Supraventrikulární tachykardie
- update 2019 -

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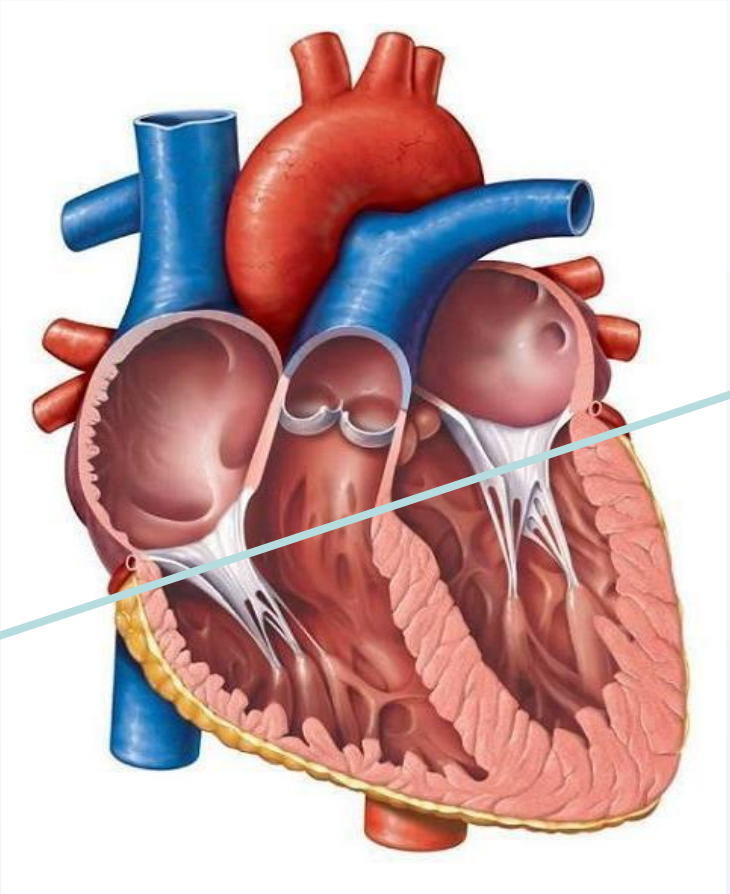
Supraventrikulární tachykardie

- Definice: tachykardie (síňová aktivita nad 100/min) které pro vznik a udržení vyžadují svalovinu síní. Výjimka je AVRT.

- Podlé šířky QRS komplexů: úzko/širokokomplexová tachykardie
- Podlé vztahu P/QRS: tachykardie s krátkým/dlouhým RP
- Podle mechanismu: fokální/reentry



Epidemiologie

- Incidence 35/100 000/rok
- Rizikové faktory: Ženy 2x, Věk ≥65let 5x
- Preexcitace: 0,15-0,25%
- Flutter síní 88/100 000/rok v USA (2,5x častěji u mužů)
- Fibrilace síní (2% v obecné populaci, RF jako u ICHS)

Klinická prezentace a vyšetření

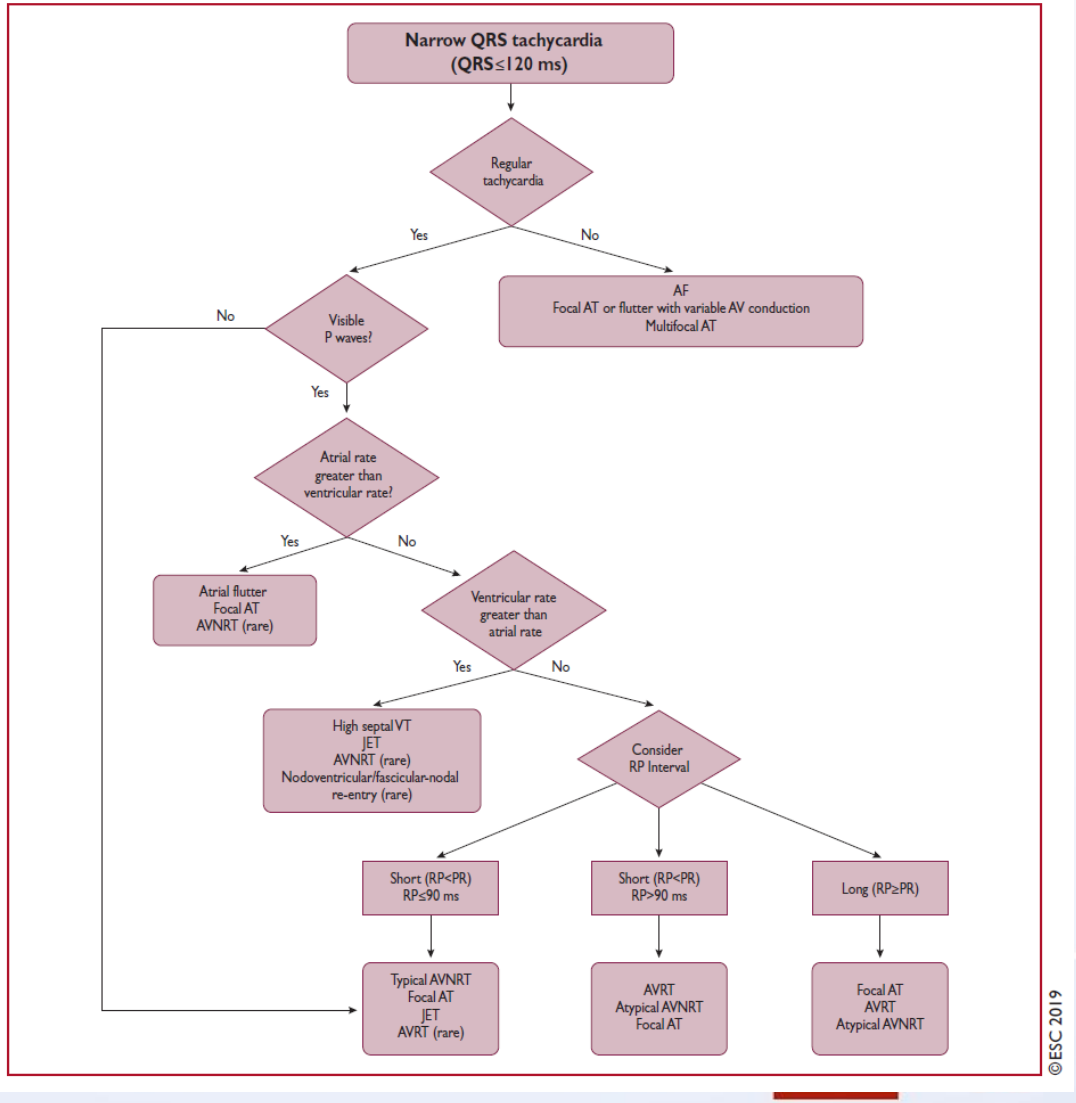
- Palpitace
- Dušnost
- Tlak na hrudi
- “Žabí krk”
- Zvýšená diuréza
- Pre/Synkopy

Standard
• History, physical examination, and 12 lead ECG • Full blood counts, biochemistry profile, and thyroid function • An ECG during tachycardia should be sought • Transthoracic echocardiography
Optional
• Exercise tolerance testing • 24 h ECG monitoring, transtelephonic monitoring, or an implantable loop recorder • Myocardial ischaemia testing in patients with risk factors for coronary artery disease (including men aged >40 years and post-menopausal women) • An EPS should be considered for a definitive diagnosis and when catheter ablation is anticipated

