ESC European Society of Cardiology

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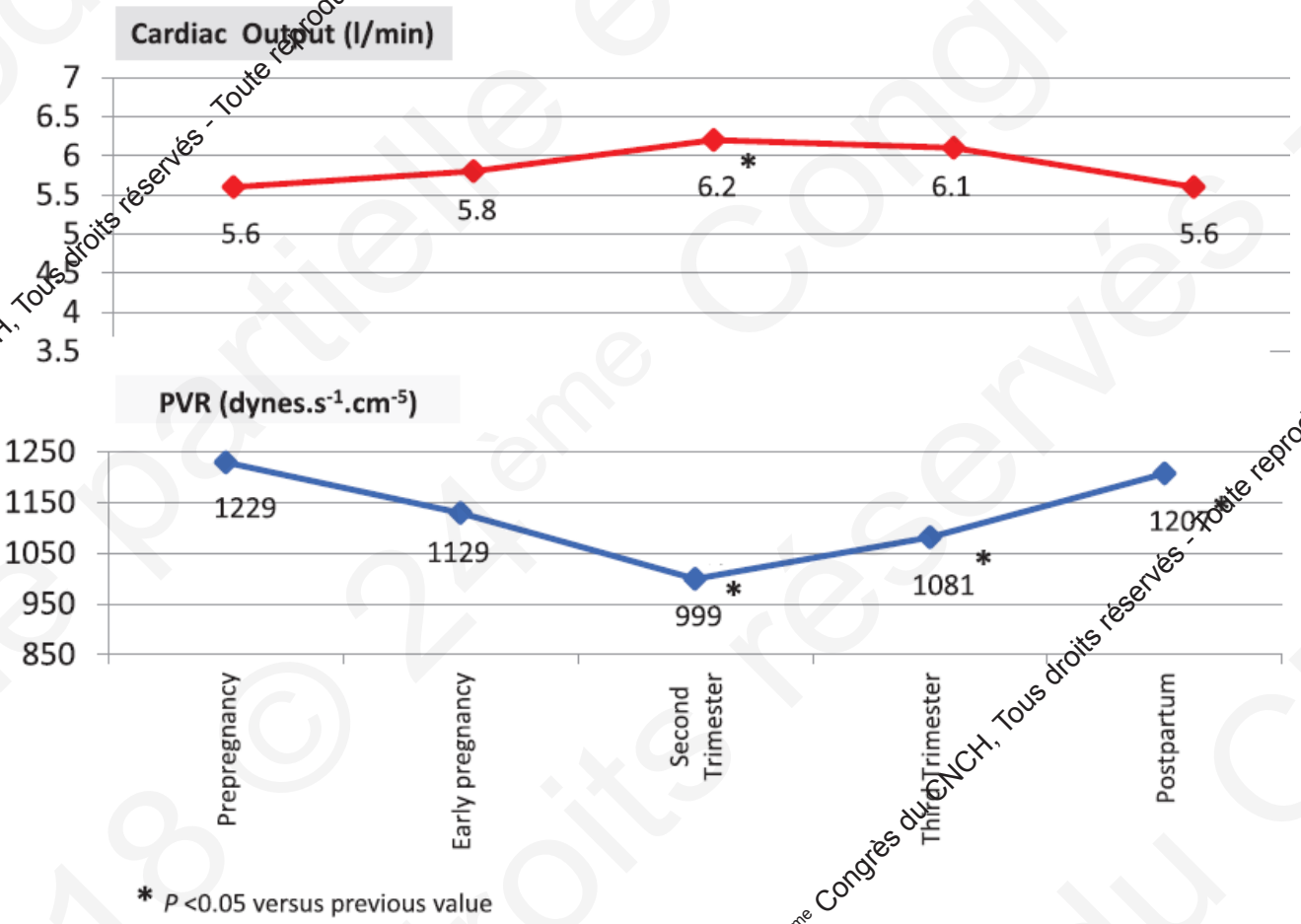
ESC GUIDELINES

