

# Ablace u pacienta s Brugada (?) syndromem

Petr Peichl



Ramon Pedro Joseph

Brugada brothers 2006



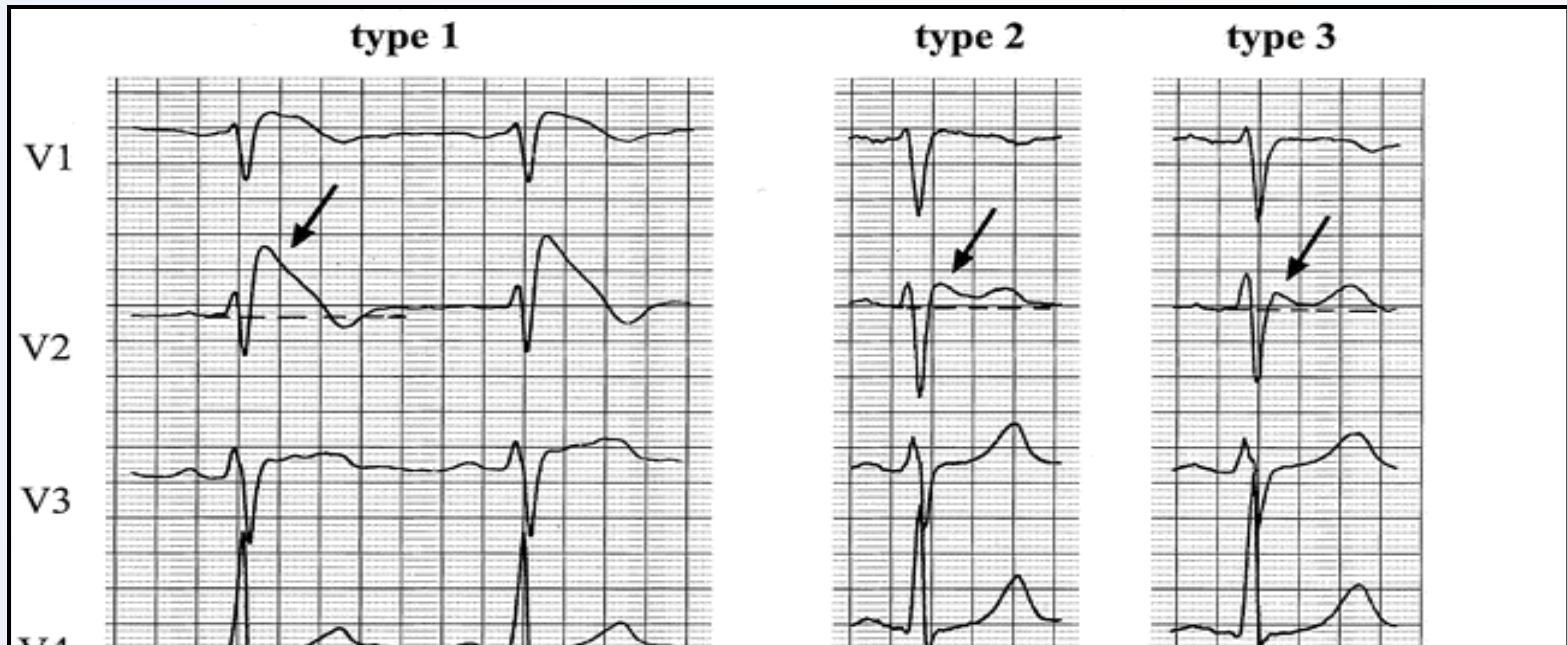
JOSEP BRUGADA CARLO PAPPONE GABRIELE VICEDOMINI

World summit on ablation of Brugada syndrom 2017

# Brugada syndrom

- Syndrom charakterizován elevacemi ST segmentu v pravostranných prekordiálních svodech (V1-V3), které nejsou způsobeny ischemií, iontovou dysbalancí či strukturálním srdečním onemocněním, a vysokým rizikem NSS
- Incidence: 5-66/10 000, endemický výskyt - JV Asie
- Vliv pohlaví 8:1 (muži:ženy)
- AD dědičnost
- Organický nálezn na srdci je normální
  - kanalopatie“ – defekt na úrovni iontového kanálu
  - prodloužené HV vedení, zvýšená incidence síňových arytmií
- Diagnosa: EKG – etážové svody ve 2. a 3 . mezižebří, horečka, aimalinový test

# EKG obraz:



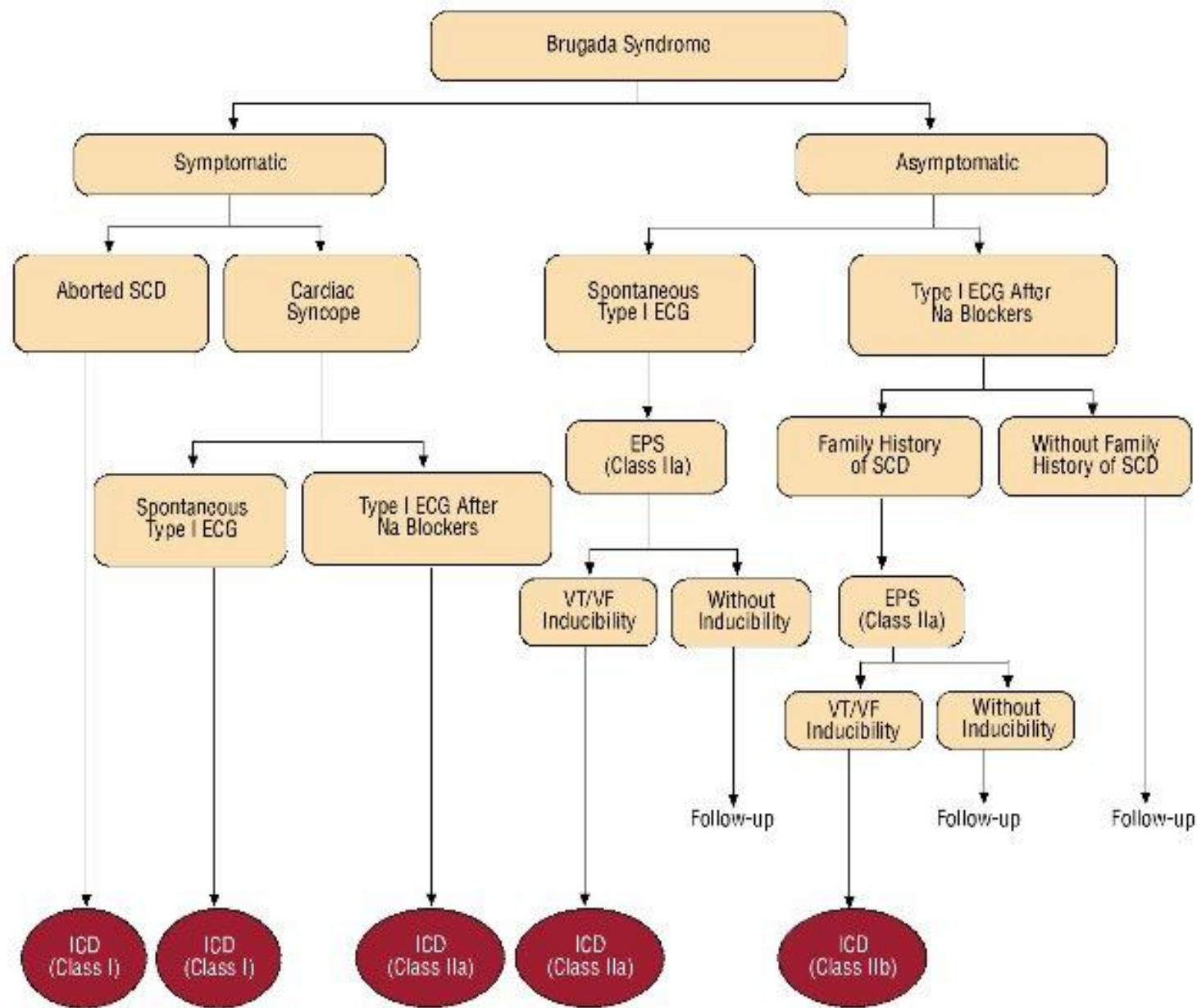
**TABLE 1. ST-Segment Abnormalities in Leads V<sub>1</sub> to V<sub>3</sub>**

	Type 1	Type 2	Type 3
J wave amplitude	≥2 mm	≥2 mm	≥2 mm
T wave	negative	positive or biphasic	positive
ST-T configuration	coved type	saddleback	saddleback
ST segment (terminal portion)	gradually descending	elevated ≥1 mm	elevated <1 mm

1 mm=0.1 mV. The terminal portion of the ST segment refers to the latter half of the ST segment.