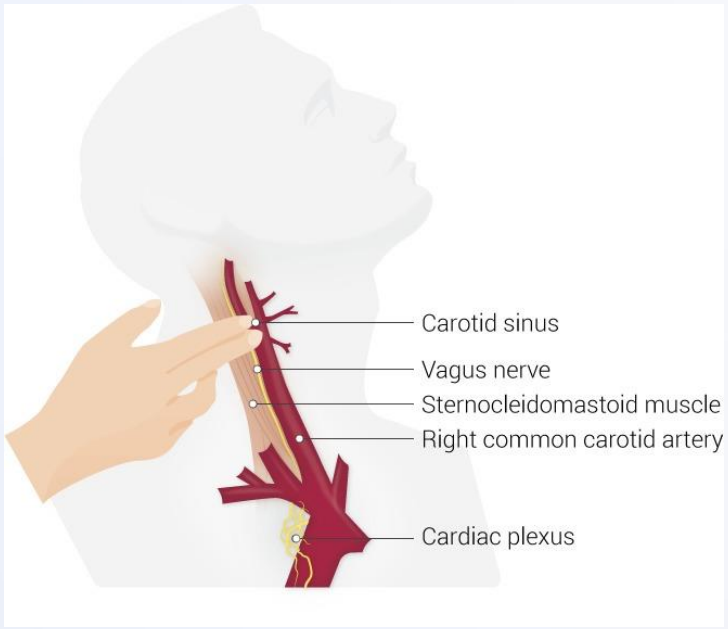
Diff.dg. úzkokomplexových tachykardií

- 12svodové EKG! (SR/při běžící arytmii)
- Začátek, průběh a terminace arytmie (prodloužení PR po SVES, KES, warm-up cool-down, arytmie končí P vlnou/QRS komplexem)

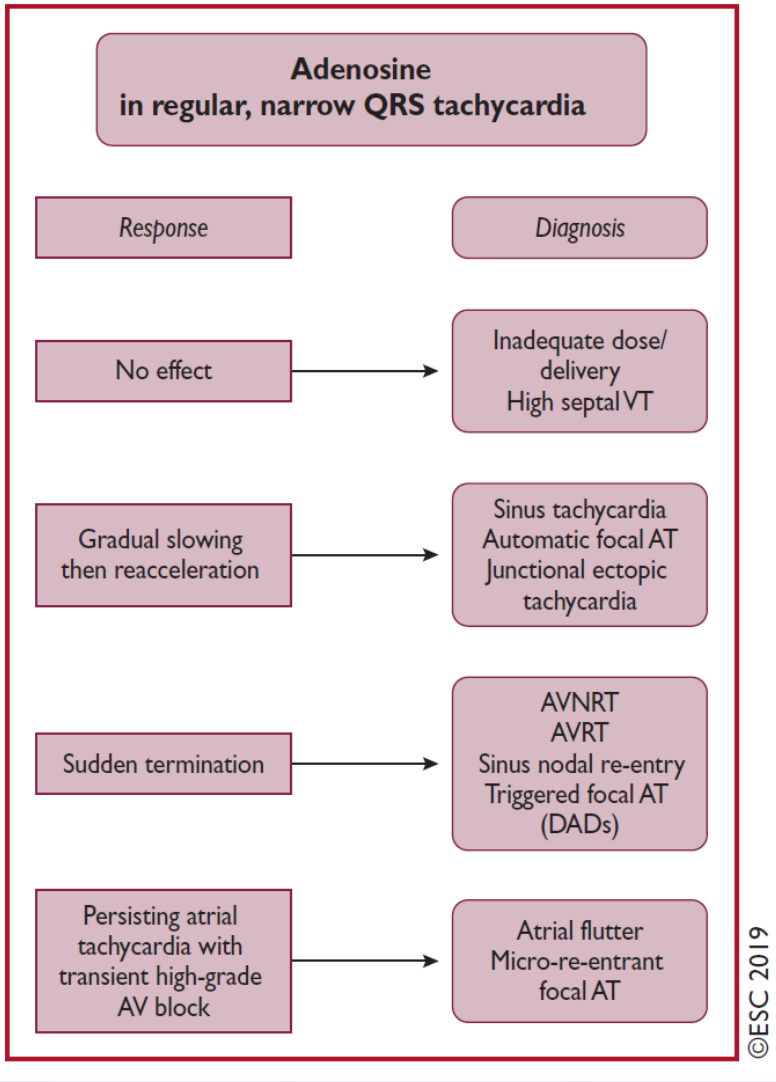
- Pravidelnost RR interválu (>15% CL, <15% CL)
- Vztah P/QRS: short RP, long RP tachykardie



Reakce na vagové manévry/léky

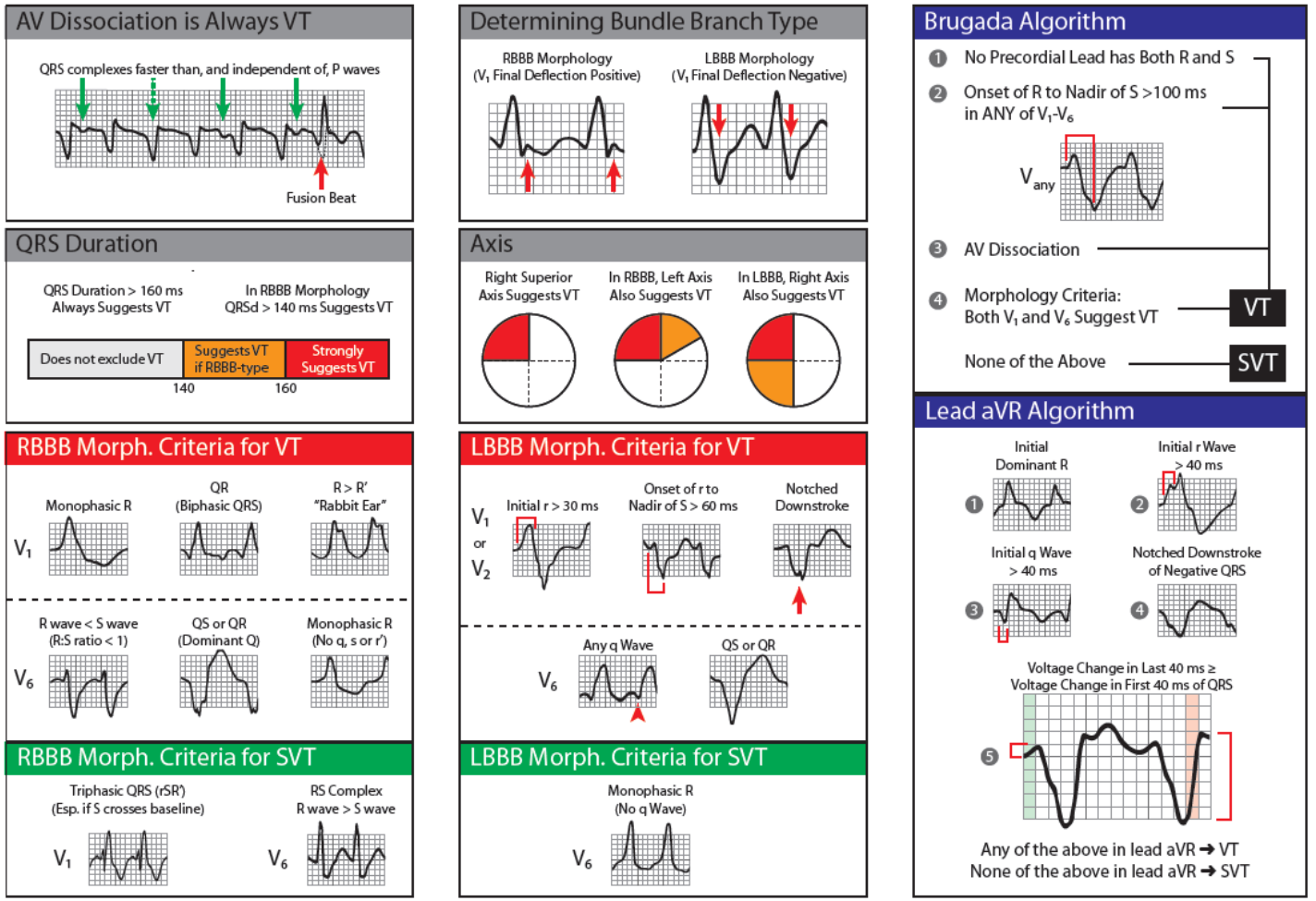


Při manévrech EKG záznam!