2018 ESC Guidelines for the management of cardiovascular diseases during pregnancy

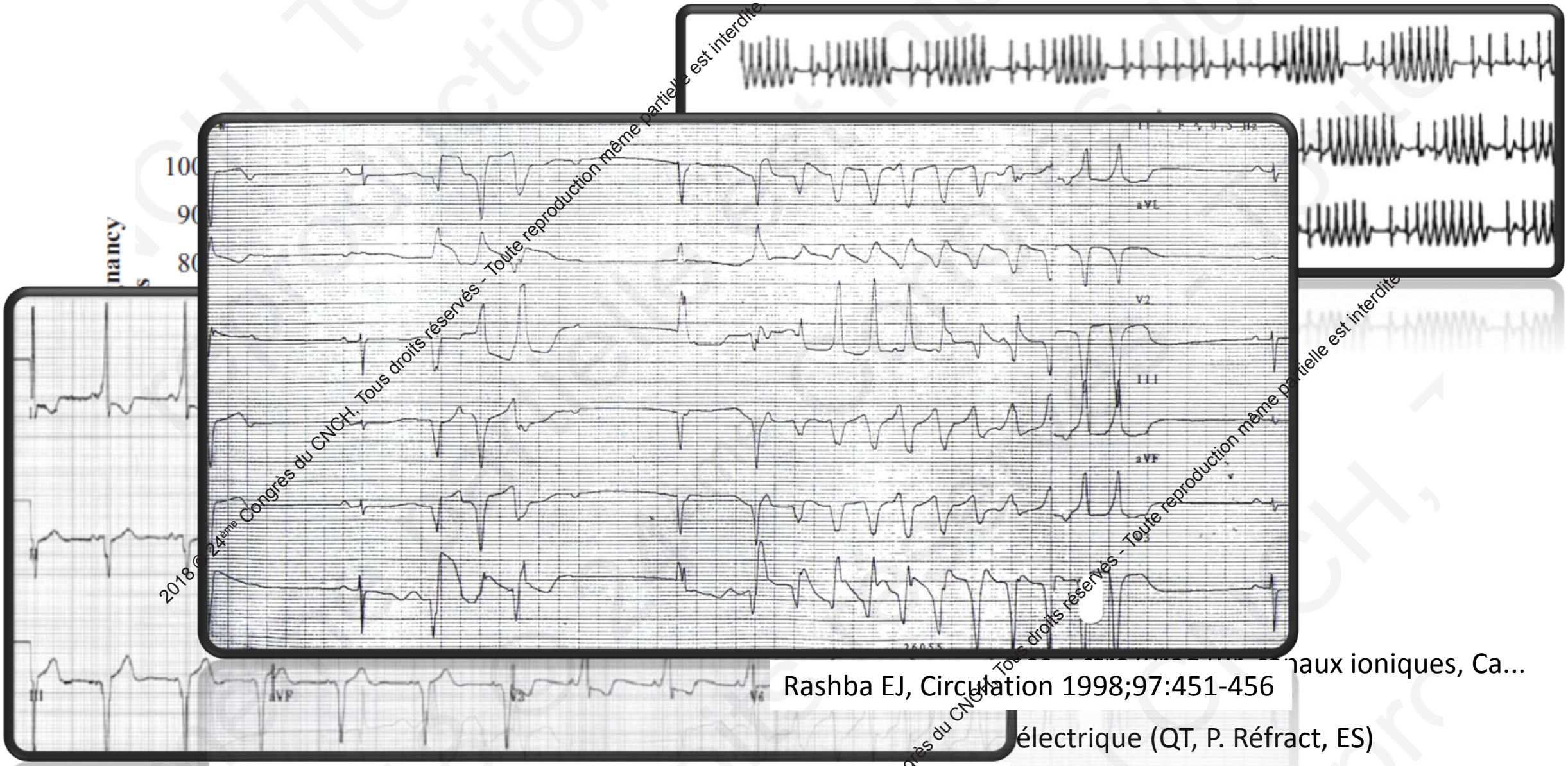
The Task Force for the Management of Cardiovascular Diseases during Pregnancy of the European Society of Cardiology (ESC)