**Figure 1.** Prevalence of Brugada syndrome ECG is shown on the world map. Overall, type 1 and 2 Brugada ECG is more frequently observed in Asia than in Europe or the United States.



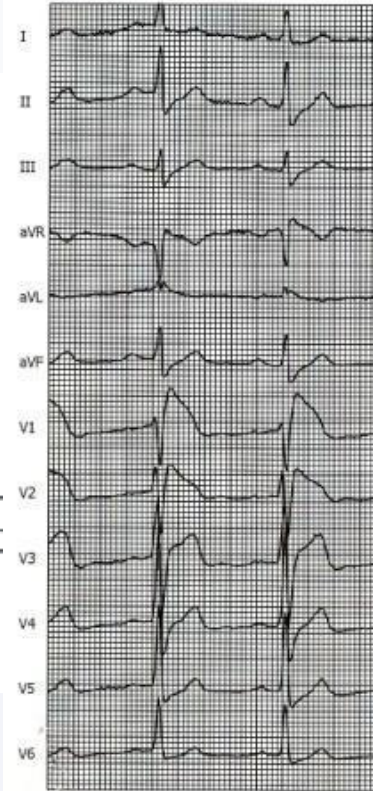
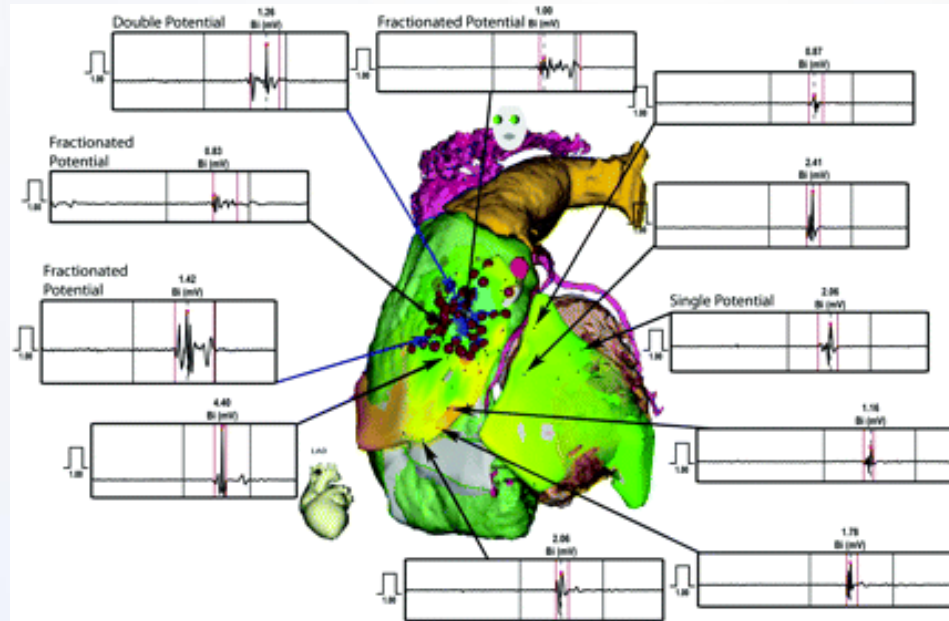
# Brugada syndrom

## zkušenosti IKEM

- Metoda: vyhledání klíčového slova „Brugada“ ve zlatokopu (NIS IKEM), období 01/2000-02/2017
- Nalezeno 20 pacientů:
  - 10pts s EKG obrazem BS asymptomatických
    - konzervativní řešení – nikdo nezemřel (k 04.2017)
  - 4pts s implantací ICD z primární prevence
    - Pozit PSK 2x, Aimalin 2x (+ RA/synkopa)
    - U žádného nebyla intervence ICD
  - 6pts s implantací ICD ze sekundární prevence
    - U 2 byla indikována RF ablace

# Ablace arytmogenního substrát u Brugada syndromu

- 9pts s Brugada syndromem a opakovanými FIK
- Abnormální voltáž v oblasti epikardu RVOT
- Ablace v této oblasti potlačila vyvolatelnost arytmií u 78%pts