Diff.dg. širokokomplexových tachykardií

Figure 1: Morphological Criteria for Discriminating Ventricular Tachycardia from Supraventricular Tachycardia with Aberration



AV = atrioventricular; aVR = augmented vector right; LBBB = left bundle branch block; RBBB = right bundle branch block; SVT = supraventricular tachycardia; VT = ventricular tachycardia.

John B Garner, John M Miller http://dx.doi.org/10.15420/aer.2013.2.1.23

Terminologie SVT

Atrial tachycardias

Sinus tachycardia

- Physiological sinus tachycardia
- Inappropriate sinus tachycardia
- Sinus nodal re-entrant tachycardia

Focal AT

Multifocal AT

MRAT

- Cavotricuspid isthmus-dependent MRAT
  - Typical atrial flutter, counter-clockwise (common) or clockwise (reverse)
  - Other cavotricuspid isthmus-dependent MRAT
- Non-cavotricuspid isthmus-dependent MRAT
  - RA MRAT
  - LA MRAT

AF

AV junctional tachycardias

Atrioventricular nodal re-entrant tachycardia (AVNRT)

- Typical
- Atypical

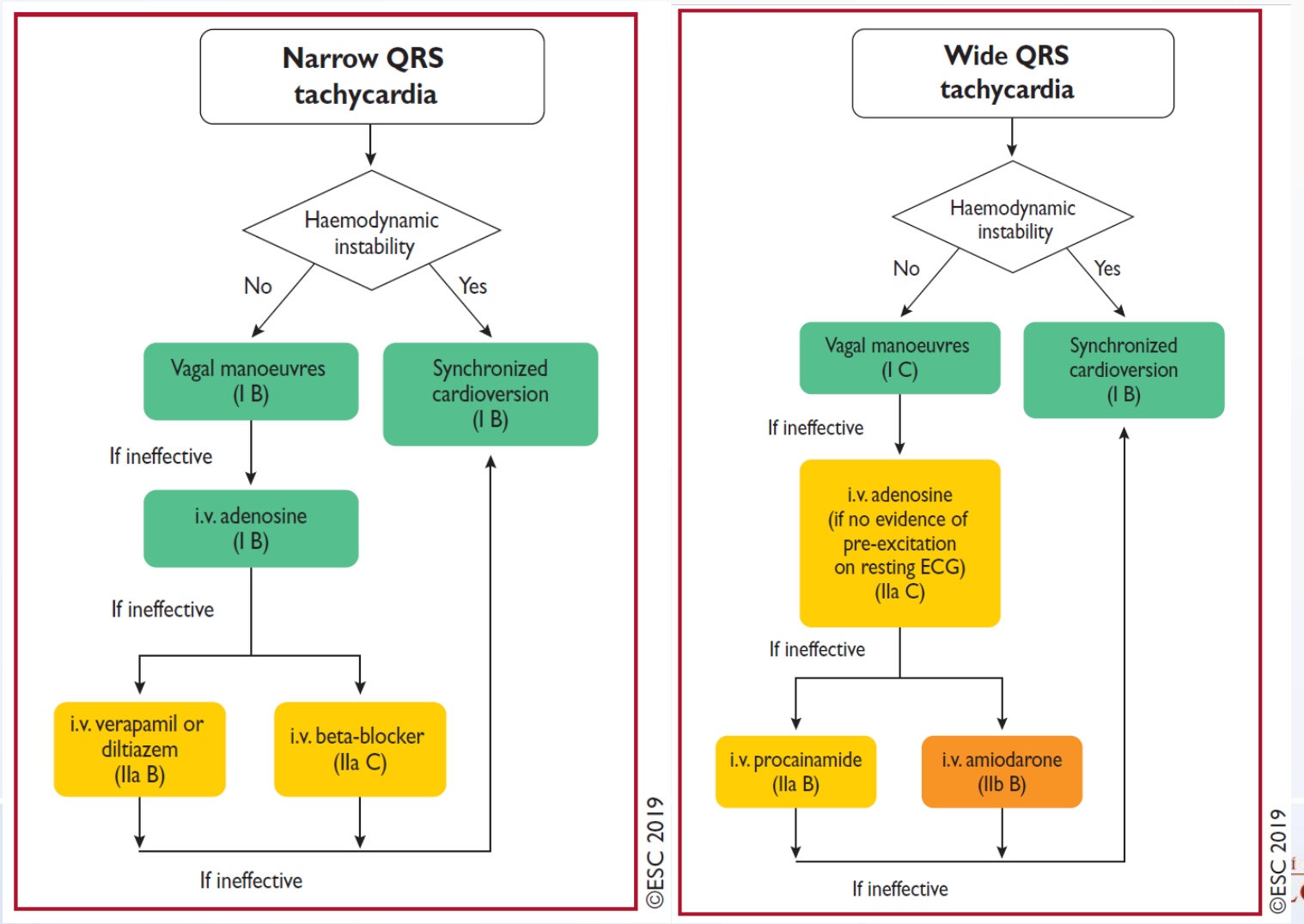
Non-re-entrant junctional tachycardia

- JET (junctional ectopic or focal junctional tachycardia)
- Other non-re-entrant variants

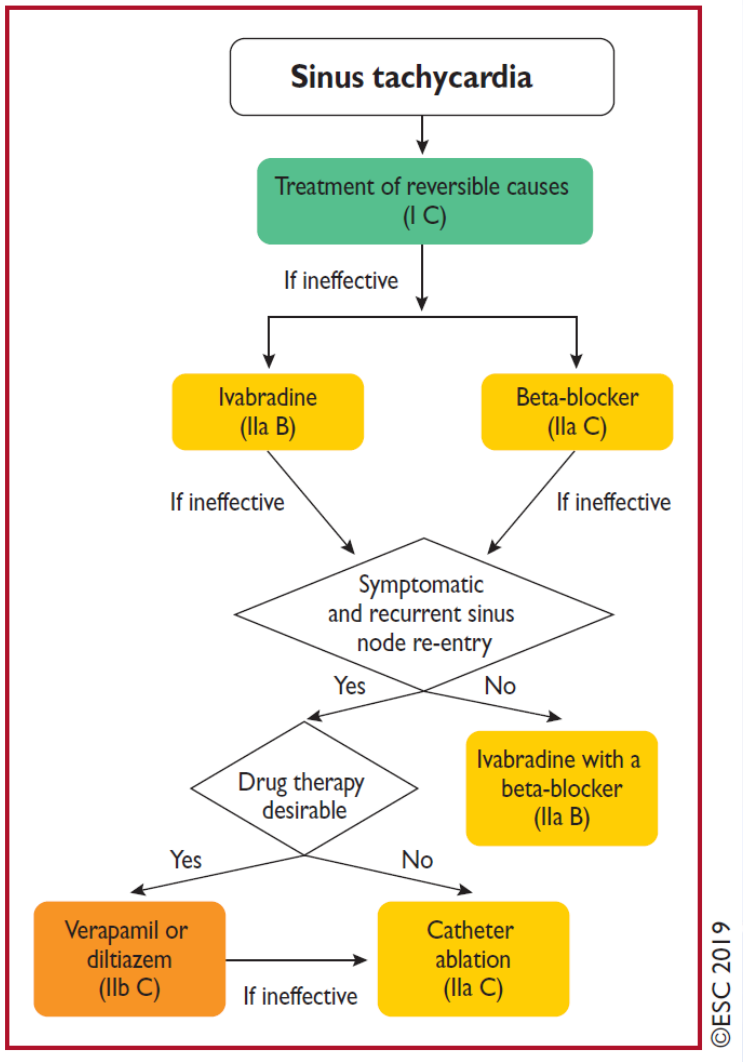
Atrioventricular re-entrant tachycardia (AVRT)

