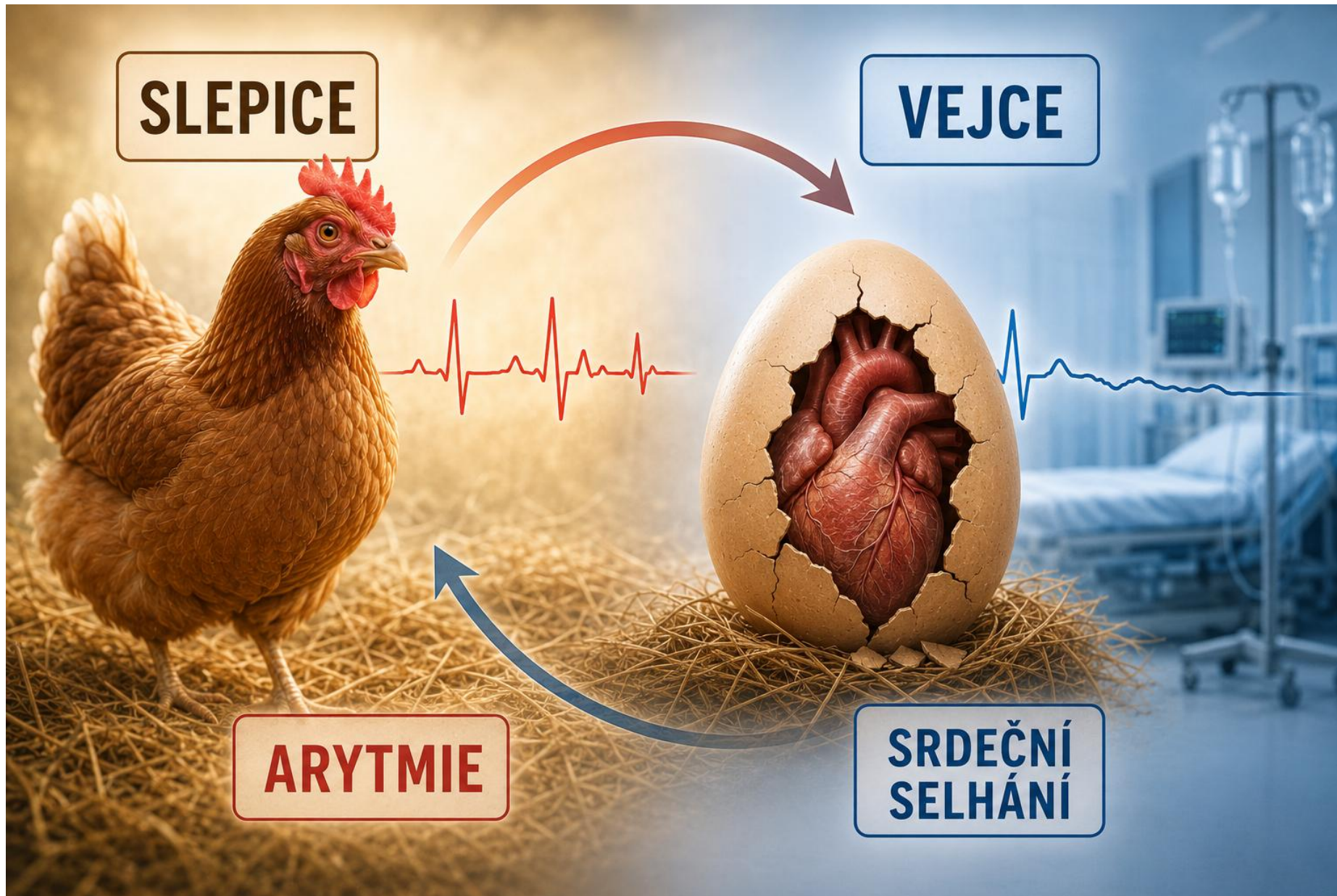
**1. LÉKAŘSKÁ  
FAKULTA**  
Univerzita Karlova

**Jak přistupovat k nemocnému s arytmiemi?**

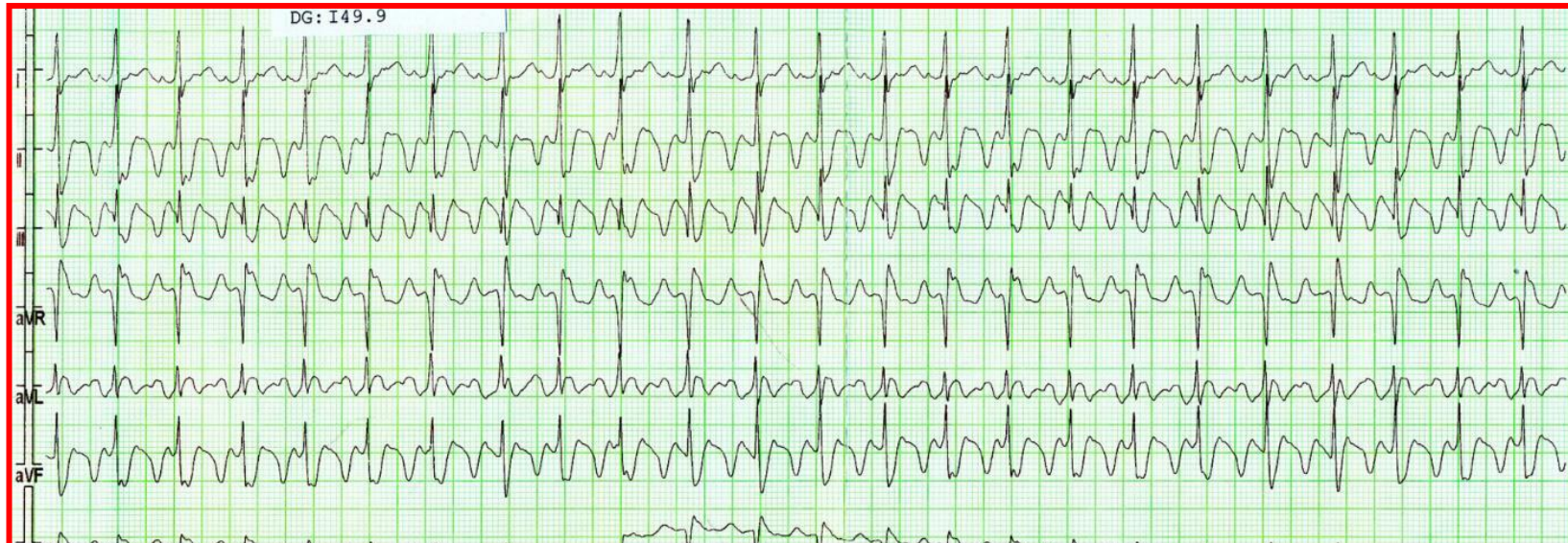
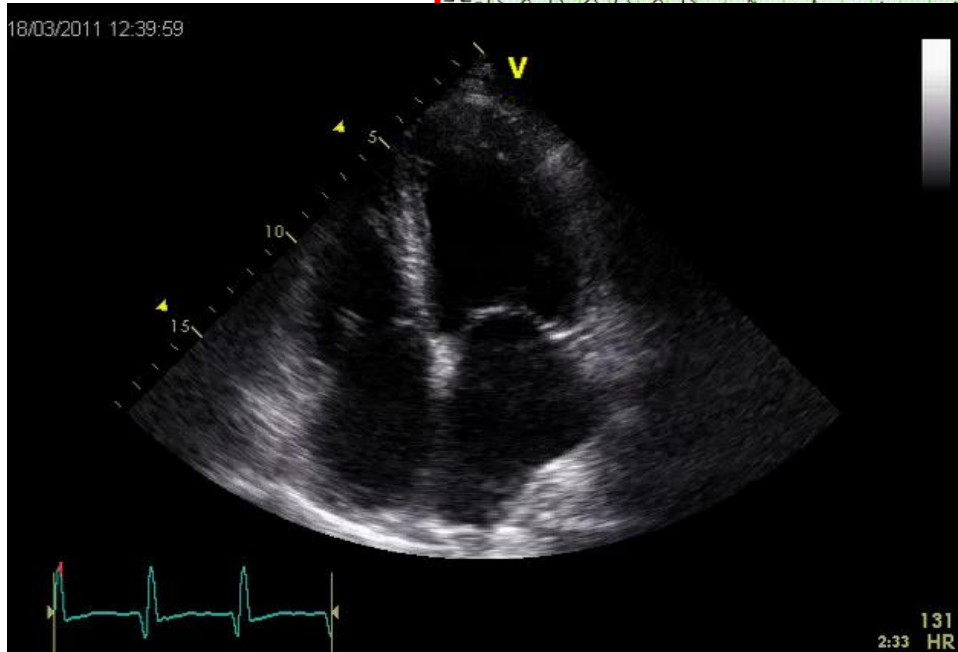
**Štěpán Havránek**