# Kazuistika

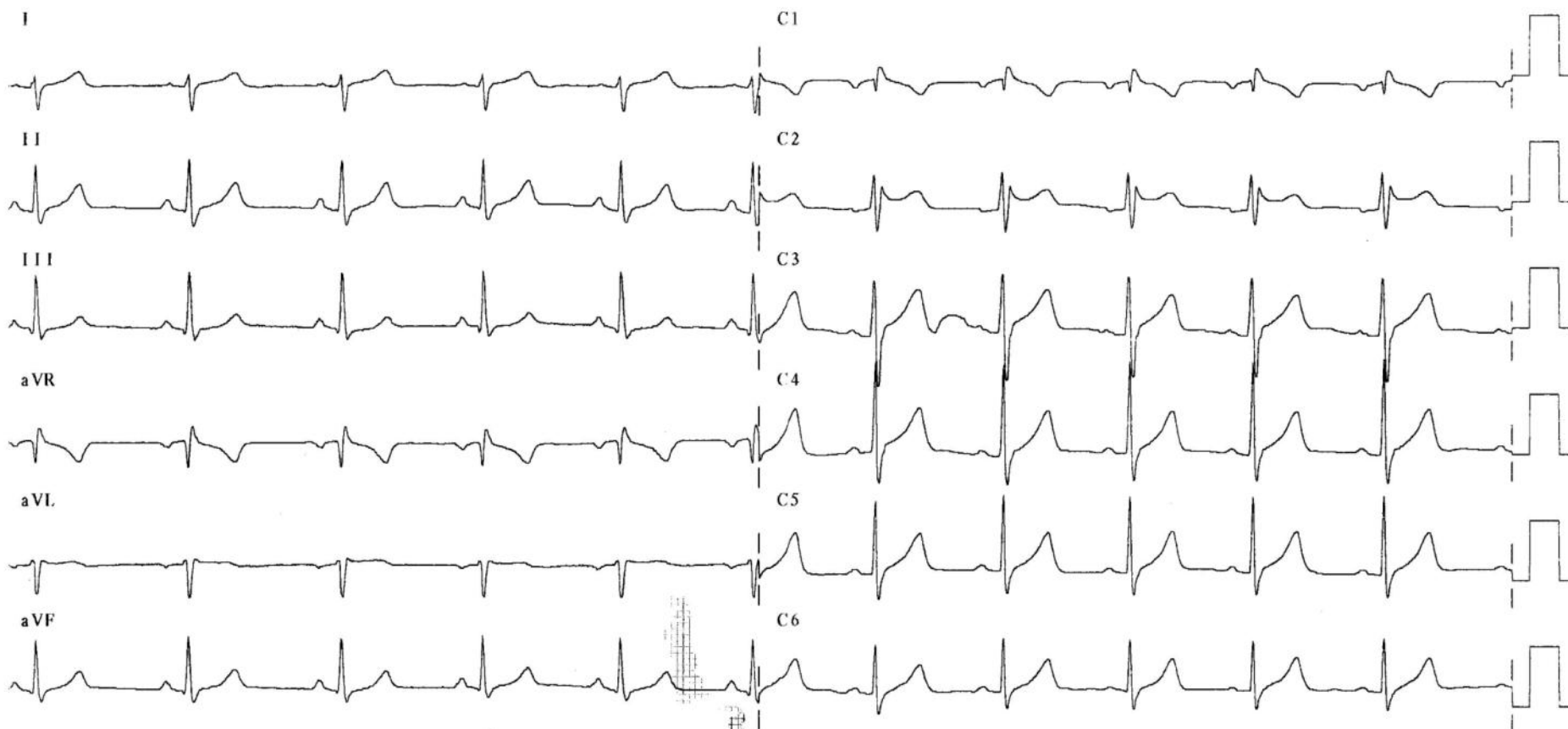




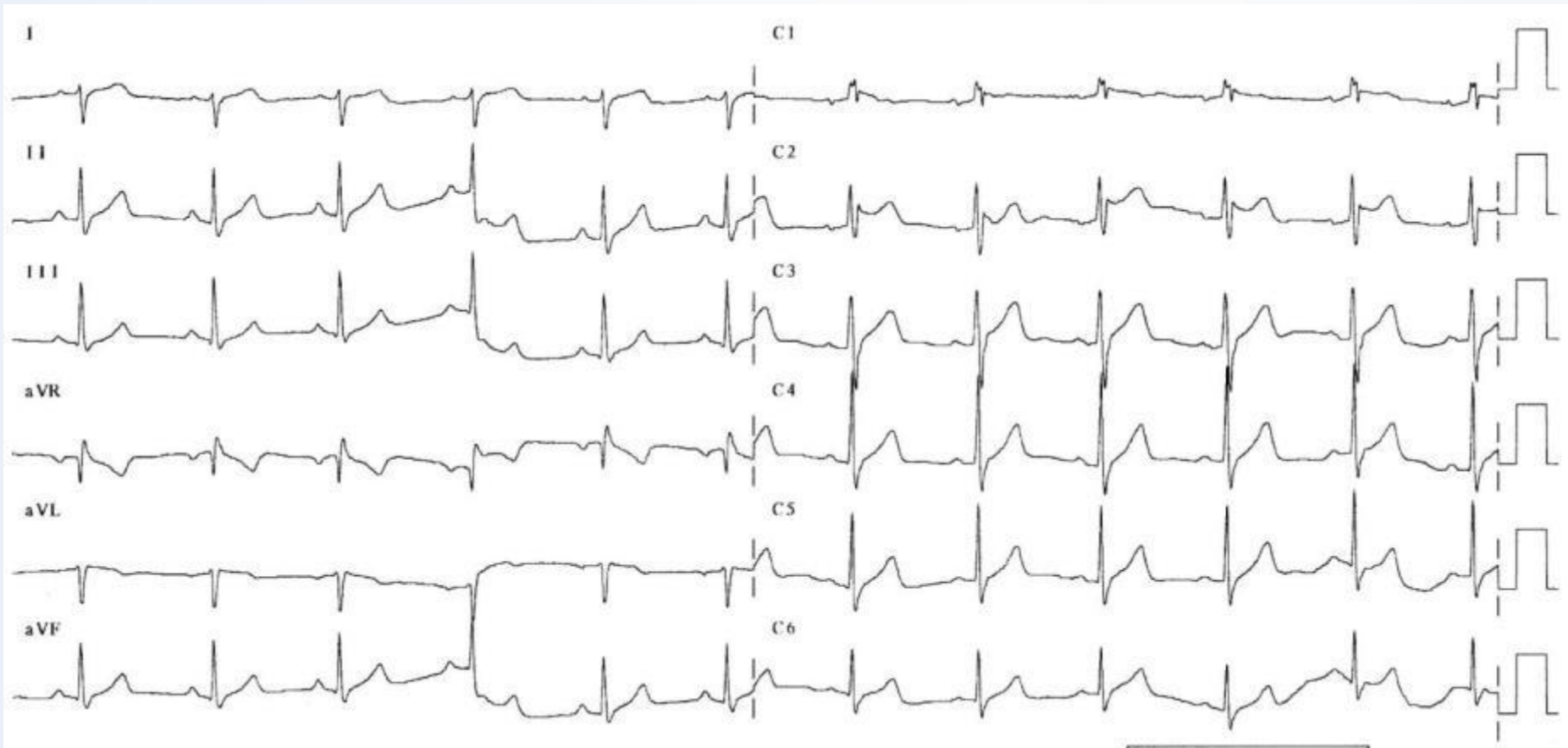
# Anamnéza

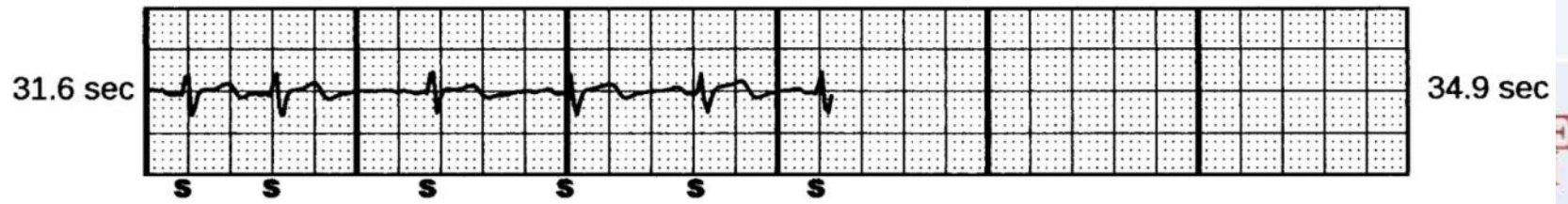
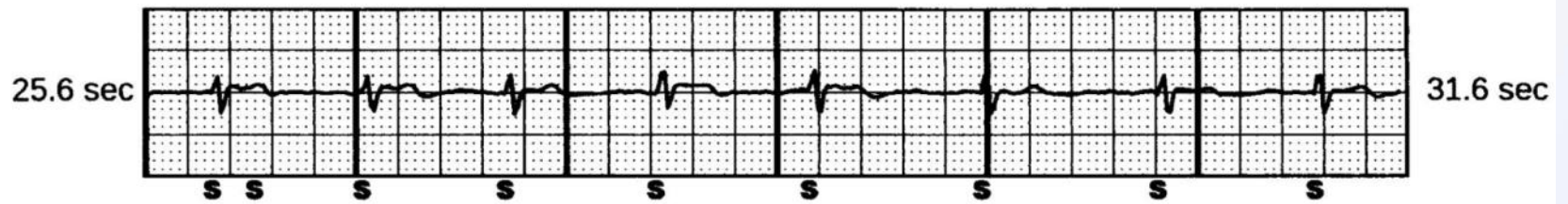
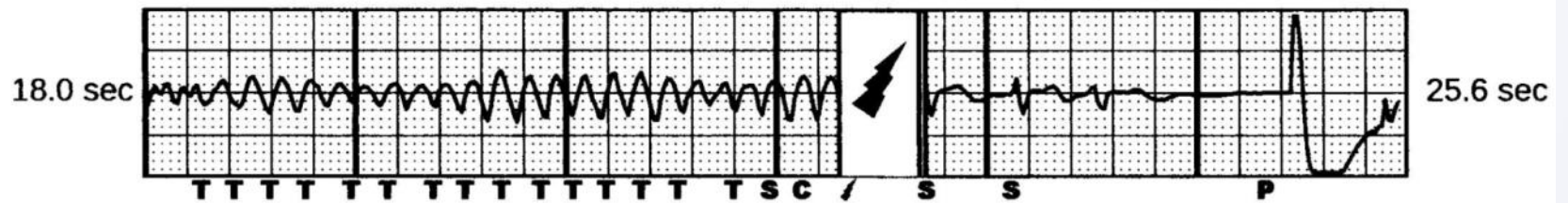
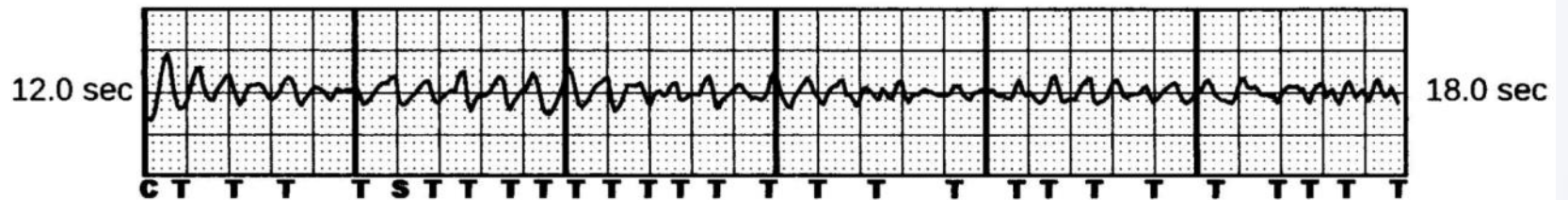
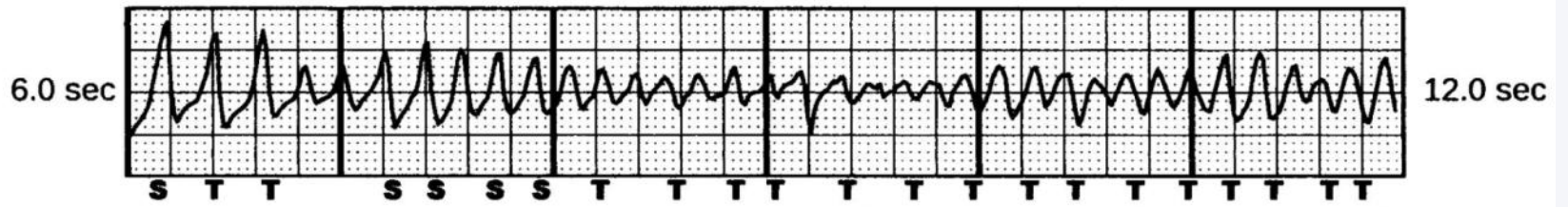