- Orthodromic (including PJRT)
- Antidromic (with retrograde conduction through the AVN or, rarely, over another pathway)

Zásady akutní léčby SVT

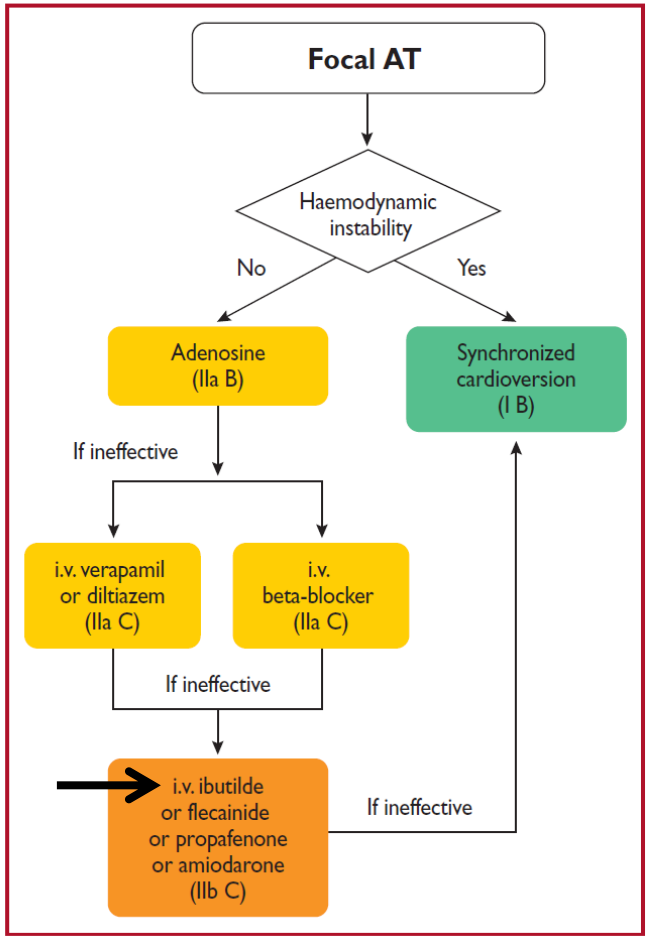


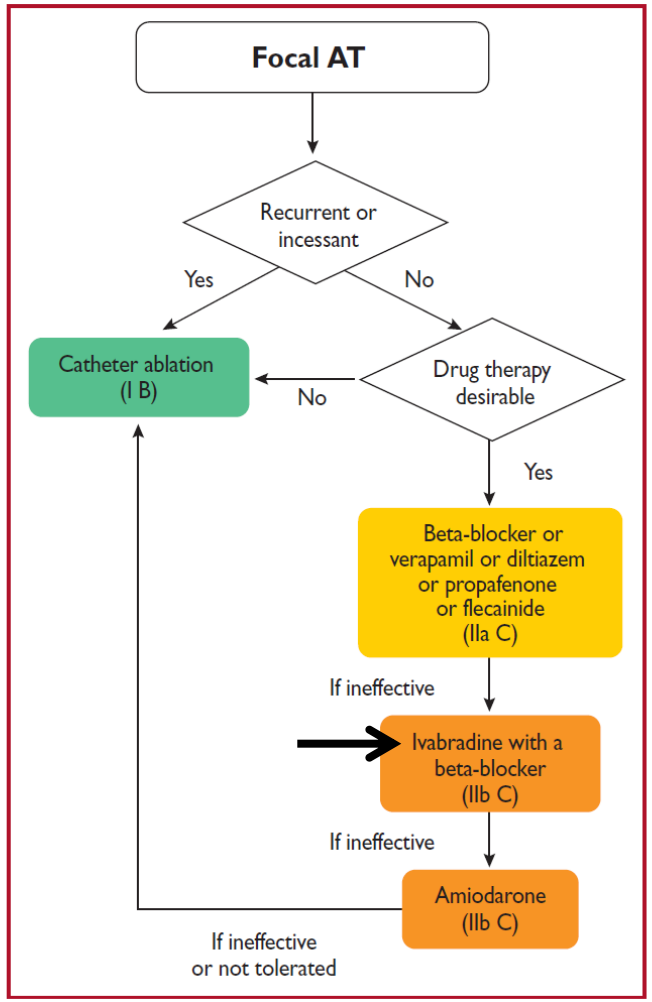
Sinusová tachykardie



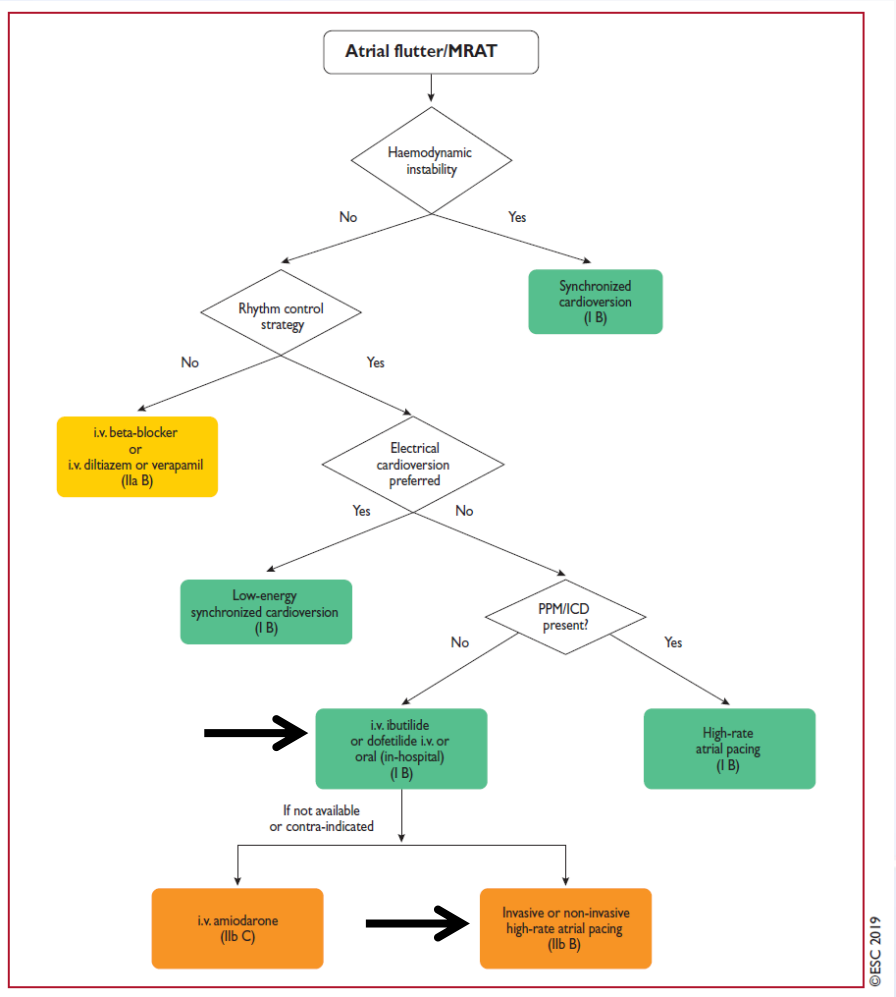
Recommendation	Class[a]	Level[b]
Inappropriate sinus tachycardia		
Evaluation and treatment of reversible causes is recommended.[139,144,162]	I	C
Ivabradine alone or in combination with a beta-blocker should be considered in symptomatic patients.[146–149,151,152]	IIa	B
Beta-blockers should be considered in symptomatic patients.[139,147]	IIa	C
Postural orthostatic tachycardia syndrome		
A regular and progressive exercise programme should be considered.[167–169]	IIa	B
The consumption of ≥2–3 L of water and 10–12 g of sodium chloride daily may be considered.[170,171]	IIb	C
Midodrine, low-dose non-selective beta-blocker, or pyridostigmine may be considered.[167,170,172–174]	IIb	B
Ivabradine may be considered.[175]	IIb	C