antoine dompnier CH Annecy 11-2018

modifications cardiovasc pendant la grossesse



M. Sanghavi ***Circulation*. 2014;130:1003-1008**



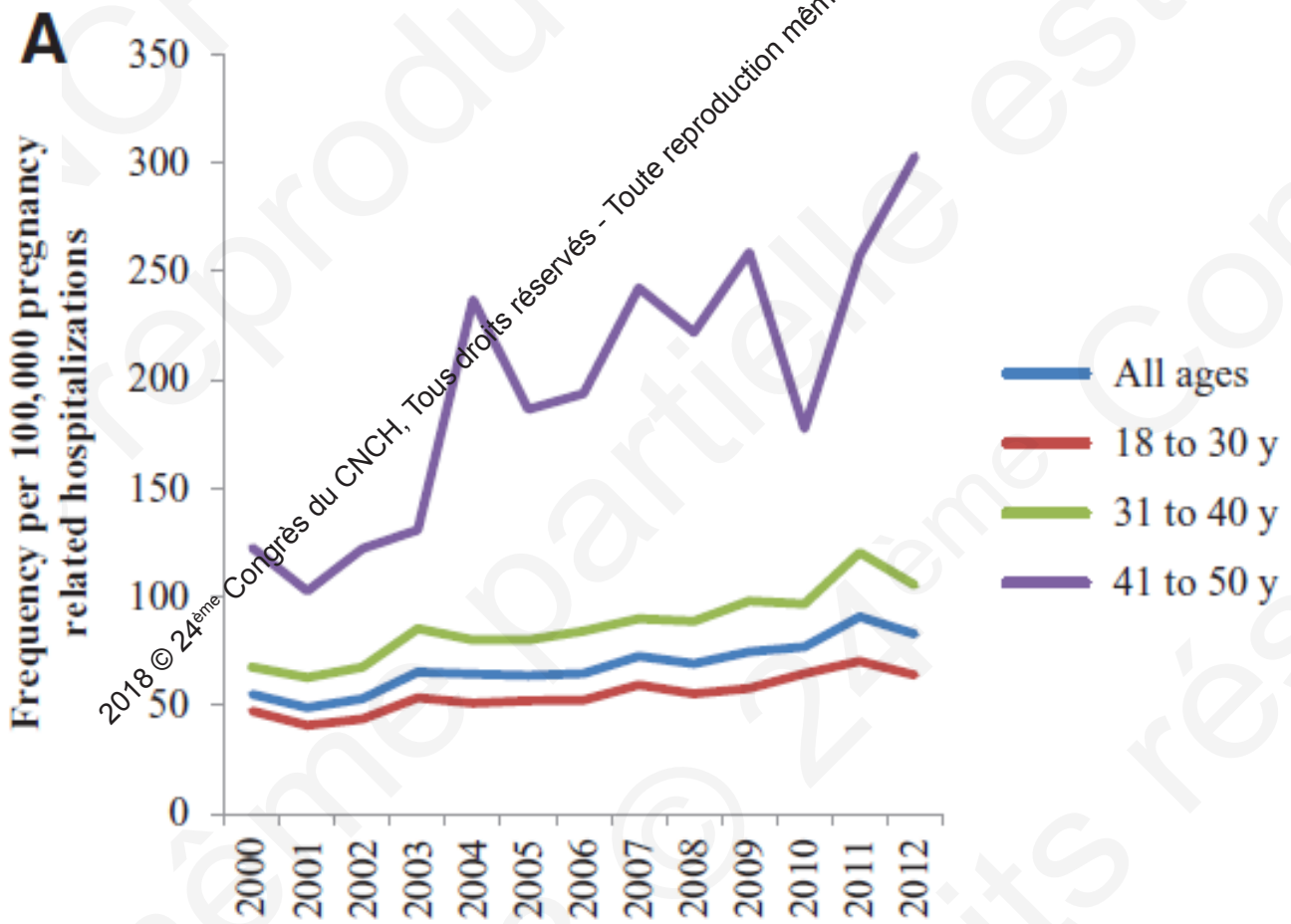
Widerhorn J,. WPW syndrome during pregnancy: increased incidence of supraventricular arrhythmias. Am Heart J 1992; 123:796 – 798.

Rashba EJ, Circulation 1998;97:451-456

naux ioniques, Ca...

électrique (QT, P. Réfract, ES)