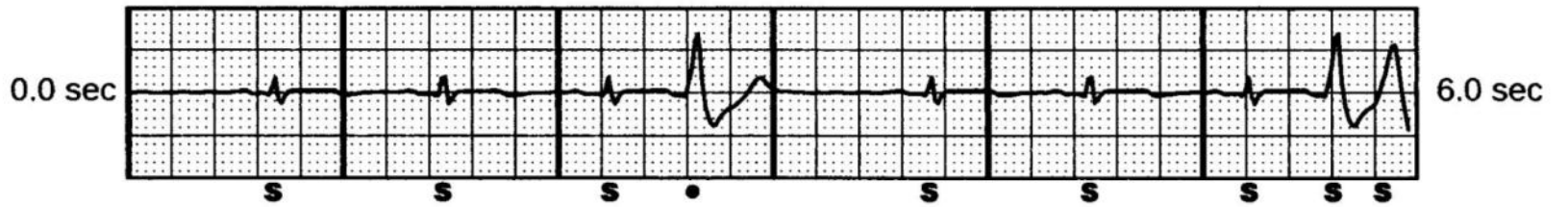
- 32-letý pacient (Číňan)
- Stp. KPCR pro FiK, stp. implantaci SICD (nem. Královské Vinohrady)
- Normální ECHO + SKG, diagnostikován Brugada syndrom
- Recentně přijat pro opakované výboje ICD indikované pro polymorfní KT
- Referován k ablaci