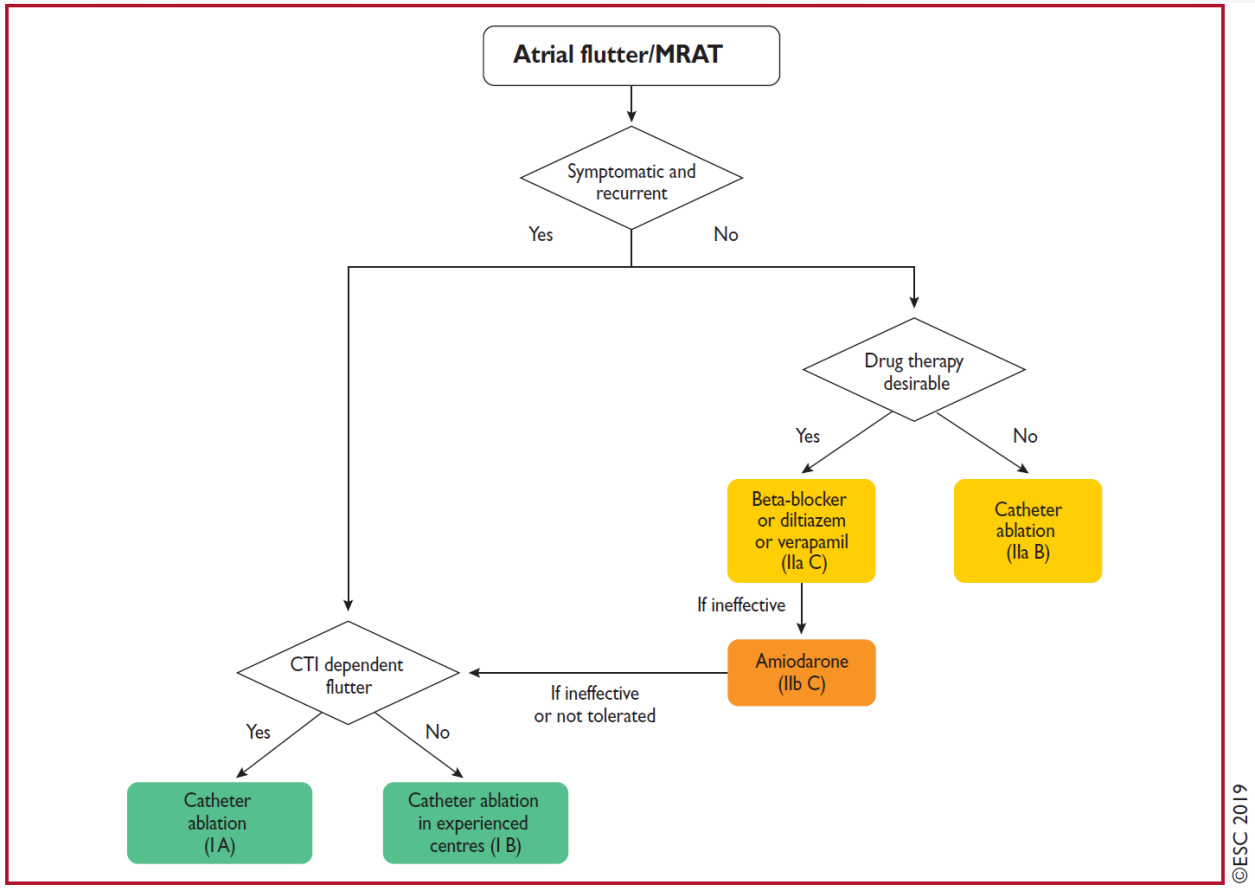
Fokální síňová tachykardie





Flutter síní / Makroreentry ST

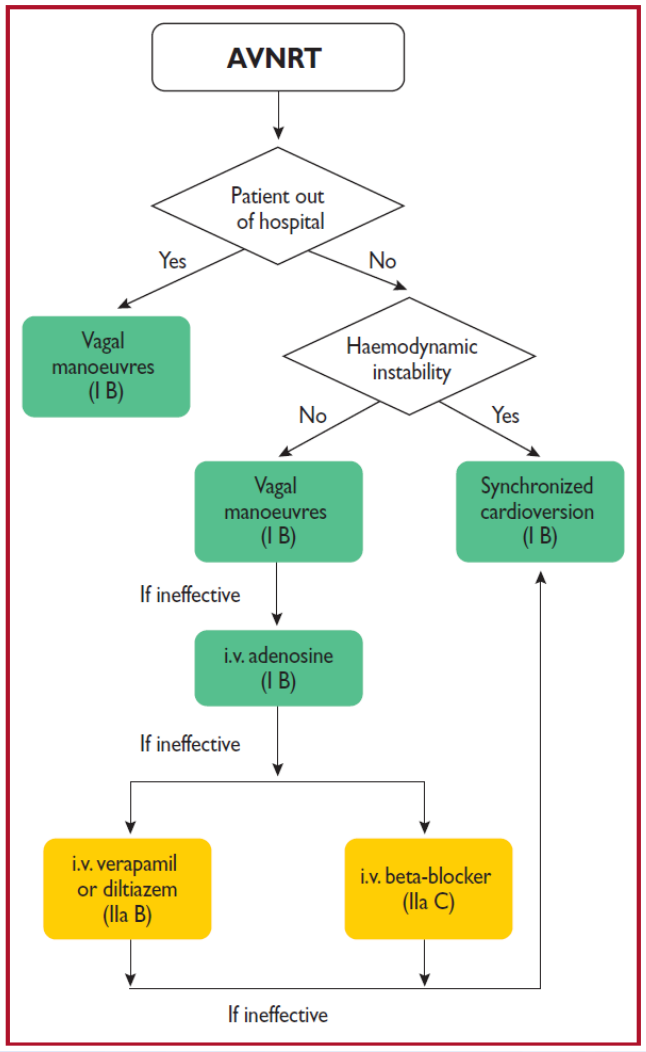


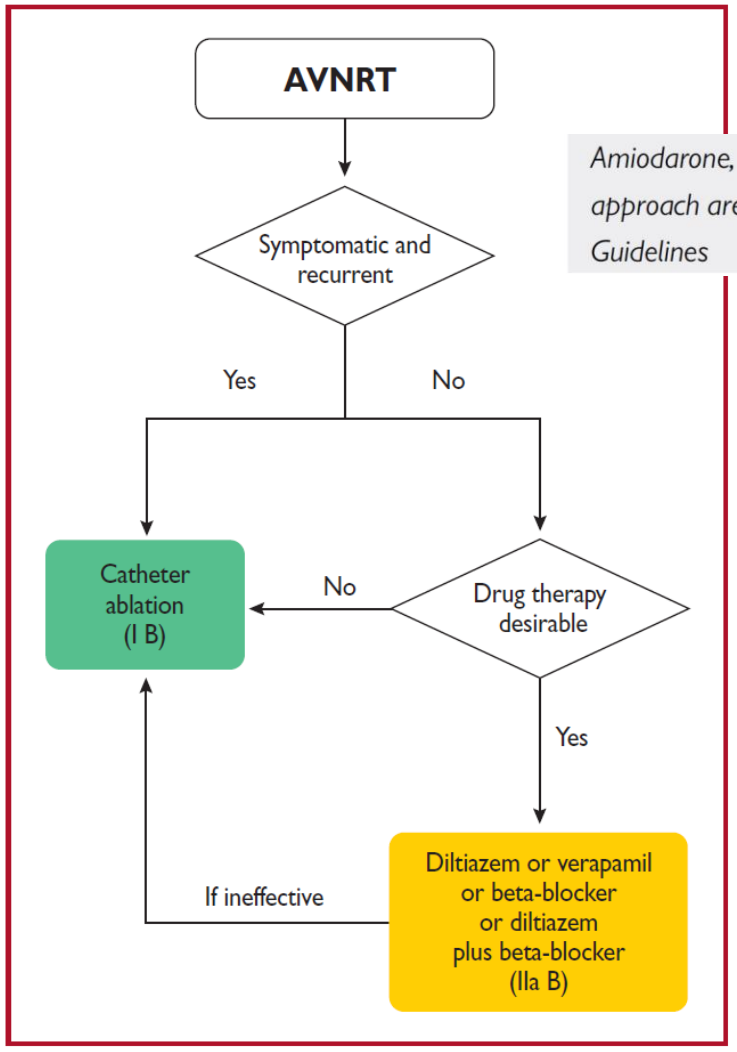


Ibutilid

- Class III
- Pouze k i.v. aplikaci (krátký poločas)
- Farmakoverze fibrilace síní a fluttru síní