**II. interní klinika – klinika kardiologie a angiologie  
1. LF UK a VFN v Praze**

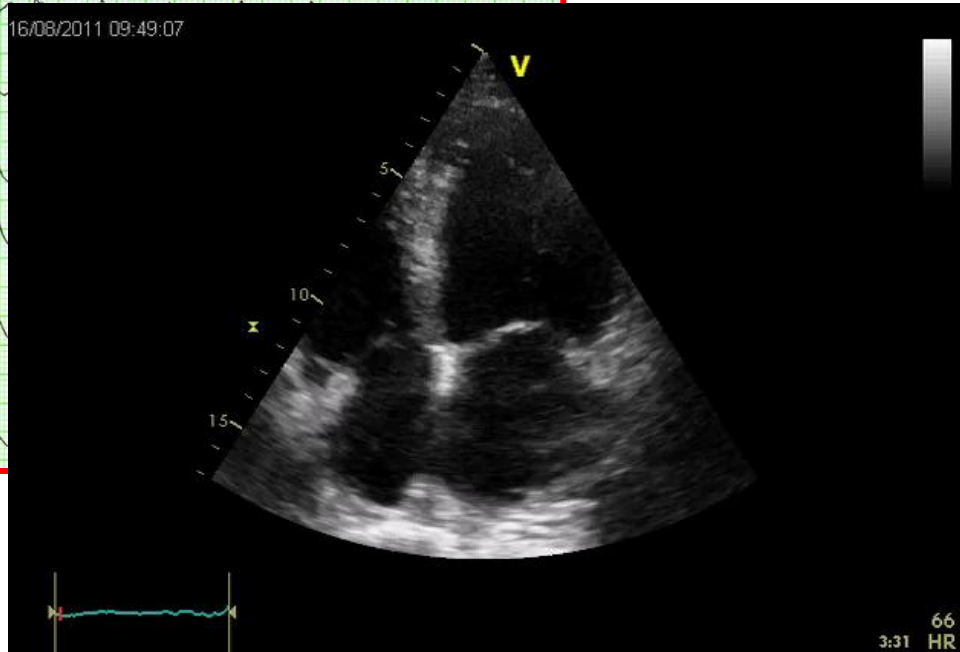
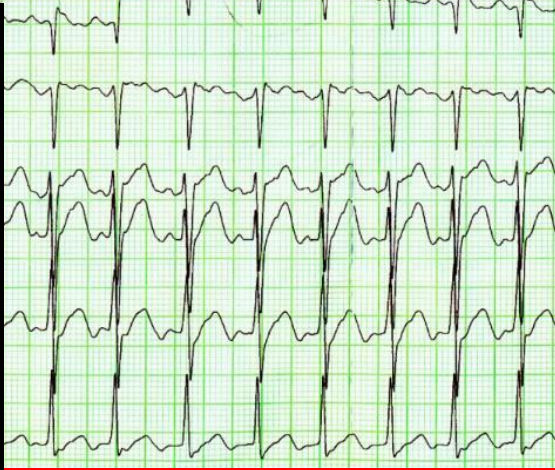