# EKG v době epizod pKT



# EKG v době epizod pKT

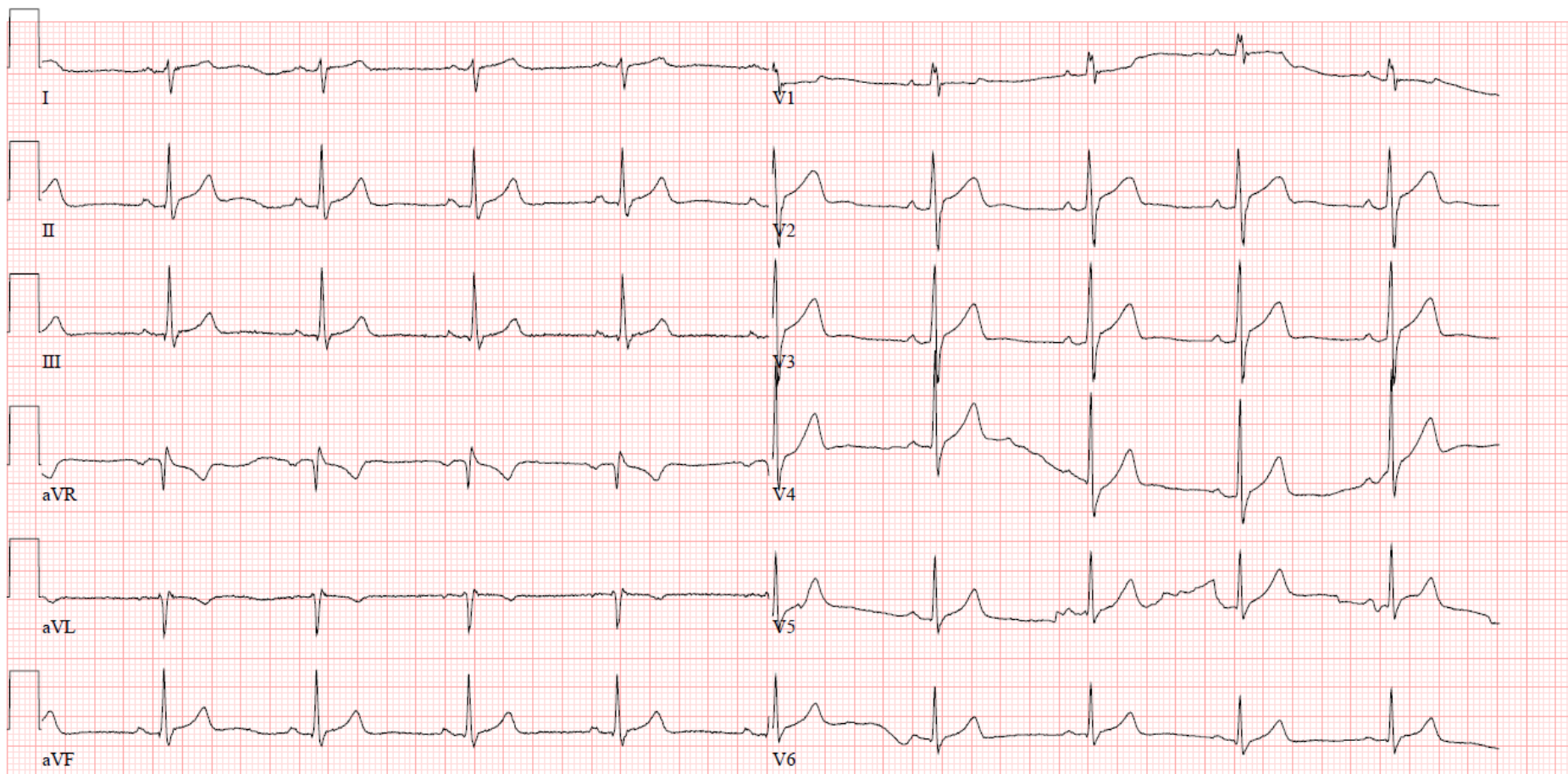




# Iniciace pKT



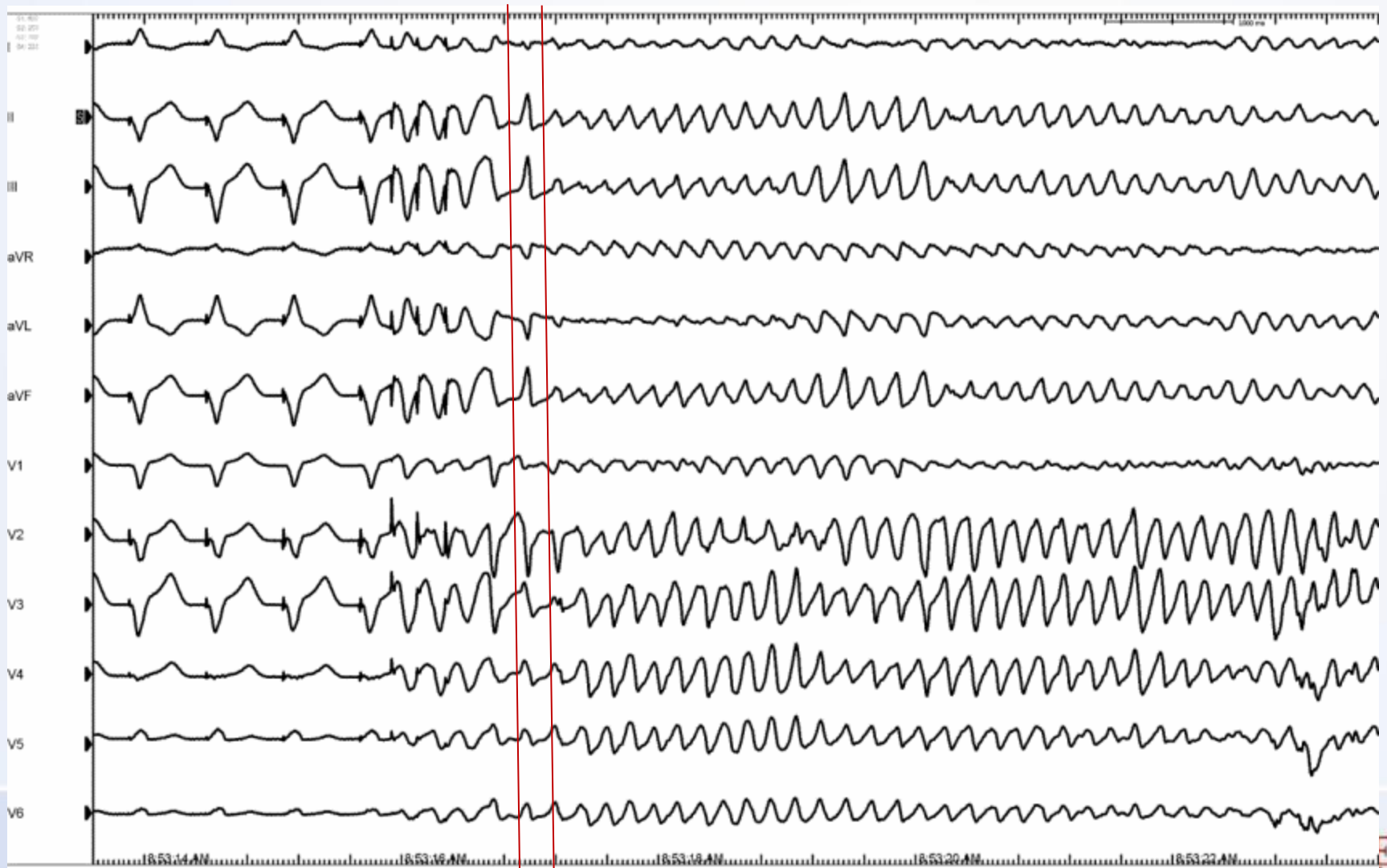
# EKG v IKEM



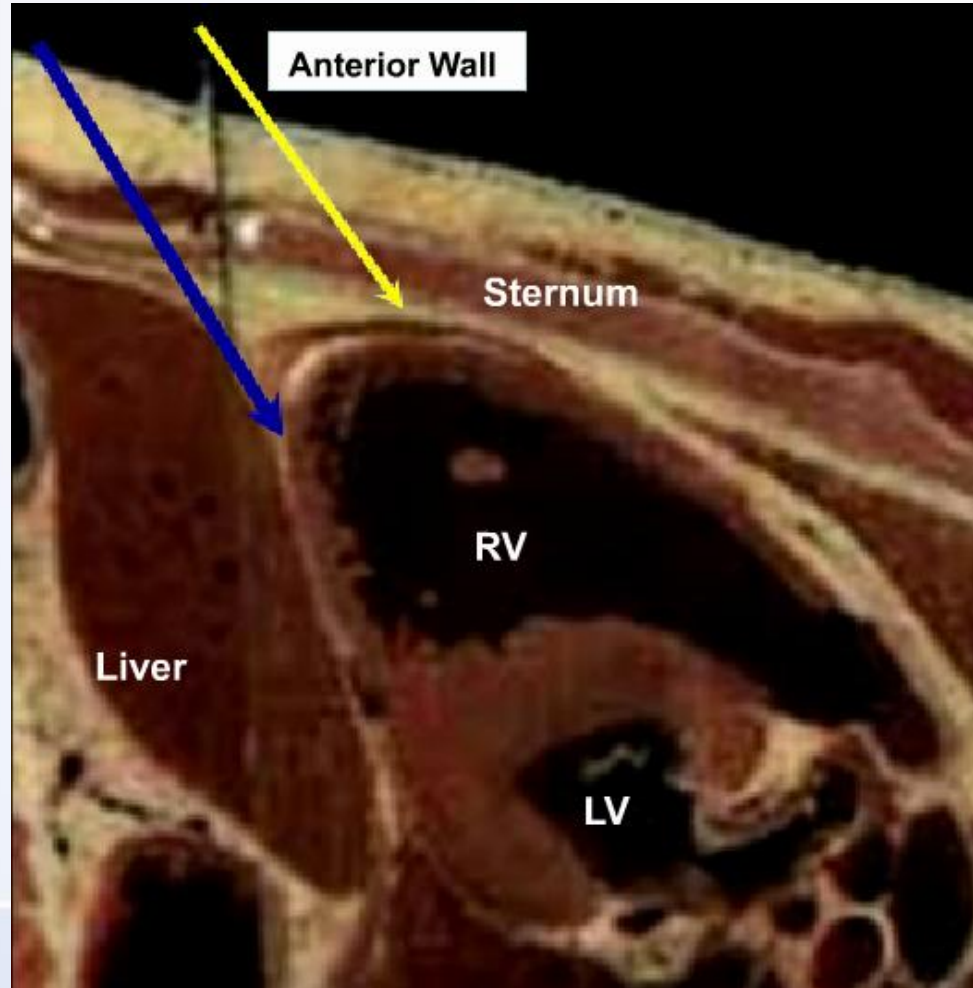
25mm/s 10mm/mV 150Hz 8.01 12SL 241 HD CID: 1

EID:16 EDT: 07:03 21-FEB-2017 ORDER:

# Programovaná stimulace komor

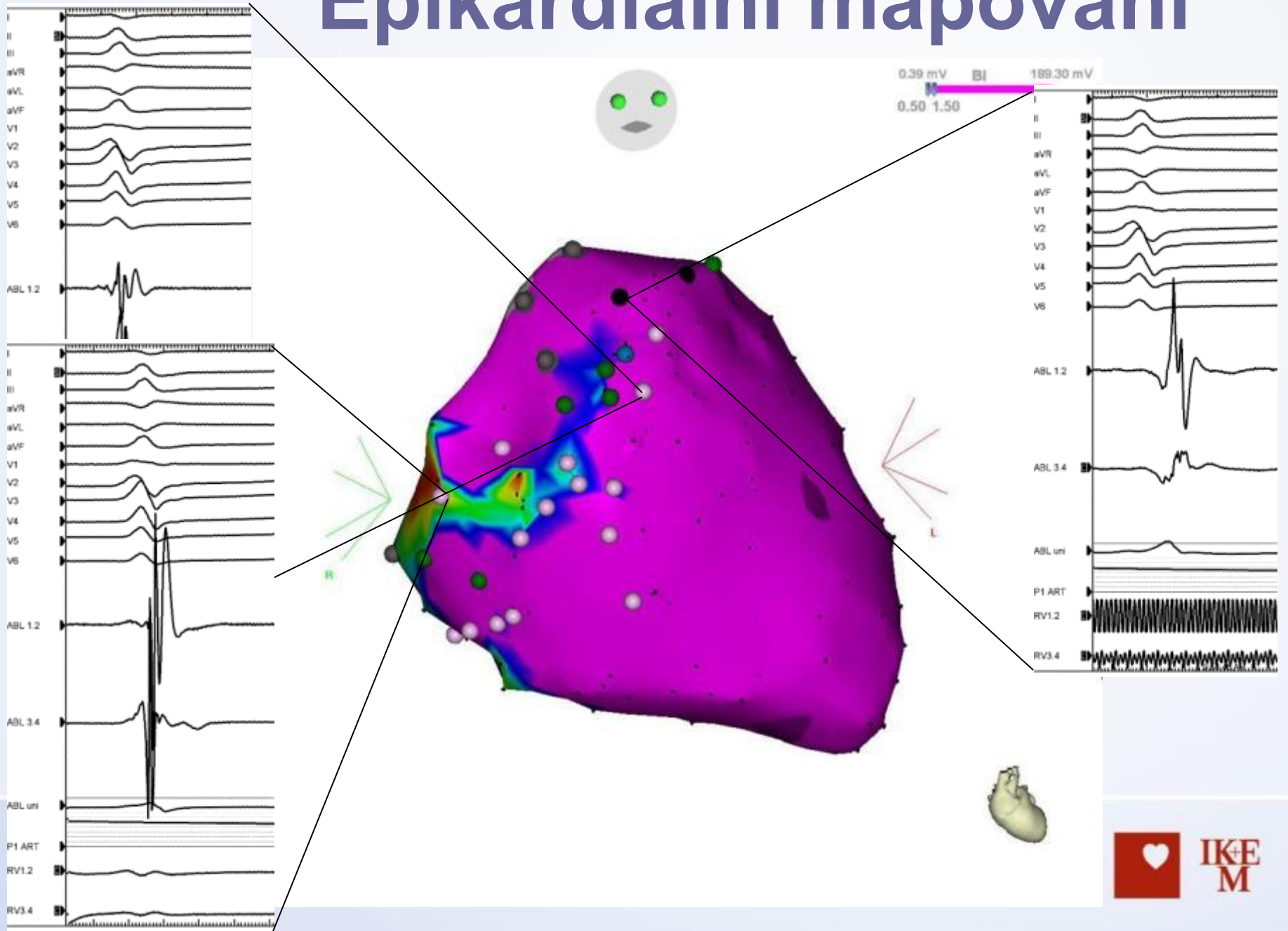


# Epikardiální přístup ze subxyfoidea

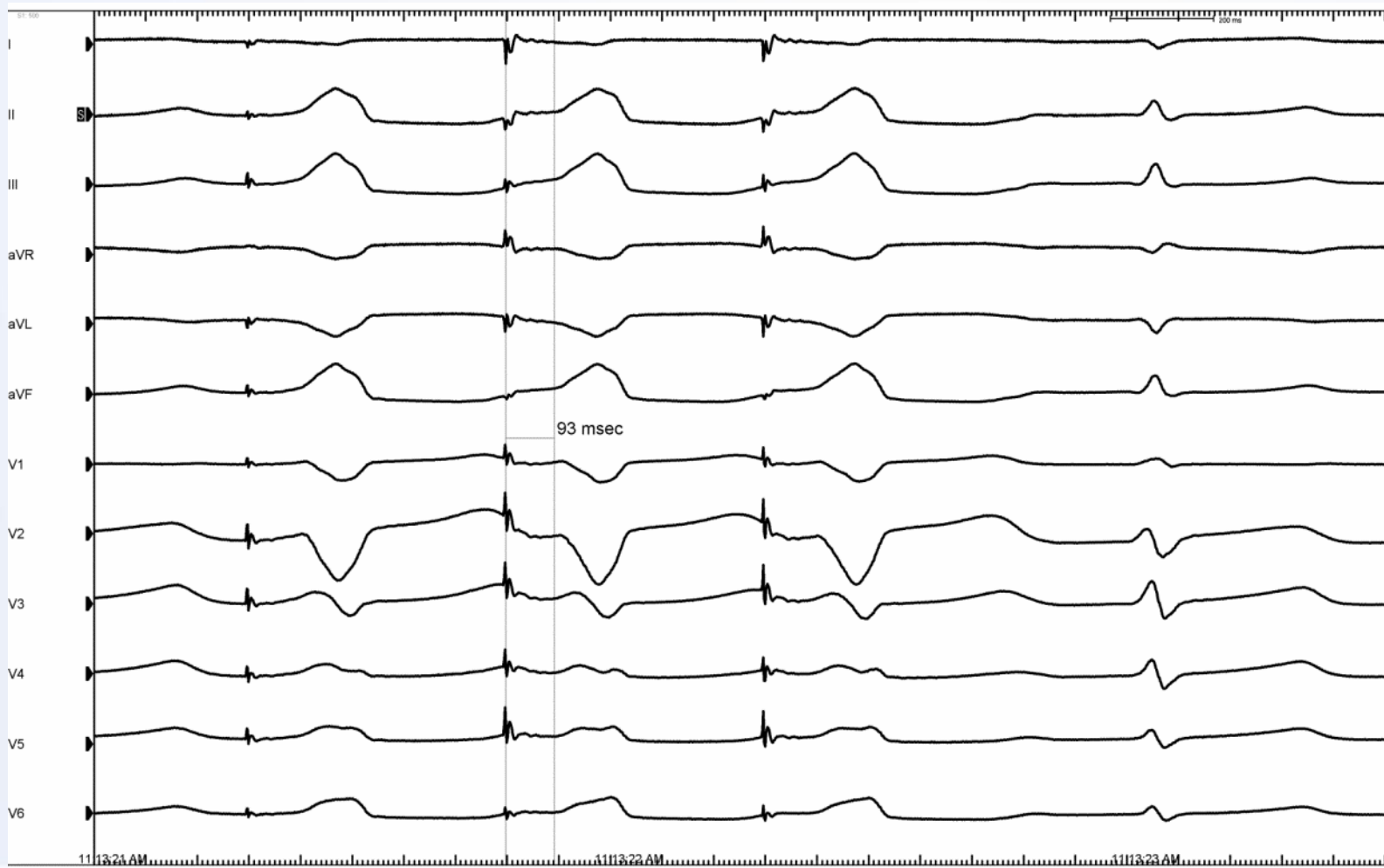




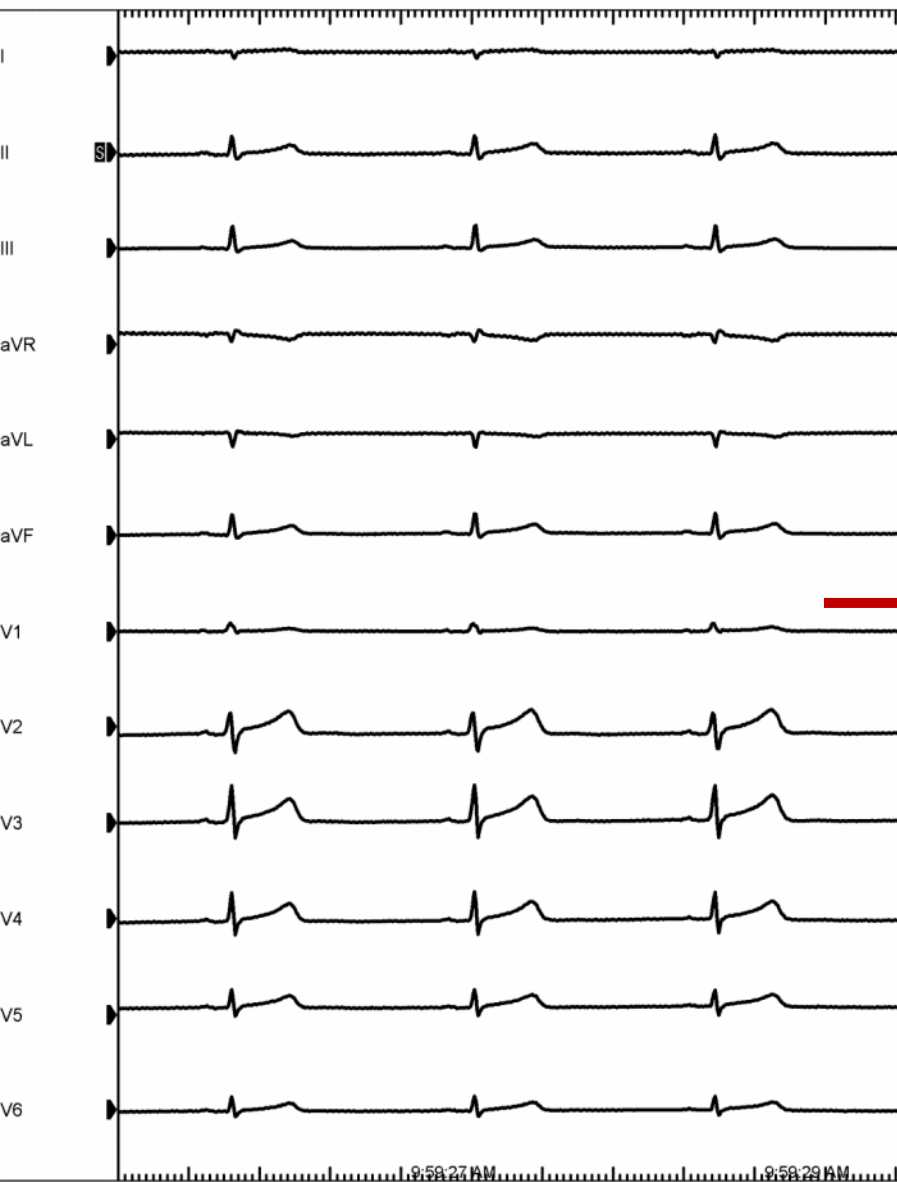