- Akutní úspěšnost: flutter síní 38%, FiS 29%
- Medián času do terminace arytmie19,6±15 min (3 až 70min), u 80% terminace do 36 min
- NÚ: prodloužení QT, pKT (TdP) u 3,6% pacientů

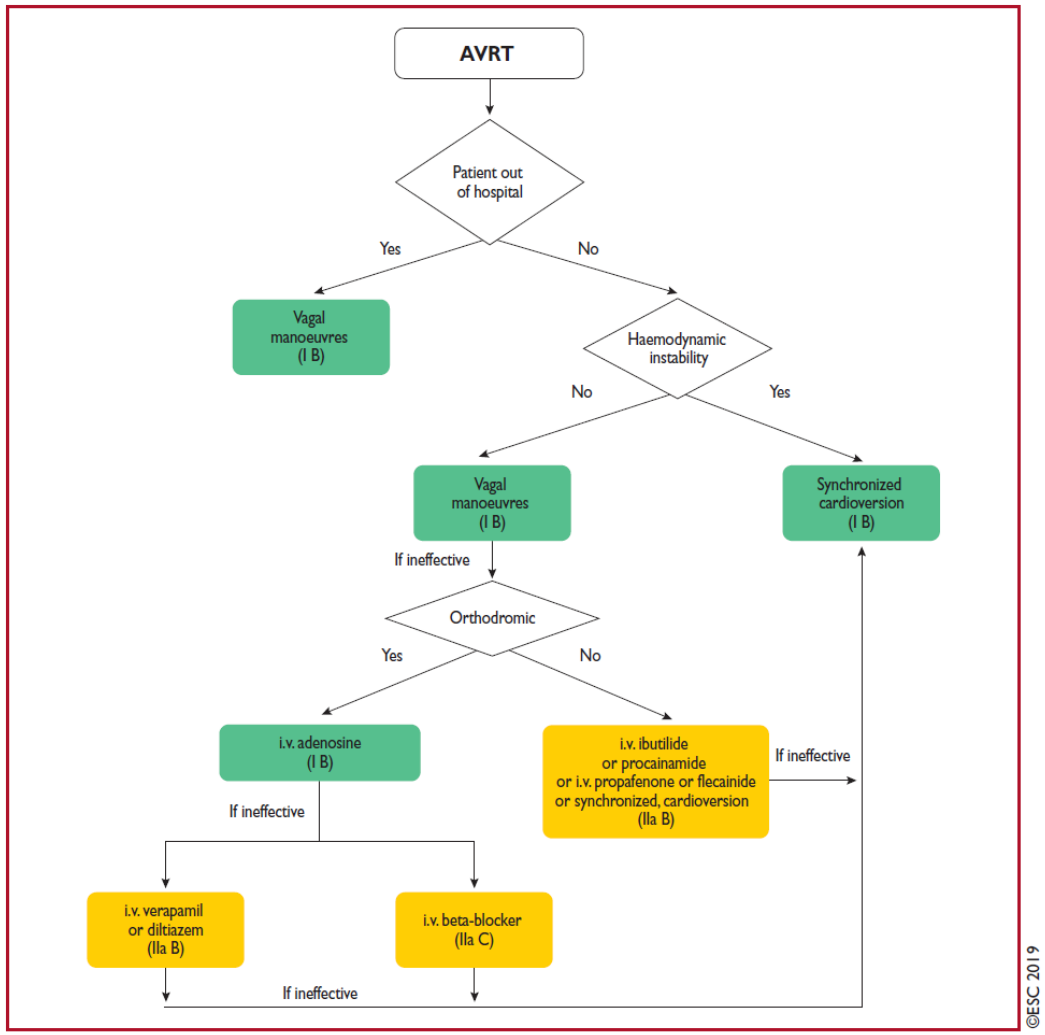
AVNRT





Amiodarone, sotalol, and the 'pill-in-the pocket' approach are not mentioned in the 2019 Guidelines