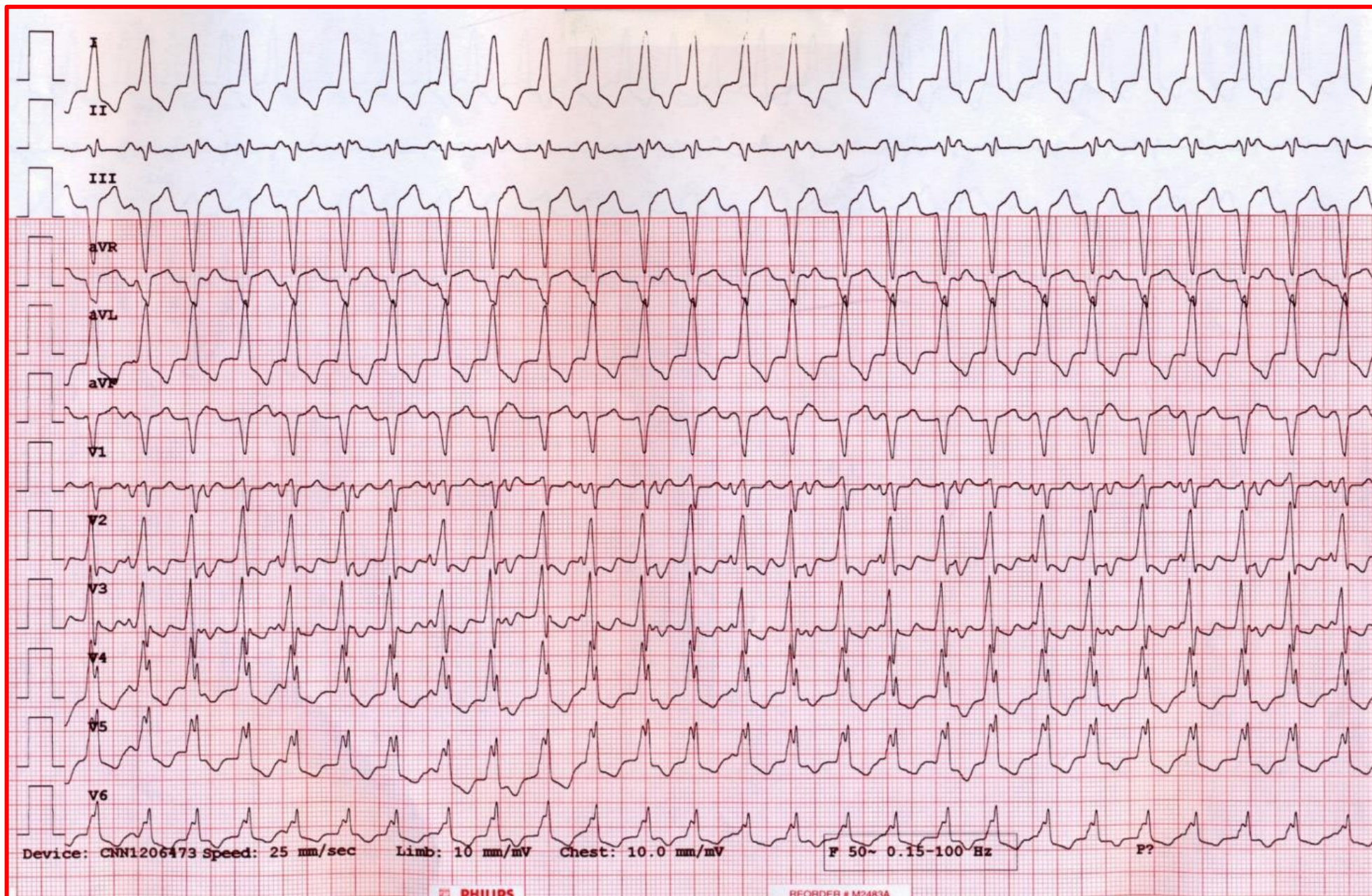


Vstupní

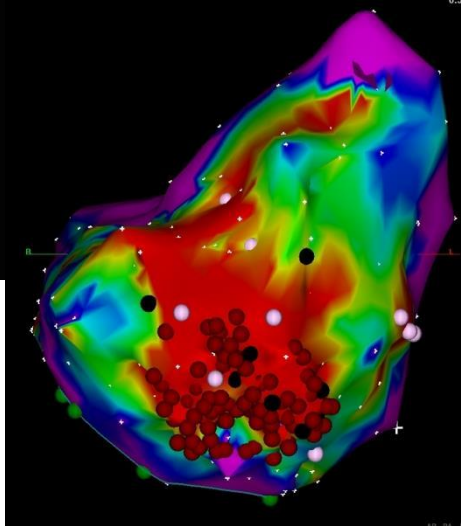
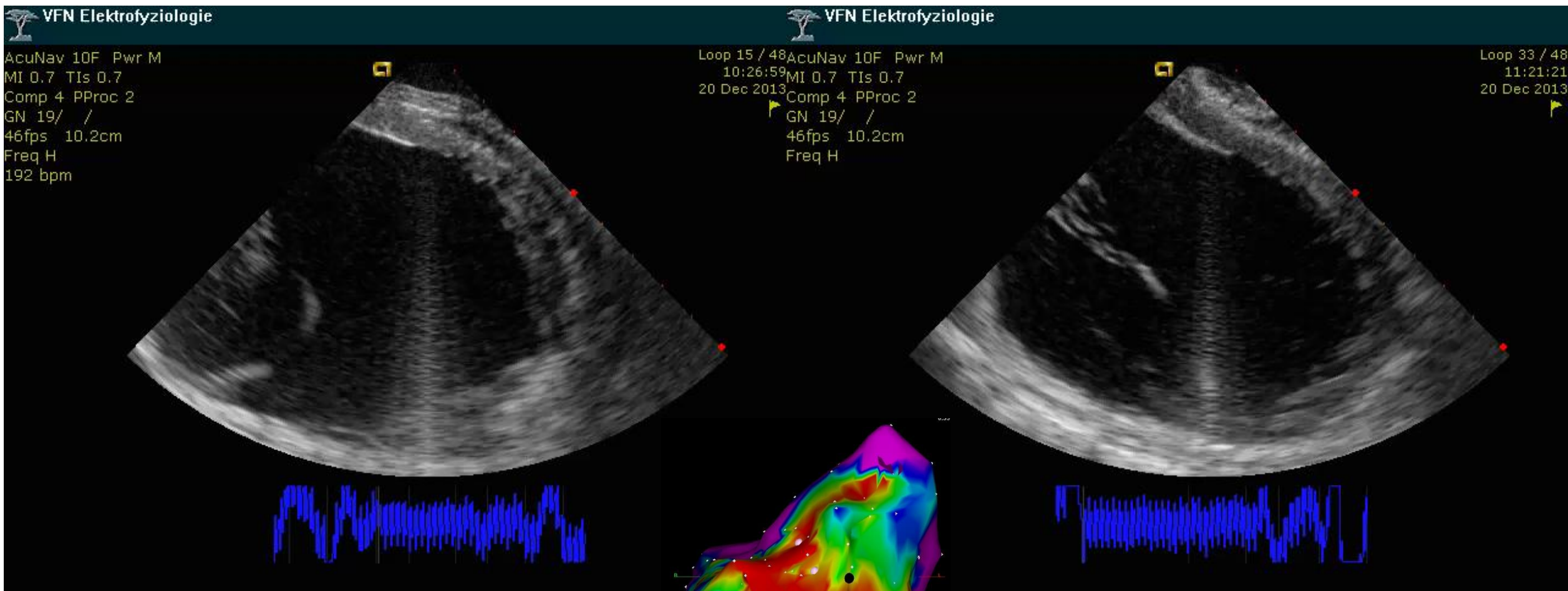