# Epikardiální mapování



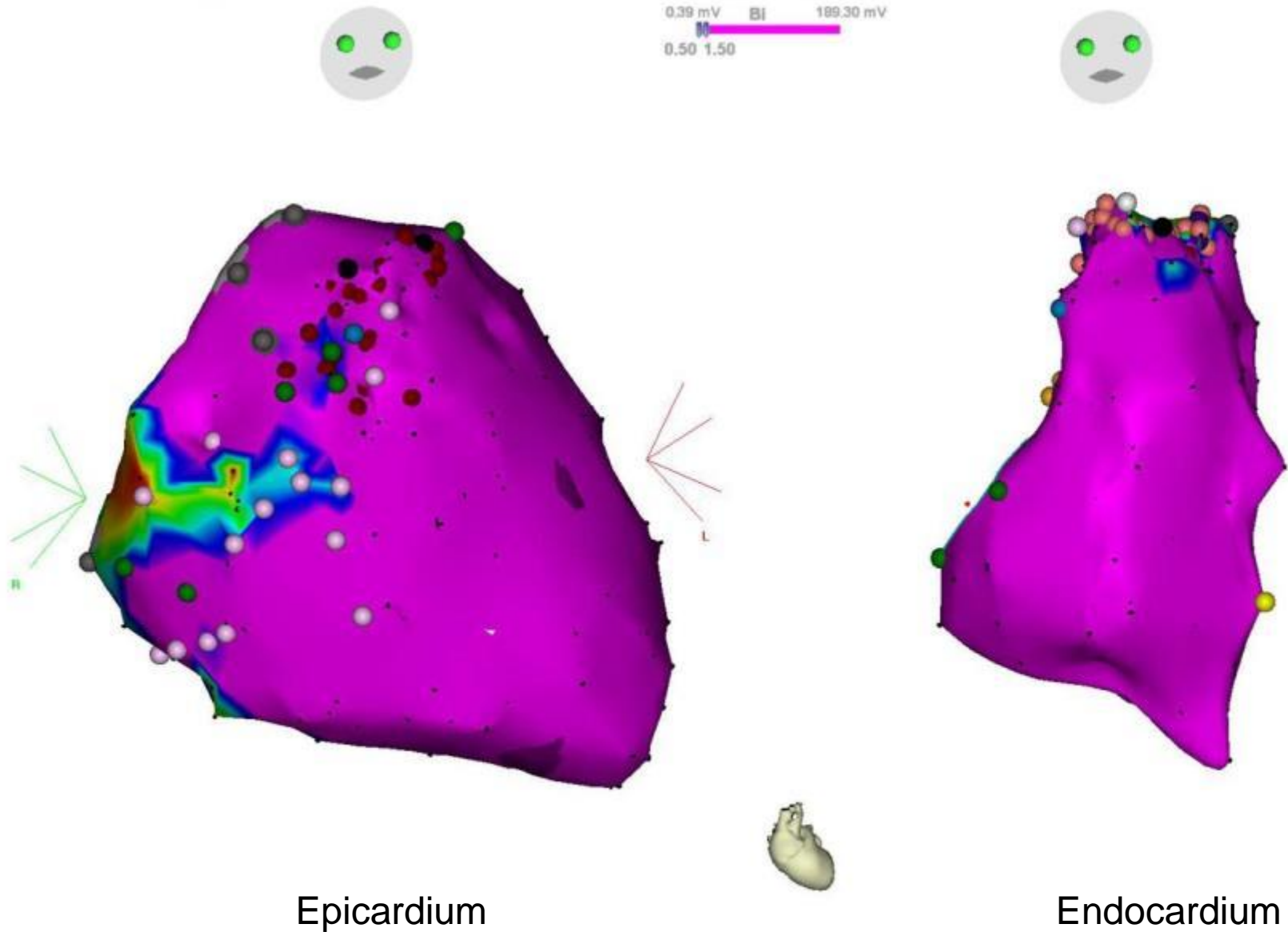
# Oblasti pomalého vedení



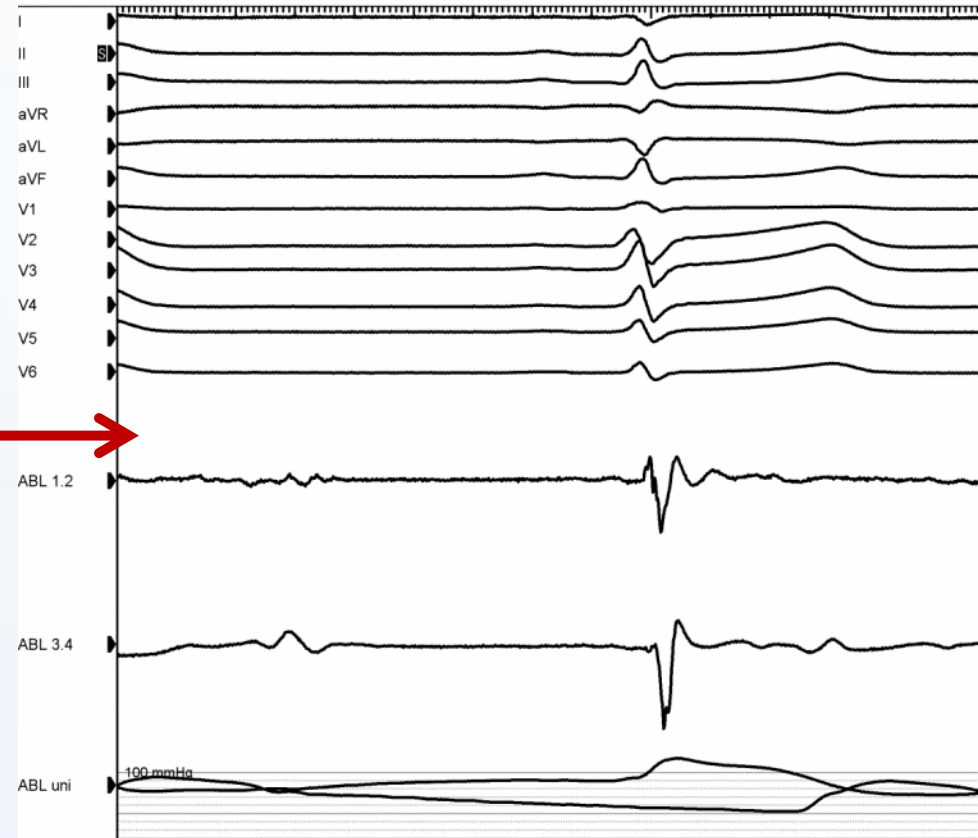
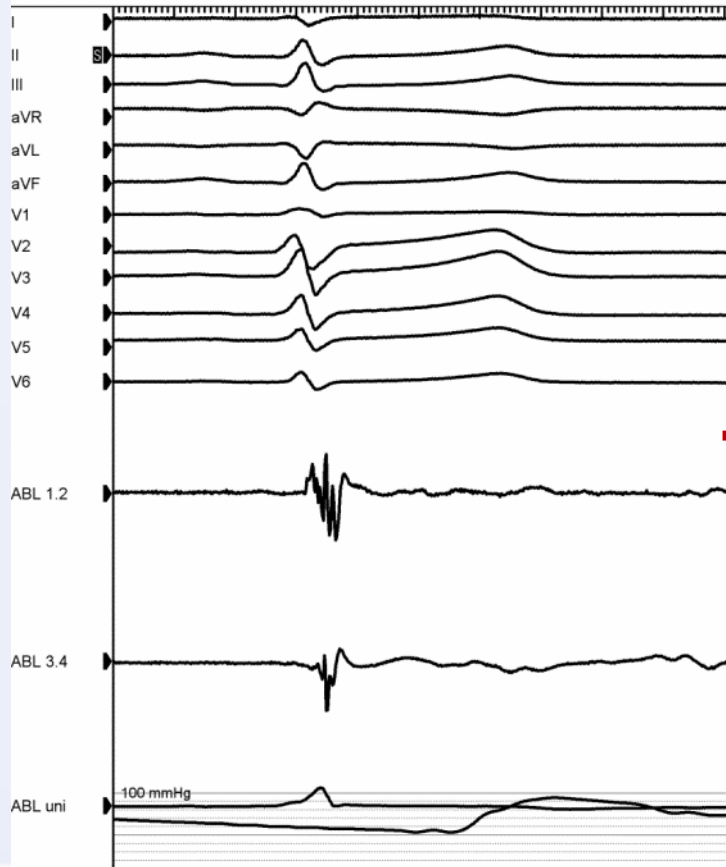
# Podání Aimalinu 75mg i.v.