WPW syndrom


AVRT
Patient out of hospital
Yes
No
Vagal manoeuvres (I B)
Haemodynamic instability
No
Yes
Vagal manoeuvres (I B)
Synchronized cardioversion (I B)
If ineffective
Orthodromic
Yes
No
i.v. adenosine (I B)
i.v. ibutilide or procainamide or i.v. propafenone or flecainide or synchronized, cardioversion (IIa B)
If ineffective
If ineffective
i.v. verapamil or diltiazem (IIa B)
i.v. beta-blocker (IIa C)
If ineffective
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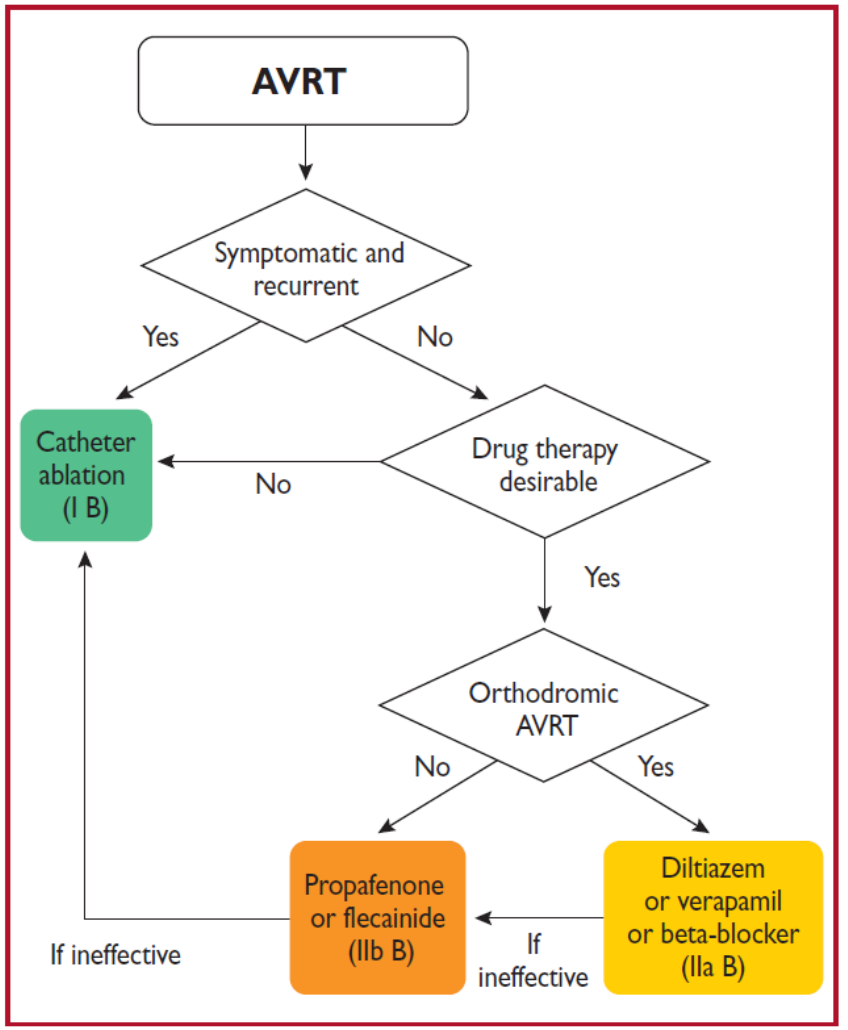
AVRT
Symptomatic and recurrent
Yes
No
Catheter ablation (I B)
No
Drug therapy desirable
Yes
Orthodromic AVRT
No
Yes
Propafenone or flecainide (IIb B)
Diltiazem or verapamil or beta-blocker (IIa B)
If ineffective
If ineffective
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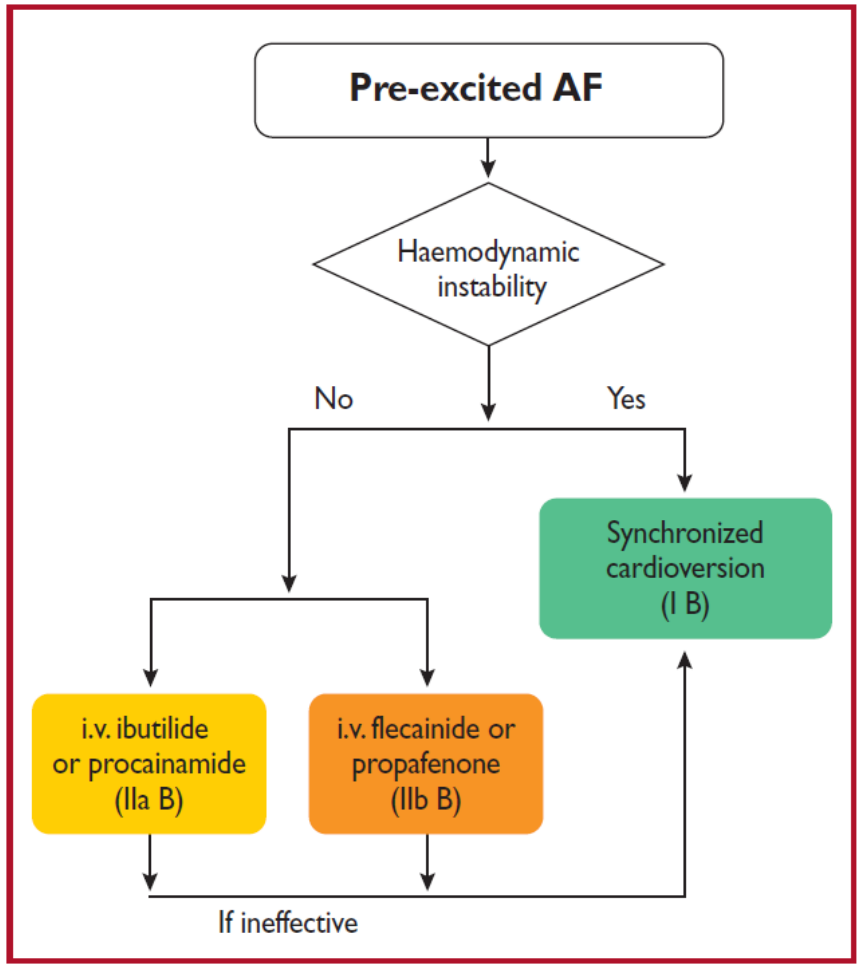
„Preexcitovaná“ fibrilace síní



Recommendations for the acute therapy of pre-excited atrial fibrillation

Recommendation	Class[a]	Level[b]
Haemodynamically unstable patients		
Synchronized DC cardioversion is recommended in haemodynamically unstable patients.[86,130]	I	B
Haemodynamically stable patients		
Ibutilide or procainamide (i.v.) should be considered.[421,430,436]	IIa	B
Flecainide or propafenone (i.v.) may be considered.[429,431]	IIb	B
Synchronized DC cardioversion is recommended if drug therapy fails to convert or control the tachycardia.[86,130]	I	B
Amiodarone (i.v.) is not recommended.[432–435]	III	B