Za 7 dní

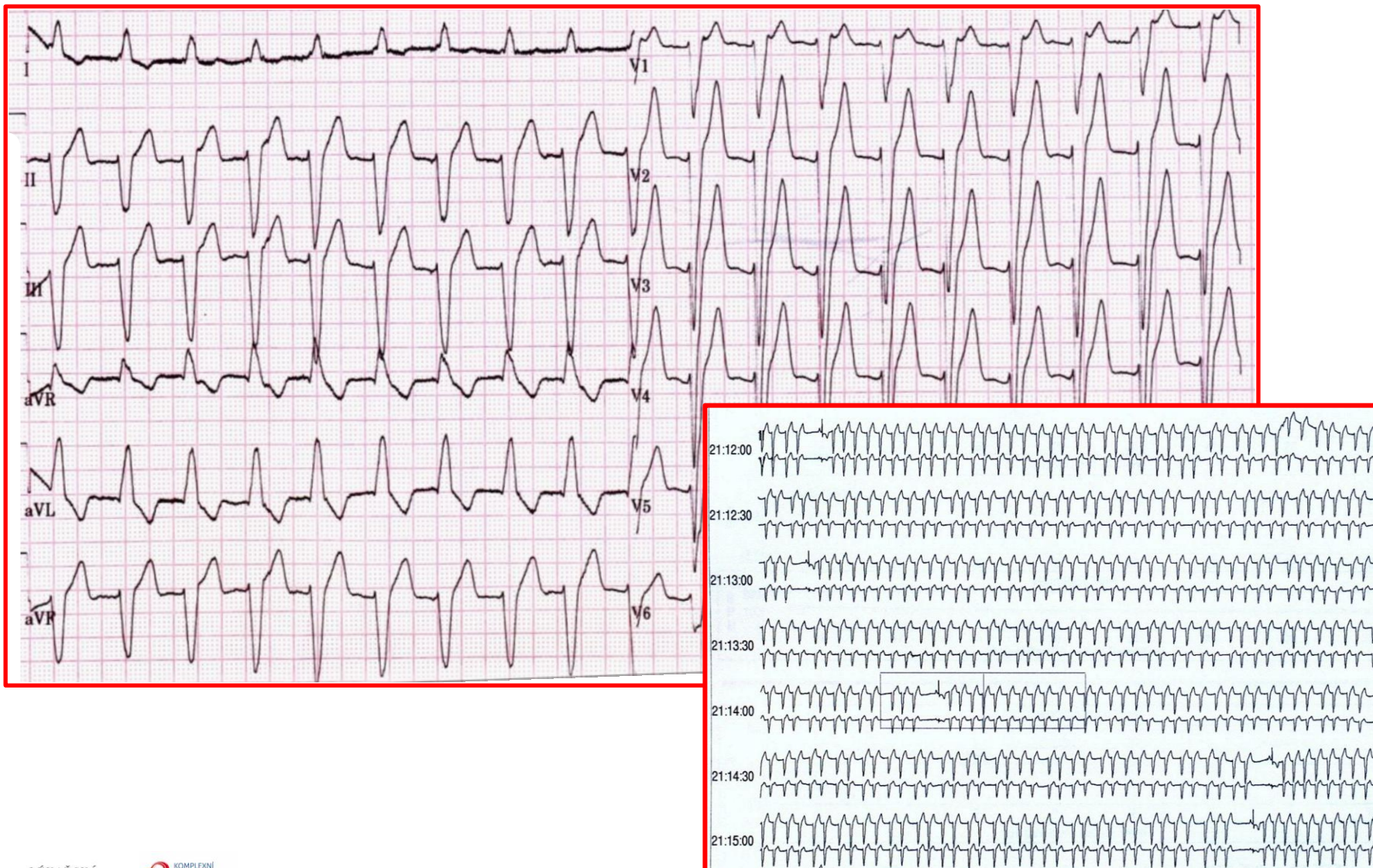




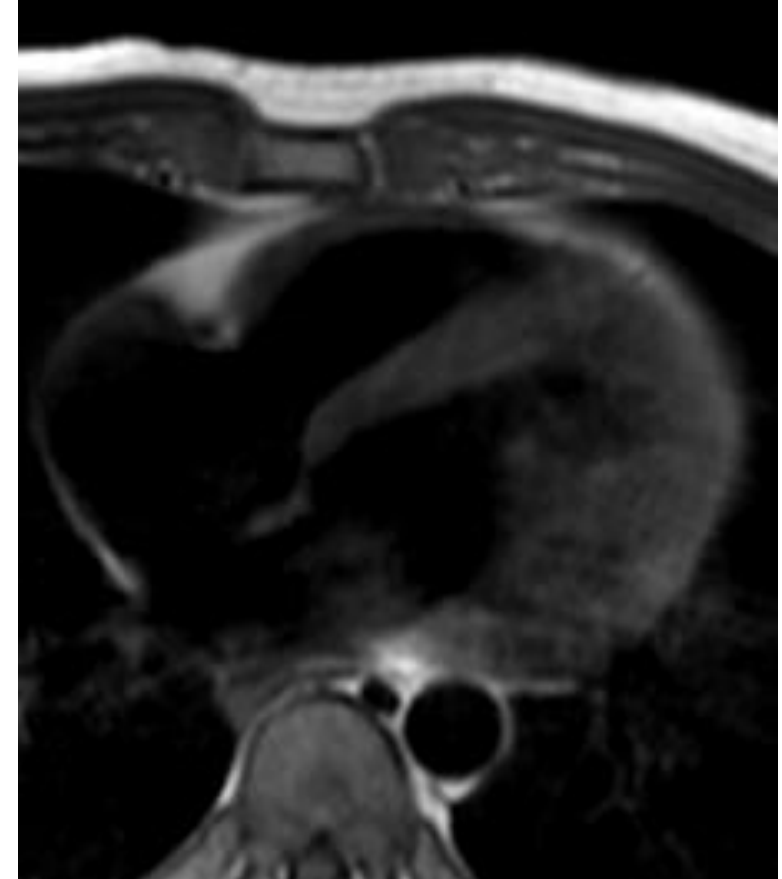
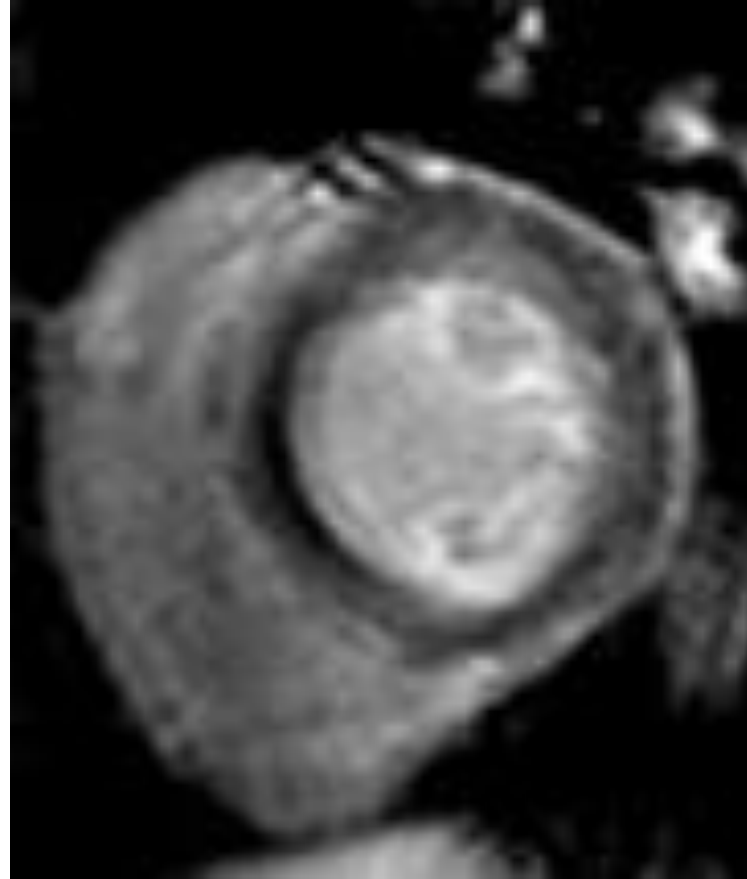
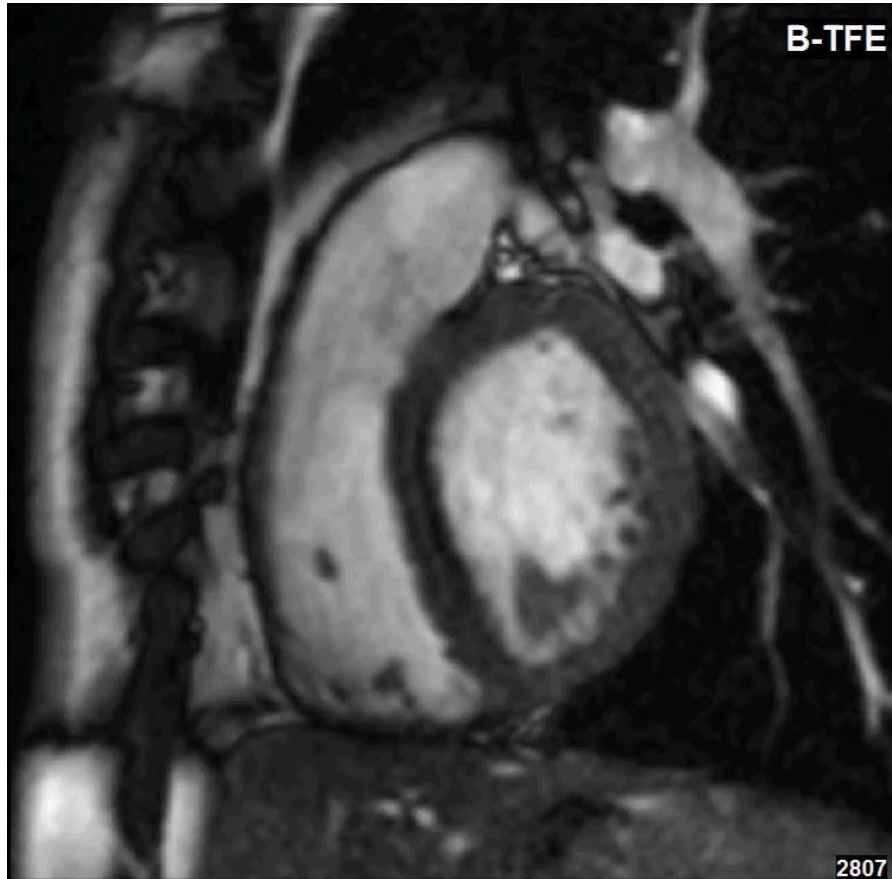
# Intrakardiální ECHO v SR a při tachykardii



# 26letý pacient s dušností NYHA II



# MRI



# Dva pohledy na arytmie u srdečního selhání

## Vychází ze dvou základních situací:

- Nepřítomnost jiné příčiny srdečního selhání.

**Arytmie selhání indukuje**

- Arytmie zhoršuje, exacerbuje, srdeční selhání při jiném strukturálním srdečním onemocnění (sama může být důsledkem srdečního selhání)

**Arytmie selhání modifikuje**

# FIBRILACE SÍNÍ

## JAKO PŘÍKLAD

## Příkladem může být fibrilace síní a indikace ke katetrizační ablaci

### Patients with heart failure

AF catheter ablation is recommended in patients with AF and HFrEF with high probability of tachycardia-induced cardiomyopathy to reverse left ventricular dysfunction.<sup>604,611</sup>

**I**

**B**

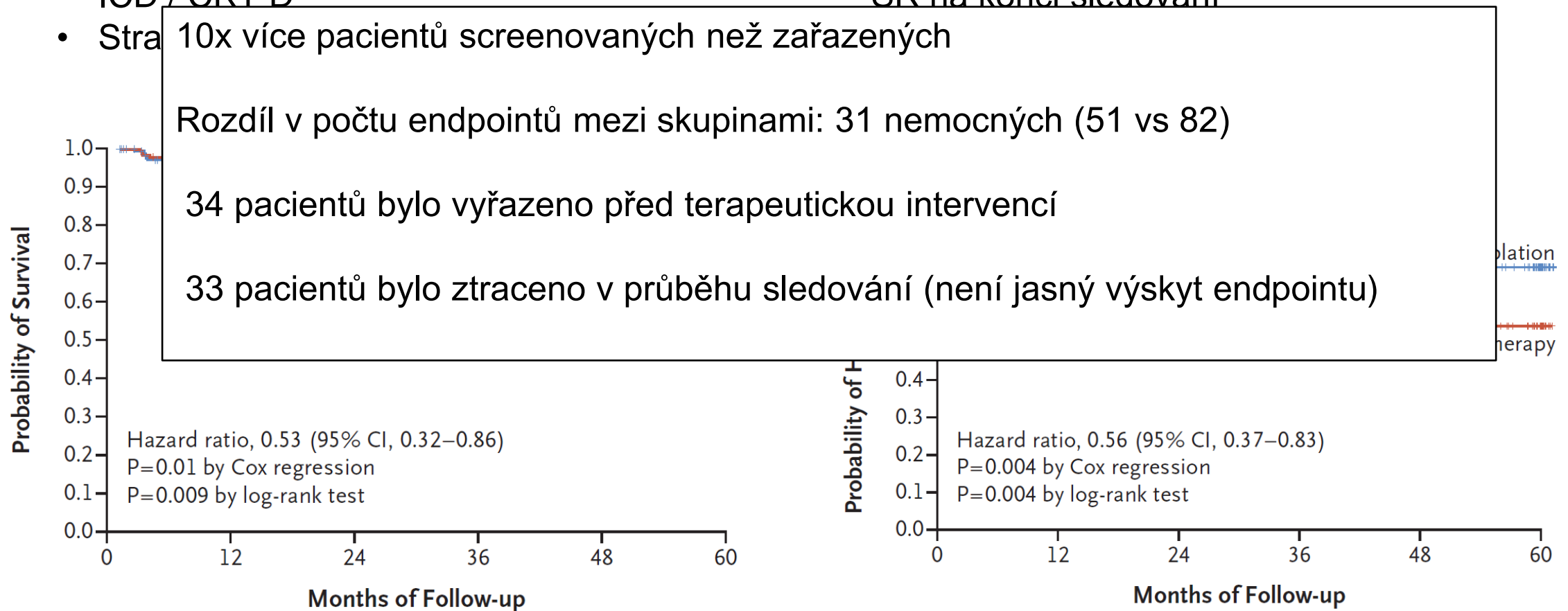
AF catheter ablation should be considered in selected AF patients with HFrEF to reduce HF hospitalization and prolong survival.<sup>4,513,514,604,610,612</sup>