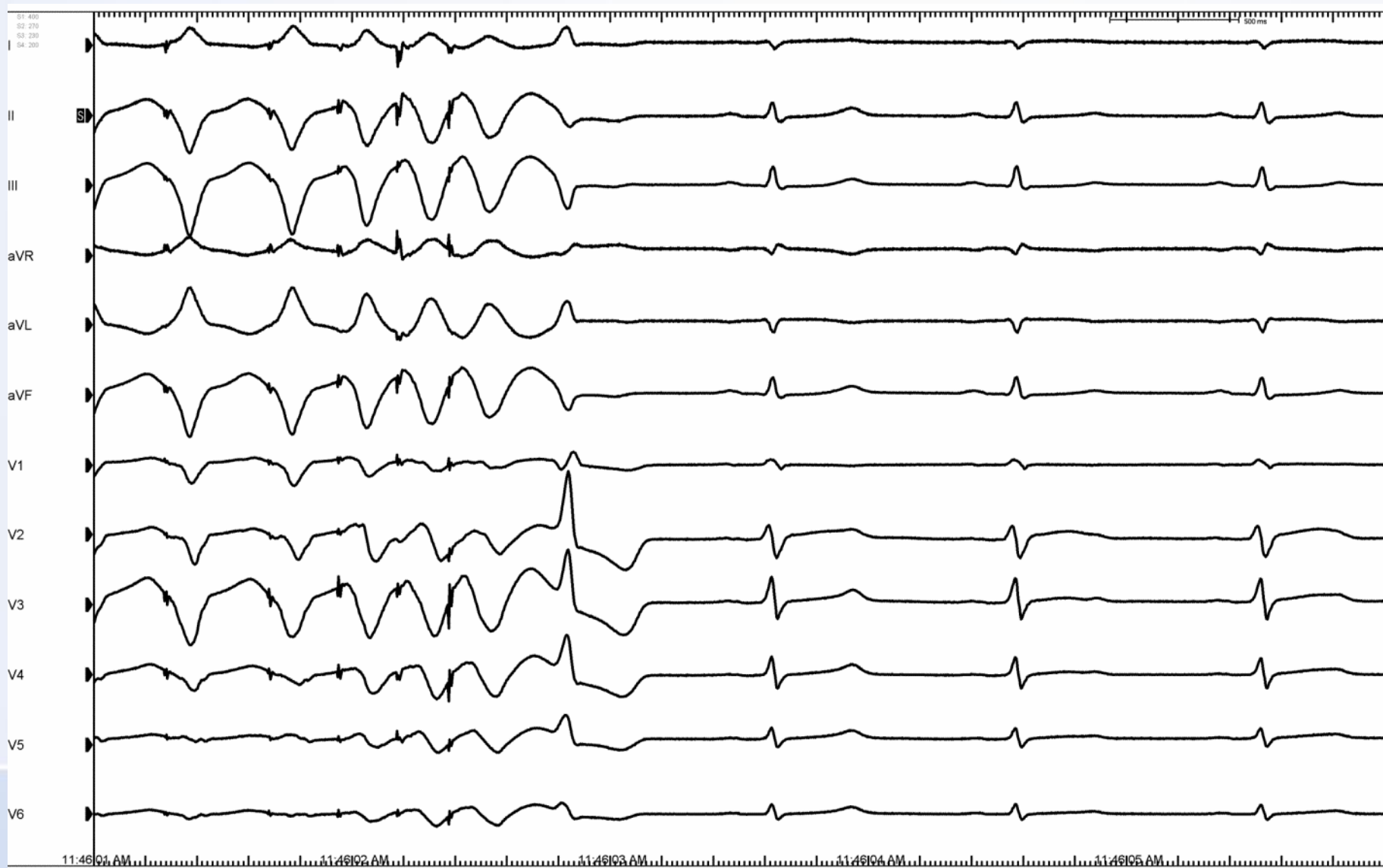
# Design ablačních lezí



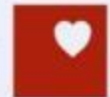
# Změna lokálního elektrogramu po ablaci



# Noninducibilita po ablaci



# Diskuze



### 3. Brugada Syndrome (BrS) Expert Consensus Recommendations on Brugada Syndrome Diagnosis

1. BrS is *diagnosed* in patients with ST-segment elevation with type 1 morphology  $\geq 2$  mm in  $\geq 1$  lead among the right precordial leads V<sub>1</sub>, V<sub>2</sub>, positioned in the 2nd, 3rd or 4th intercostal space occurring either spontaneously or after provocative drug test with intravenous administration of Class I antiarrhythmic drugs.
2. BrS is *diagnosed* in patients with type 2 or type 3 ST-segment elevation in  $\geq 1$  lead among the right precordial leads V<sub>1</sub>, V<sub>2</sub> positioned in the 2nd, 3rd or 4th intercostal space when a provocative drug test with intravenous administration of Class I antiarrhythmic drugs induces a **type I** ECG morphology.

### Expert Consensus Recommendations on Brugada Syndrome Therapeutic Interventions

- |           |  |
|-----------|--|
| Class I   | <ol style="list-style-type: none"><li>1. The following lifestyle changes <i>are recommended</i> in all patients with diagnosis of BrS:<ol style="list-style-type: none"><li>a) Avoidance of drugs that may induce or aggravate ST-segment elevation in right precordial leads (for example, visit <a href="http://Brugadadrugs.org">Brugadadrugs.org</a>),</li><li>b) Avoidance of excessive alcohol intake.</li><li>c) Immediate treatment of fever with antipyretic drugs.</li></ol></li><li>2. ICD implantation <i>is recommended</i> in patients with a diagnosis of BrS who:<ol style="list-style-type: none"><li>a) Are survivors of a cardiac arrest and/or</li><li>b) Have documented spontaneous sustained VT with or without syncope.</li></ol></li></ol>  |
| Class IIa | <ol style="list-style-type: none"><li>3. ICD implantation <i>can be useful</i> in patients with a spontaneous diagnostic type I ECG who have a history of syncope judged to be likely caused by ventricular arrhythmias.</li><li>4. Quinidine <i>can be useful</i> in patients with a diagnosis of BrS and history of arrhythmic storms defined as more than two episodes of VT/VF in 24 hours.</li><li>5. Quinidine <i>can be useful</i> in patients with a diagnosis of BrS:<ol style="list-style-type: none"><li>a) Who qualify for an ICD but present a contraindication to the ICD or refuse it <i>and/or</i></li><li>b) Have a history of documented supraventricular arrhythmias that require treatment.</li></ol></li><li>6. Isoproterenol infusion <i>can be useful</i> in suppressing arrhythmic storms in BrS patients.</li></ol> |
| Class IIb | <ol style="list-style-type: none"><li>7. ICD implantation <i>may be considered</i> in patients with a diagnosis of BrS who develop VF during programmed electrical stimulation (inducible patients).</li><li>8. Quinidine <i>may be considered</i> in asymptomatic patients with a diagnosis of BrS with a spontaneous <b>type I</b> ECG.</li><li>9. Catheter ablation <i>may be considered</i> in patients with a diagnosis of BrS and history of arrhythmic storms or repeated appropriate ICD shocks.</li></ol>   |
| Class III | <ol style="list-style-type: none"><li>10. ICD implantation <i>is not indicated</i> in asymptomatic BrS patients with a drug-induced <b>type I</b> ECG and on the basis of a family history of SCD alone.</li></ol>   |



# Závěry

- Záchyt dg. Brugada syndromu v našem kardiocentru je malý
- Katetrizační ablace by měla být provedena epikardiálním přístupem
- Diagnóza může být obtížná
  - intermitentní STE na EKG, absence reakce na aimalin, nutnost použití 2.-3. mezižebří
  - dif dg ARVC, fok. spouštěná FiK z RVOT
- Riziková stratifikace a indikace k implantaci ICD z primární prevence je problematická

**Děkuji za pozornost...**