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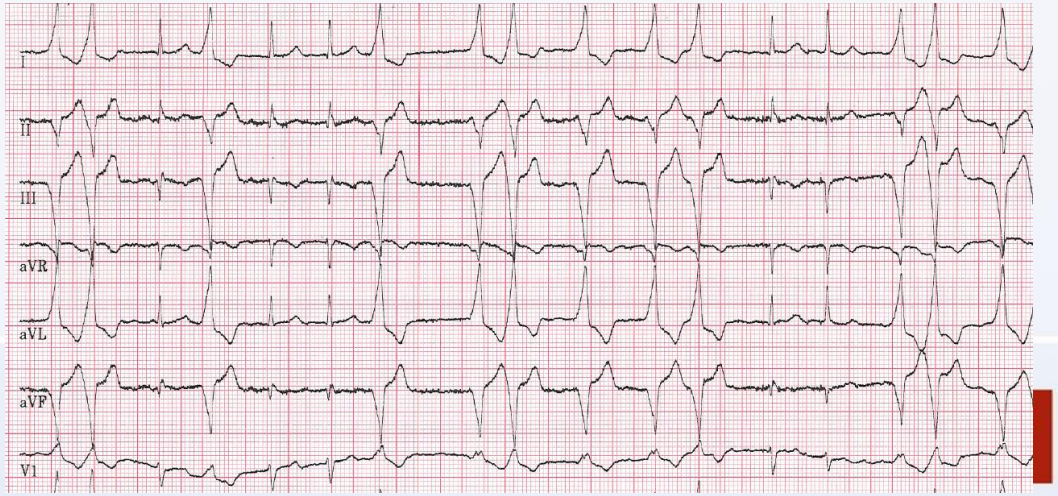
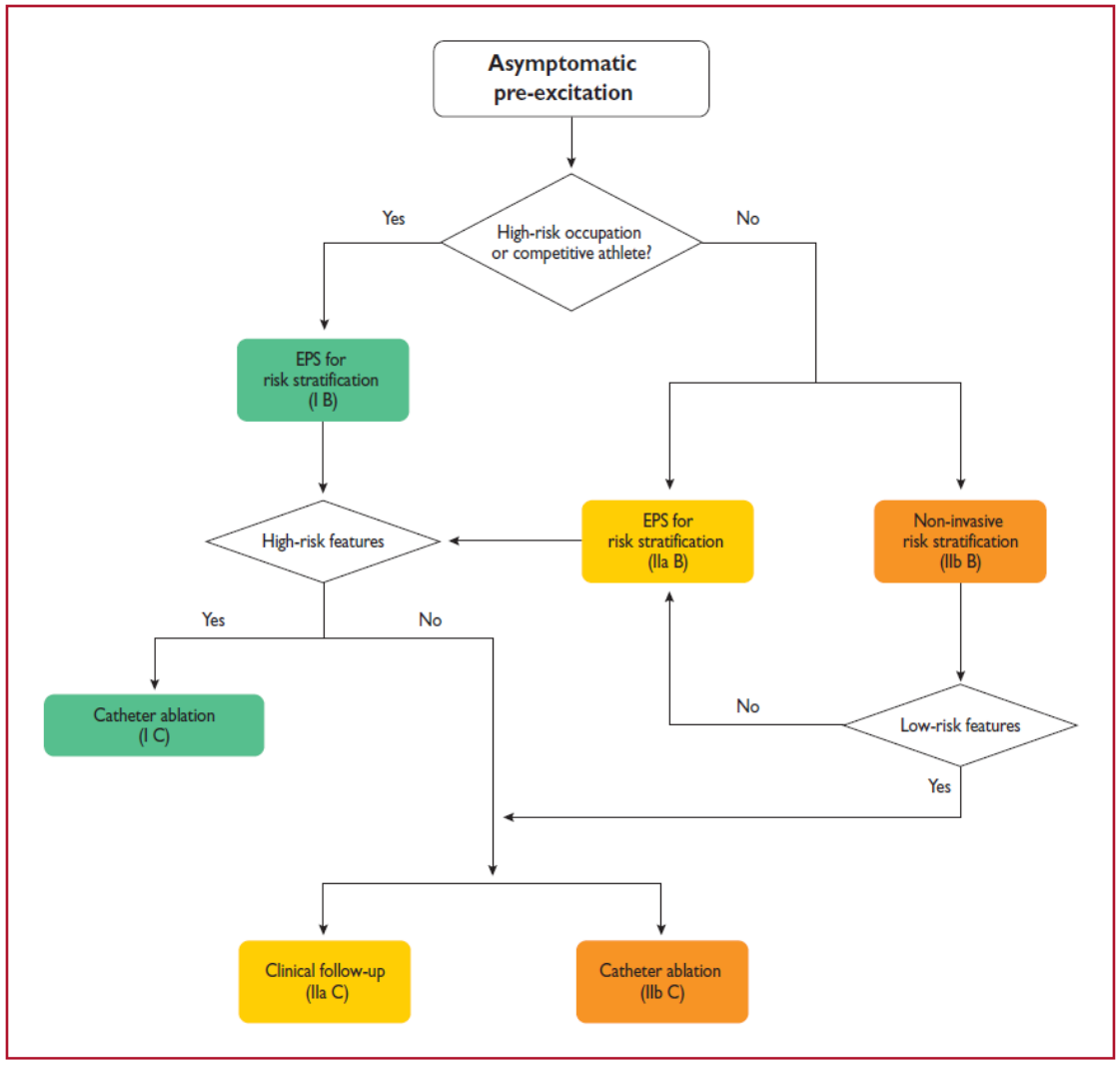


Asymptomatická preexcitace



Catheter ablation is recommended in asymptomatic patients in whom electrophysiology testing with the use of isoprenaline identifies high-risk properties, such as SPERRI ≤250 ms, AP ERP ≤250 ms, multiple APs, and an inducible AP-mediated tachycardia.	I
Non-invasive evaluation of the conducting properties of the AP in individuals with asymptomatic pre-excitation may be considered.	IIb
Catheter ablation may be considered in a patient with asymptomatic pre-excitation and low-risk AP at invasive or non-invasive risk stratification.	IIb
Catheter ablations should be considered in patients with asymptomatic pre-excitation and LV dysfunction due to electrical dyssynchrony.	IIa

SVT v těhotenství

SVT in pregnancy		
Verapamil	IIb	IIa
Catheter ablation	IIb	IIa*
Sotalol, propranolol, quinidine, and procainamide are not mentioned in the 2019 Guidelines.		

During the first trimester of pregnancy, it is recommended that all antiarrhythmic drugs are avoided, if possible.	I	
In pregnant women, beta-1 selective blockers (except atenolol) or verapamil, in order of preference, should be considered for prevention of SVT in patients without WPW syndrome.	IIa	
In pregnant women, flecainide or propafenone should be considered for prevention of SVT in patients with WPW syndrome and without ischaemic or structural heart disease.	IIa	

Digoxin or verapamil should be considered for rate control of AT if beta-blockers fail in patients without WPW syndrome.[543]	IIa	C
Amiodarone is not recommended in pregnant women.[153,543]	III	C
Fluoroless catheter ablation should be considered in cases of drug-refractory or poorly tolerated SVT, in experienced centres.[550–552]	IIa	C

SVT a sporty

Table 13 **Recommendations for sports participation in athletes with ventricular pre-excitation and supraventricular arrhythmias**

	Criteria for eligibility	Eligibility
Premature atrial beats	No symptoms, no cardiac disease	All sports
AVRT or AF in the context of WPW syndrome	Ablation is mandatory. Sports are allowed 1 month after ablation if there are no recurrences	All sports
Asymptomatic ventricular pre-excitation	Ablation is mandatory in patients at high risk. Sports are allowed 1 month after ablation if there are no recurrences	All sports
Paroxysmal SVT (AVNRT, AVRT over a concealed AP, and AT)	Ablation is recommended. Sports are allowed 1 month after ablation if there are no recurrences	All sports
	Ablation undesirable or not feasible	All sports, except those with high intrinsic risk of loss of consciousness

SVT a způsobilost k řízení motorových vozidel

Table 14 **European Working Group 2013 report on driving and cardiovascular disease: driving in arrhythmias and conduction disorders: supraventricular tachycardia**

Conduction disorder/ arrhythmia	Group 1 (motorcycles, cars, and other small vehicles with and without a trailer)	Group 2 (vehicles over 3500 kg or passenger carrying vehicles exceeding eight seats excluding the driver)
AF/atrial flutter/focal AT	Driving may continue provided no history of syncope. If history of syncope, driving must cease until the condition has been satisfactorily controlled/treated.	Driving may continue provided no history of syncope and anticoagulation guidelines are adhered to. If history of syncope, driving must cease unless the underlying cause is treated and the risk of recurrence is low. Rate control during tachycardia should be adequate. Driving can only be resumed after medical assessment.
AVNRT, AVRT, and WPW	If history of syncope, driving must cease until the condition has been satisfactorily controlled/treated.	Driving may continue provided no history of syncope or other significant symptoms (e.g. palpitations with dizziness). If so, driving must cease until the underlying cause is treated so that the risk of recurrence is low. In case of pre-excitation, driving may only be allowed after specialist assessment.

AF = atrial fibrillation; AT = atrial tachycardia; AVNRT = atrioventricular nodal re-entrant tachycardia; AVRT = atrioventricular re-entrant tachycardia; WPW = Wolff-Parkinson-White.

Závěry pro praxi

- Prakticky všechny SVT lze léčit kat. ablací
- Nabízet symptomatickým pacientům katetrizační ablaci jako možnost první volby
- Nedávat těhotným amiodaron, při redidivující symptomatické SVT se má zvážit fluoroless katetrizační ablace
- Nedávat verapamil u širokokomplexové tachykardie (pokud není jasná etiologie arytmie)
- Nepoužívat sotalol u SVT
- Nedávat amiodaron u “preexcitované” FiS
- Nebídnout EFV/RFA i asymptomatickým pacientům s preexcitací

Děkuji za pozornost.