**IIa**

**B**

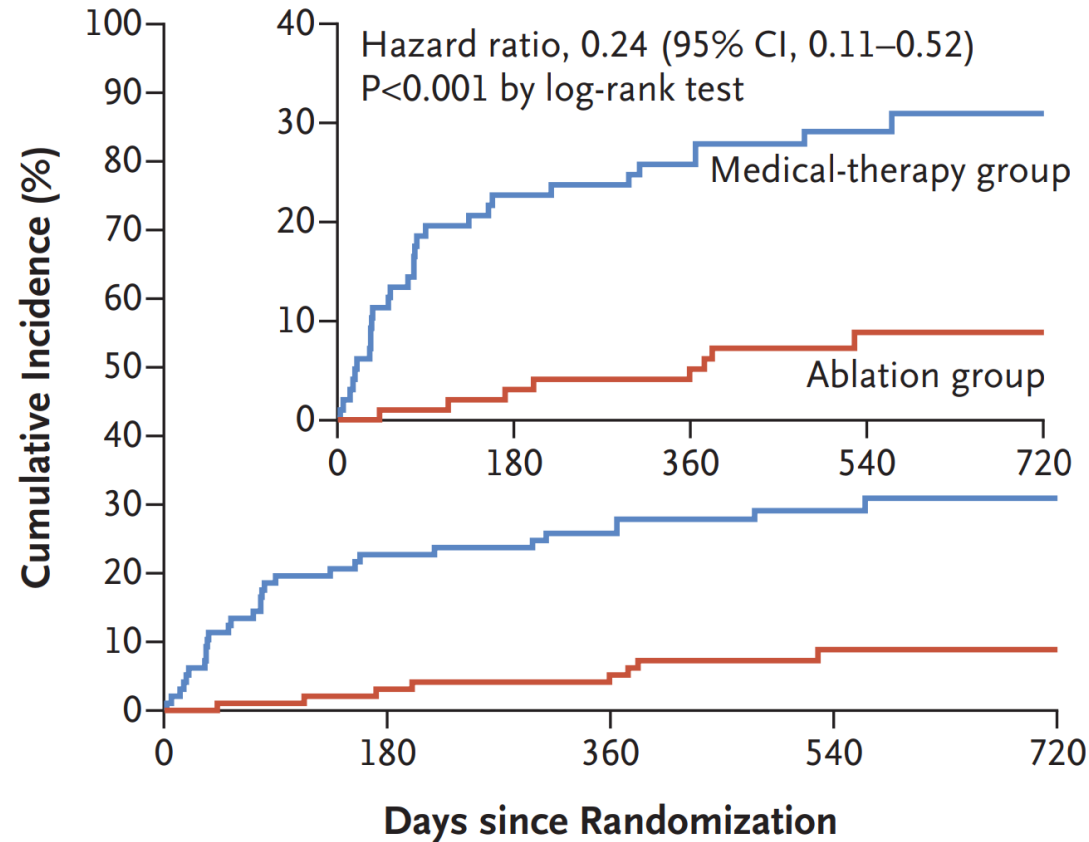
# CASTLE AF

- **Paroxysmální / perzistentní FS**
- **Ablační výkon** 179 nemocných
- **Konzervativní postup** 184 nemocných
- NYHA II-IV, EF LK  $\leq 35\%$
- ICD / CRT-D
- **Stratifikace** 10x více pacientů screenovaných než zařazených
- $\emptyset$  počet ablací: 1,3 / pacient
- Změna EF LK (baseline  $\emptyset$  32,5%)
  - Ablační:  $\sim 8\%$
  - Konzervativní: 0
- SR na konci sledování

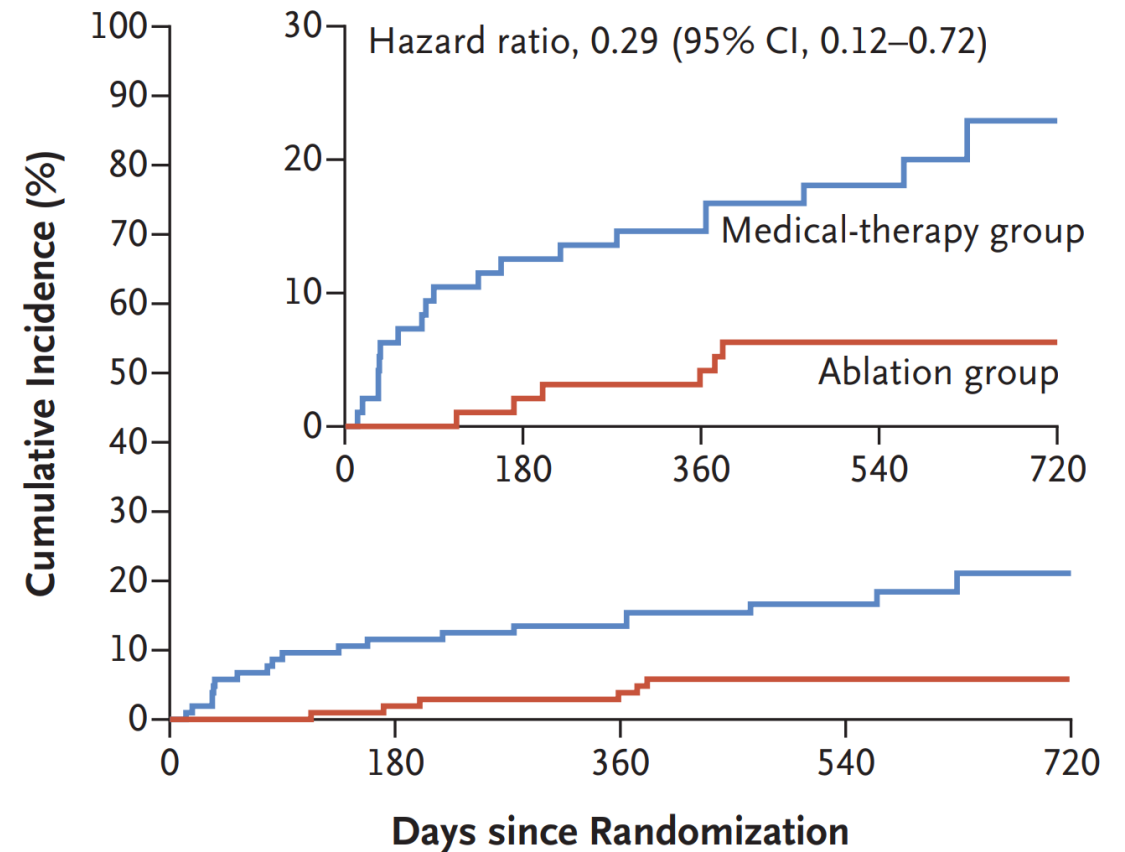


# CASTLE-HTx

## Primární endpoint



## Celková mortalita



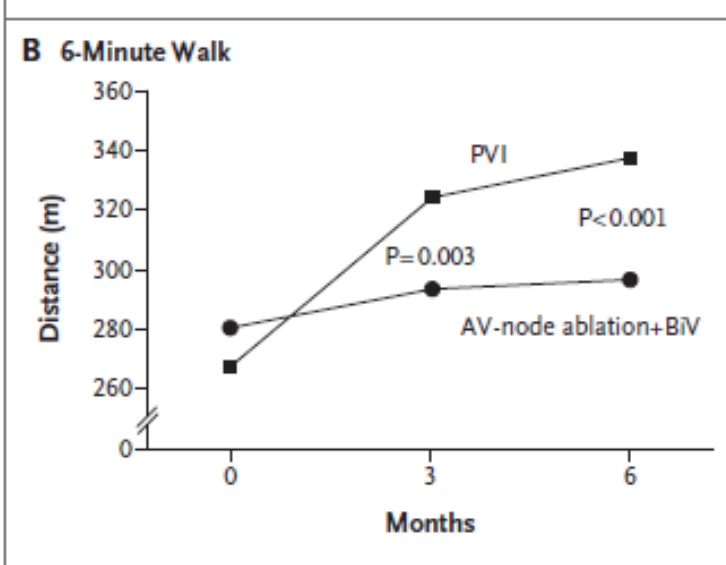
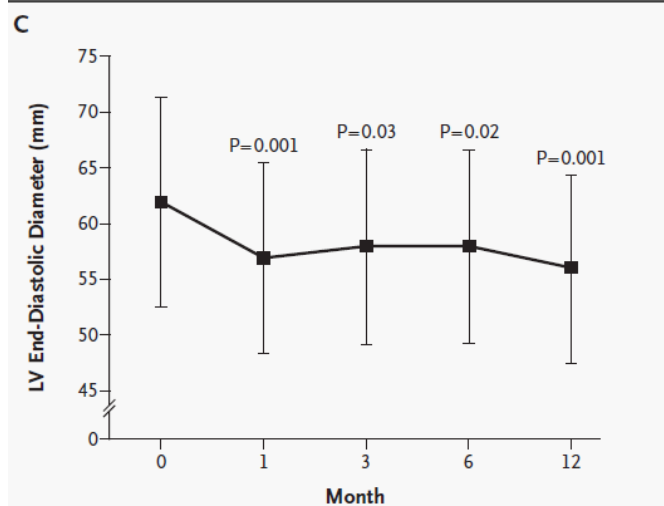
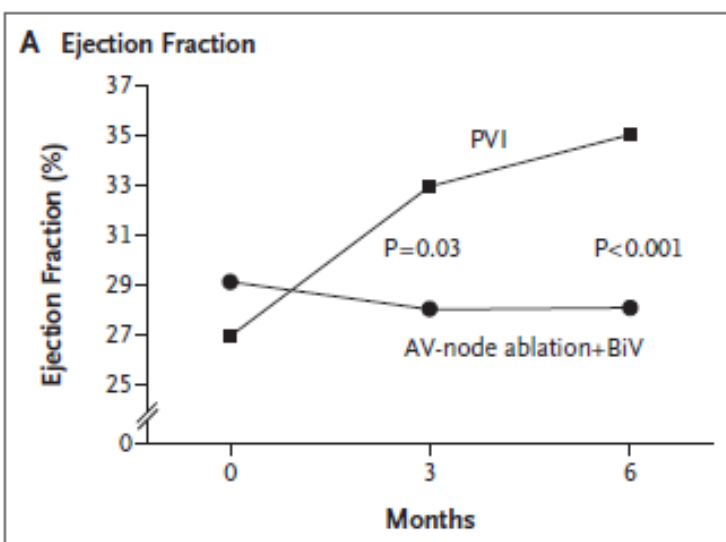
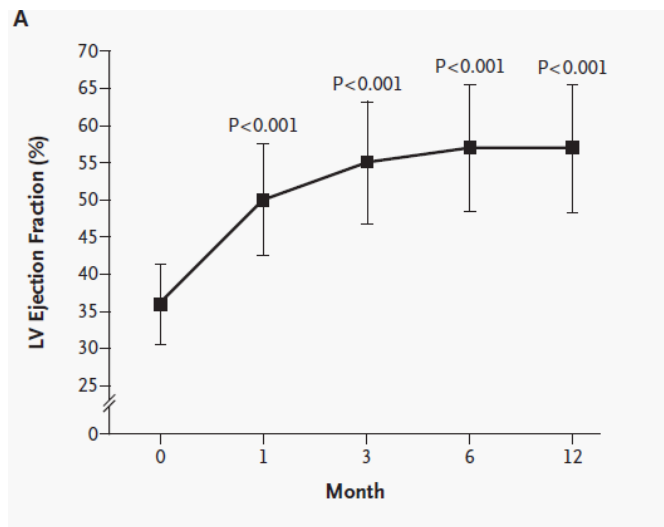
**Primární endpoint:** celková mortalita, transplantace, zavedení podpory

# Význam selektivní ablace na EF LK a funkční kapacitu

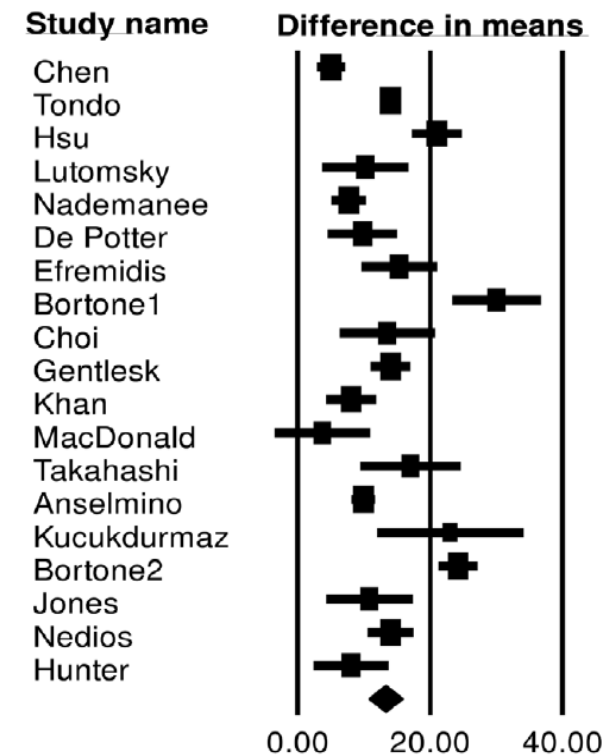
58 nemocných  
NYHA II-III, EF LK ≤ 45%

NYHA II-III, EF LK ≤ 40%  
Plná léčba SS, Parox a perz FS  
1:1

Metaanalýza 19 studií, 914  
pacientů  
82% po opakovaném výkonu  
**Zlepšení EF LK o 13%**



## LVEF Change with AF ablation



Hsu LF, NEJM 2004.

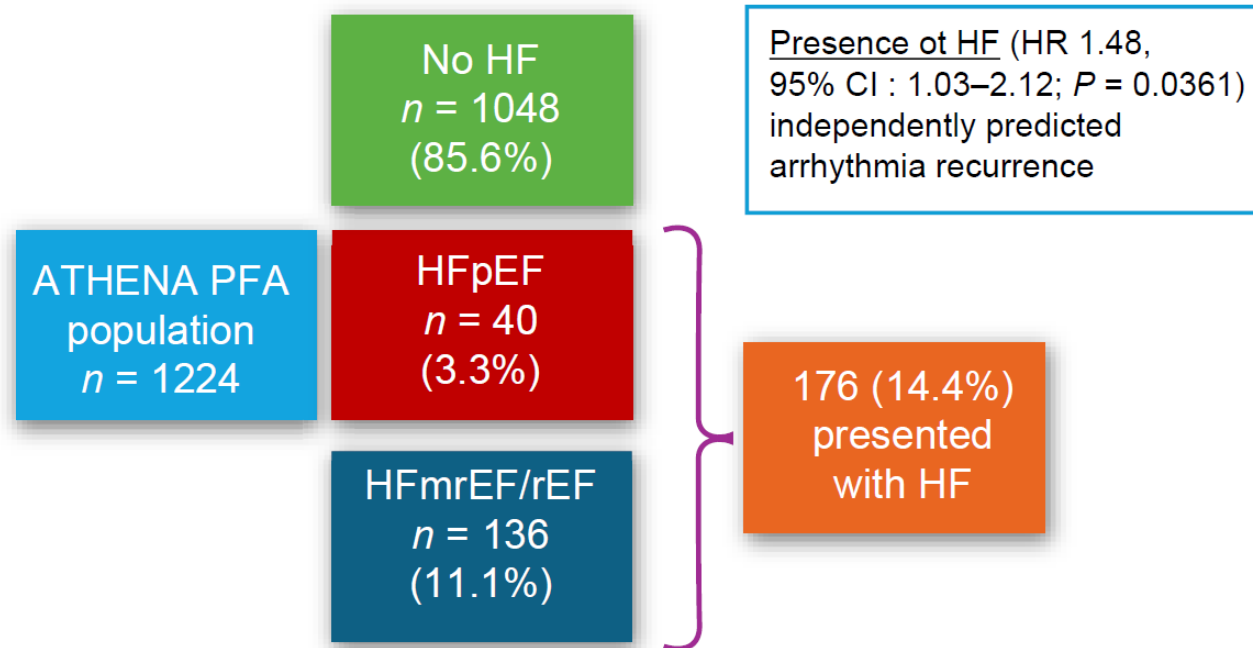
Khan M, et al. NEJM 2008.

Ganesan AN. Heart Lung Circ 2015.

# Odhad úspěchu selektivní ablace k ovlivnění EF LK

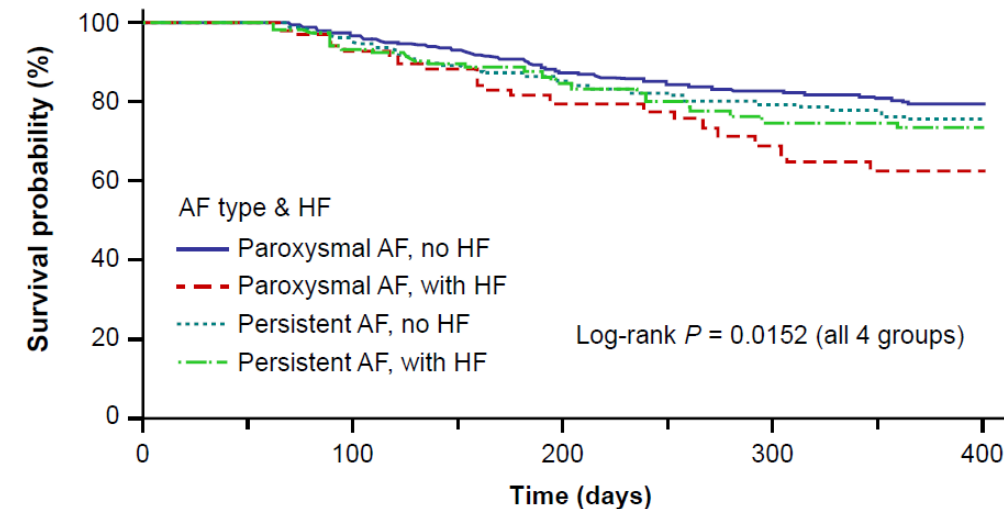
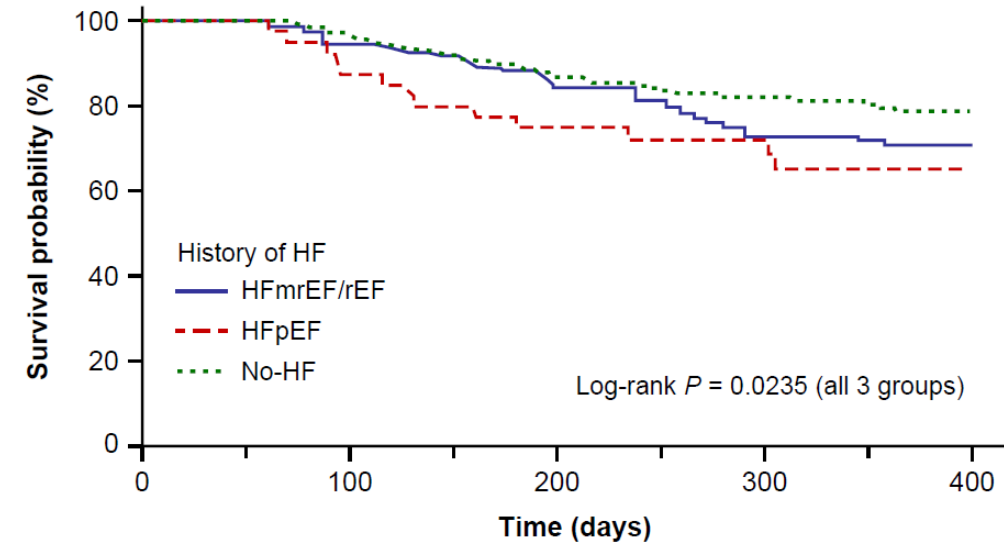
Lower NYHA class	Lower NYHA Class (I and II) at presentation is a predictor of significant LVEF recovery following AF ablation when compared with higher NYHA Class (III and IV) in patients with HFrEF <sup>256</sup>
Non-ischemic etiology	Non-ischemic HF etiology is a significant predictor of LVEF improvement after AF ablation in patients with HFrEF <sup>256</sup>
Persistent AF	Persistent AF is an independent predictor of LVEF improvement and left ventricular reverse remodelling after AF ablation in patients with impaired LVEF <sup>307-310</sup>
Narrow QRS	Narrow QRS ( $\leq 120$ ms) is an independent predictor of LVEF recovery after AF ablation in patients with impaired LVEF <sup>307,308</sup>
Absence of CMR-detected atrial fibrosis	Extent of atrial fibrosis is inversely correlated to LVEF response following AF catheter ablation in patients with HFrEF <sup>311</sup>
Absence of CMR-detected ventricular fibrosis	Absence of ventricular fibrosis is an independent predictor of LVEF normalization after AF catheter ablation in patients with non-ischemic cardiomyopathy and persistent AF <sup>250</sup>
Post-cardioversion EF and NYHA improvement	Improvement in functional status and/or LVEF after cardioversion is indicative of underlying tachyarrhythmia-mediated cardiomyopathy and a favourable response to catheter ablation in HFrEF patients
Absence of severe atrial dilatation	Absence of severe atrial dilatation ( $LAVI \leq 50$ mL/m <sup>2</sup> ) is an independent predictor of LVEF recovery after AF ablation in patients with impaired LVEF <sup>307,308</sup>
AF preceding HF or simultaneous AF and HF diagnosis	Patients with simultaneous AF and HF diagnosis or AF history preceding HF diagnosis are more likely to present normalization of LVEF and resolution of HF symptoms following catheter ablation <sup>252,312</sup>

# PFA u nemocných se srdečním selháním



0.4% rate of major complications without differences among groups

PFA procedures were feasible and safe across all HF subtypes, including in patients with reduced LVEF and significant comorbidity burdens



# Alternativní řešení

**133** pts with:  
• Permanent AF  
• Narrow QRS  
•  $\geq 1$  HF hospitalization  
• Severe symptoms

**63** Rate control  
**ABL+CRT**

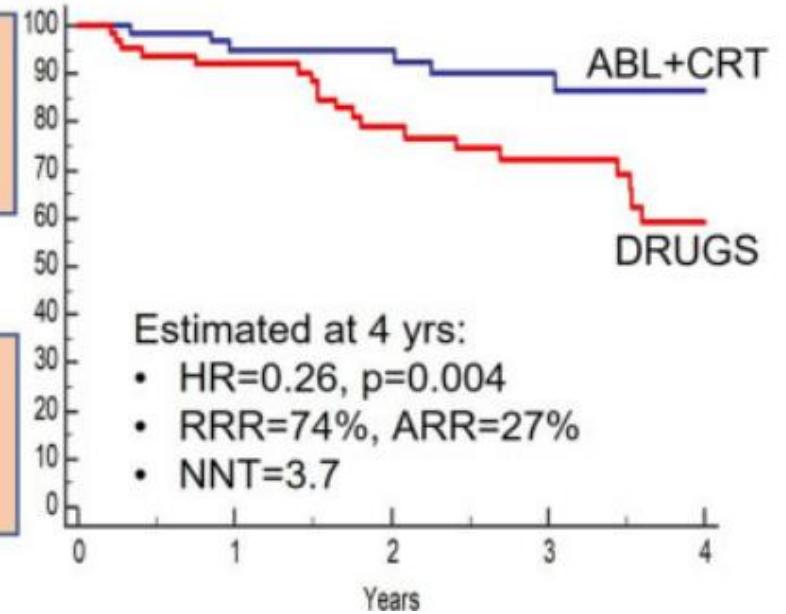
HR = 70 bpm

11% (7 pts)

**70** Rate control  
**DRUGS**

HR = 82 bpm

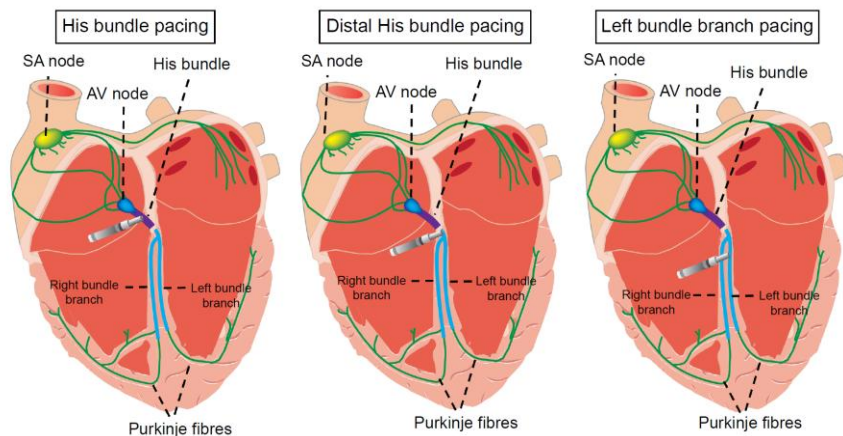
29% (20 pts)



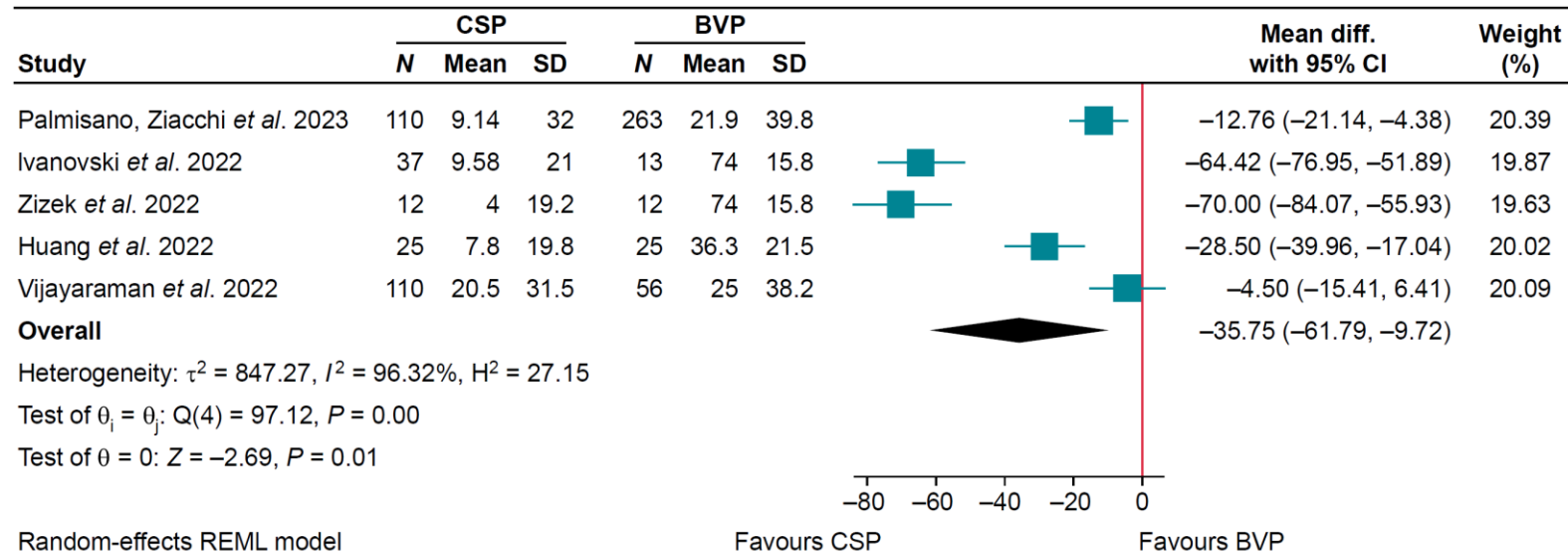
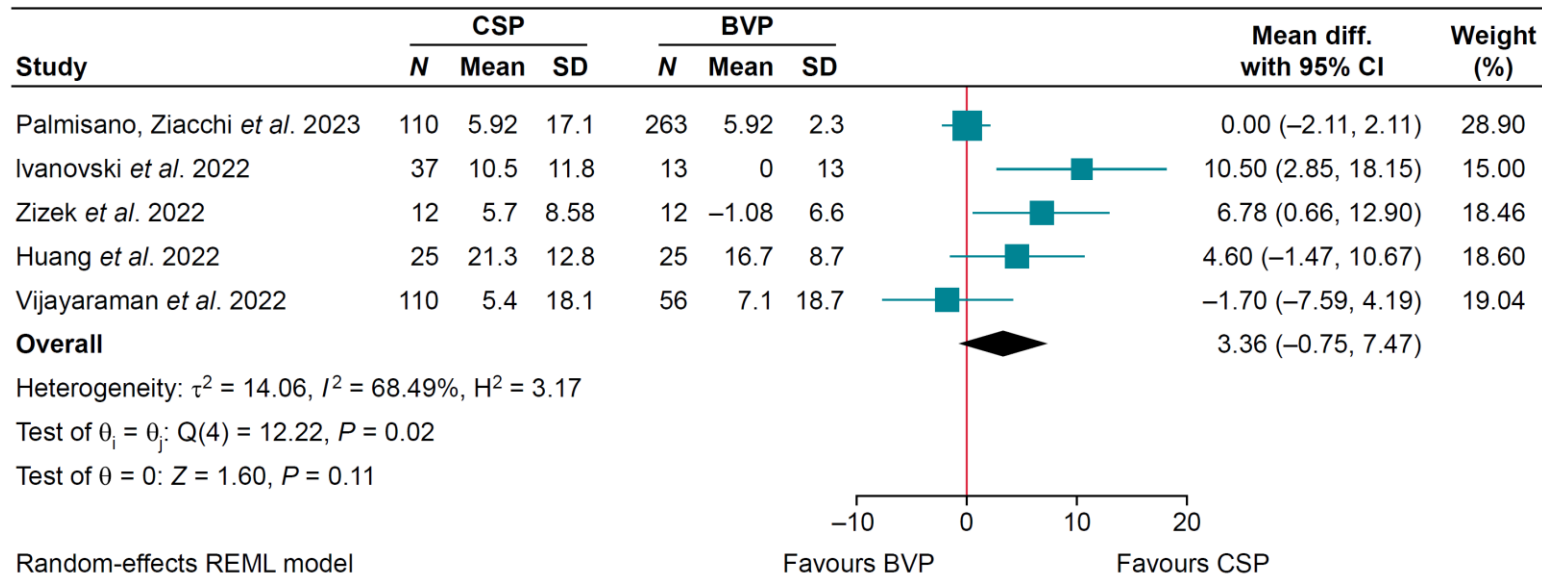
## APAF - CRT

# CRT vs. CSP a ablace AVN - metaanalýza

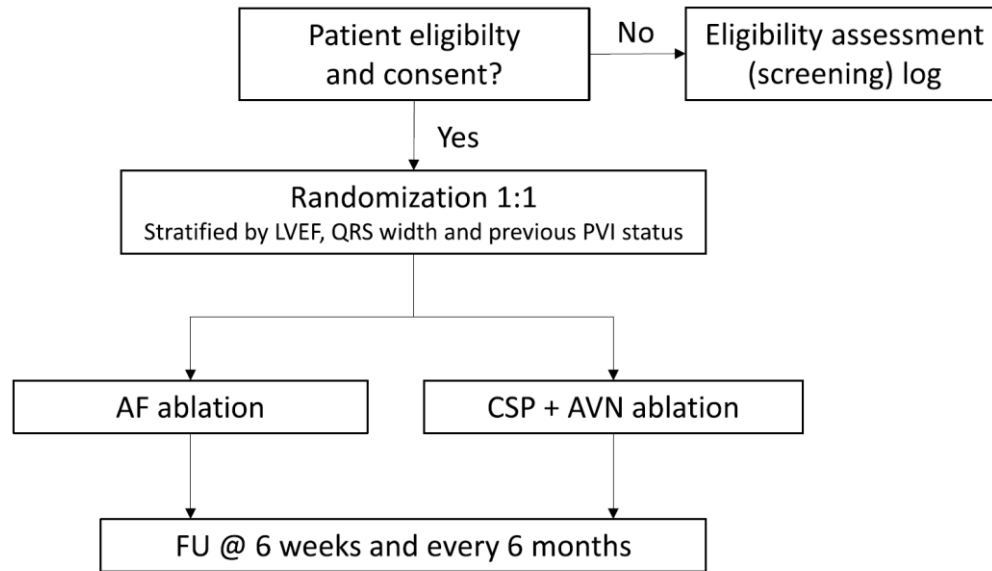
## Efekt na EF LK



## Efekt na QRS



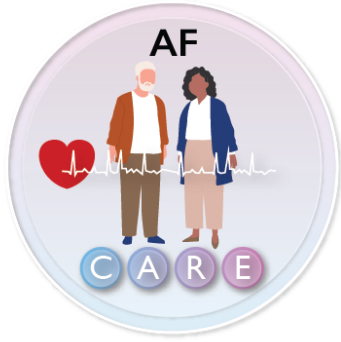
# Protokol studie ABACUS – AVN ablace a CSP vs. AF ablace



Trial end after 220 pts enrolled and 1 year follow-up after last included patient

- Age  $\geq$  60 years.
- Persistent AF with symptomatic HF despite medical therapy, considered to be suitable for AF ablation, *with at most one previous PVI procedure*. Persistent AF is defined as AF that is continuously sustained beyond seven days, including episodes terminated by cardioversion (drugs or electrical) after > 7 days.<sup>42</sup>
- At least one prior hospital admission, or emergency room/HF clinic visit for HF in the past 2 years, with BNP > 250 pg/mL or NT-pro-BNP > 1000 pg/mL measured at any timepoint during this interval.
- Previous or current rate or rhythm control drug therapy.
- Considered eligible for CSP implantation as an alternative to AF ablation

# A na co nezapomenout...



Equality in healthcare provision (gender, ethnicity, socioeconomic) (Class I)

Education for patients, families and healthcare professionals (Class I)

Patient-centred AF management with a multidisciplinary approach (Class IIa)

## C Comorbidity and risk factor management

### Hypertension

Blood pressure lowering treatment (Class I)

### Diabetes mellitus

Effective glycaemic control<sup>a</sup> (Class I)

### Heart failure

Diuretics for congestion (Class I)

Appropriate HFrEF medical therapy (Class I)

SGLT2 inhibitors (Class I)

### Overweight or obese

Weight loss (target 10%)<sup>a</sup> (Class I)

Bariatric surgery if rhythm control<sup>a</sup> (Class IIb)

### Obstructive sleep apnoea

Management of OSA<sup>a</sup> (Class IIb)

### Exercise capacity

Tailored exercise programme (Class I)

### Alcohol

Reduce to  $\leq 3$  drinks per week (Class I)

### Other risk factors/comorbidities

Identify and manage aggressively<sup>a</sup> (Class I)

# ZÁVĚRY

# Jak přistupovat k nemocnému s arytmiemi?

Stanovení významu arytmie:

arytmie je příčina nebo jen situaci modifikuje?

U čisté tachykardií indukovaném srdečním selhání je řešení arytmie kauzální

U arytmií doprovázejících srdeční selhání je ovlivnění arytmie součástí komplexní léčby

Volba přístupu:

odstranění arytmie

zmírnění vlivu arytmie

Vždy součást celkové strategie

Skutečný význam poruchy rytmu někdy poznáme až časem



**Děkuji za pozornost**