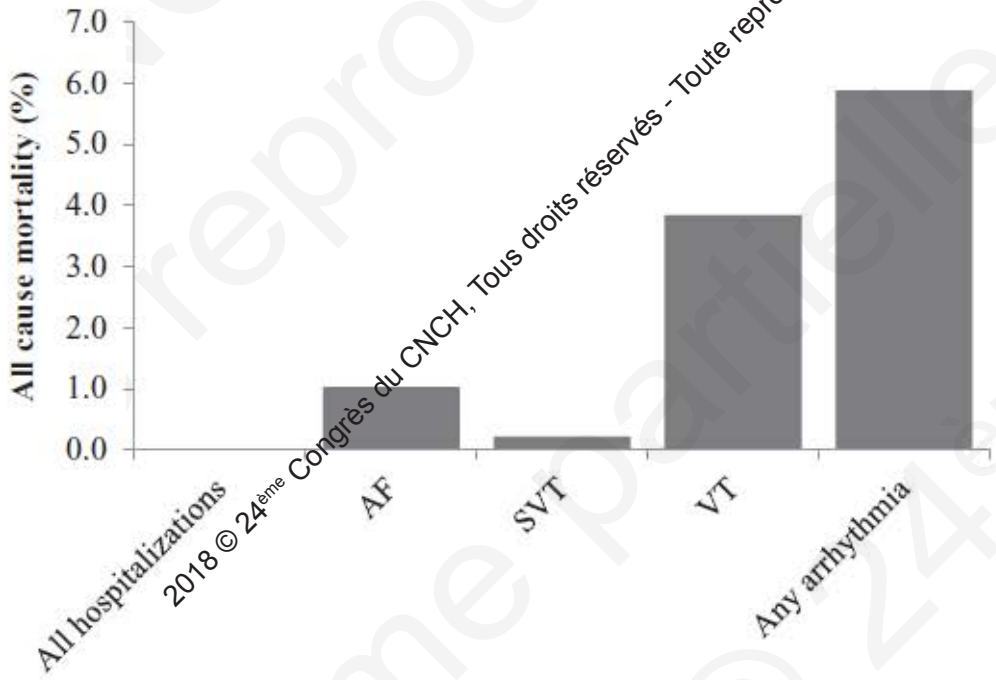
Vaidya et al*Circulation.* 2017;135:619–621

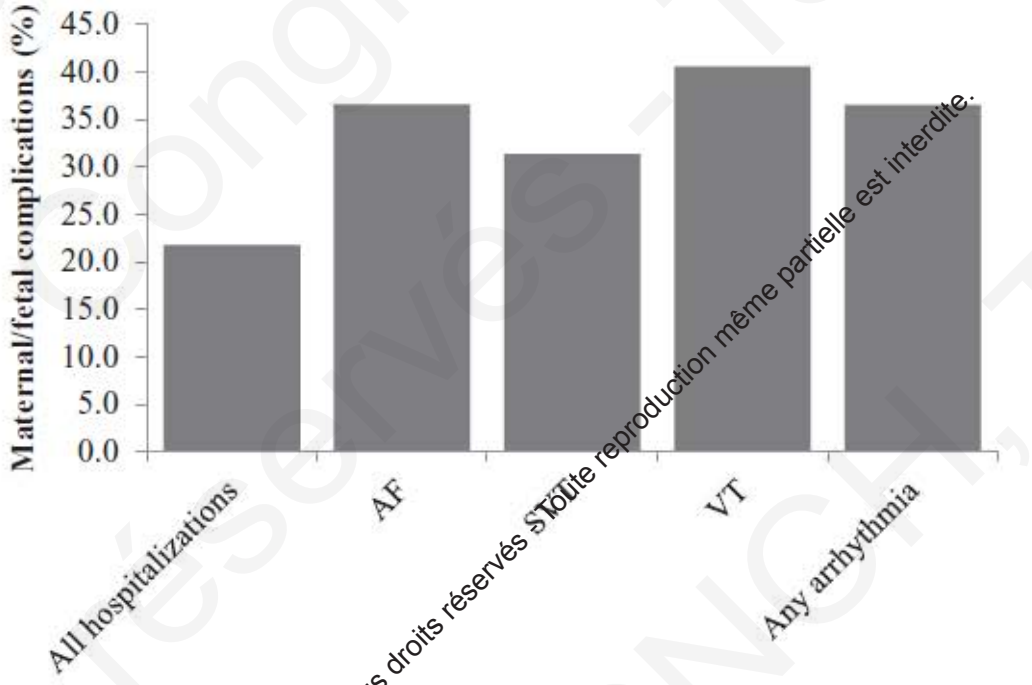


Âge (FA)

Cardiopathies sous-jacentes (TV, FA)

Vaidya et al*Circulation.* 2017;135:619–621.





Mortalité (ACFA), Retard de croissance, prématurité, hémorragies, (pré-) éclampsie, HTA ...

Vaidya et al*Circulation.* 2017;135:619–621.

Ttt anti-arythmique

- Efficacité en dehor
- Études randomisée
- Expérience...Pragm
- indication pour foe
- Classification FDA
- Bénéfice attendu

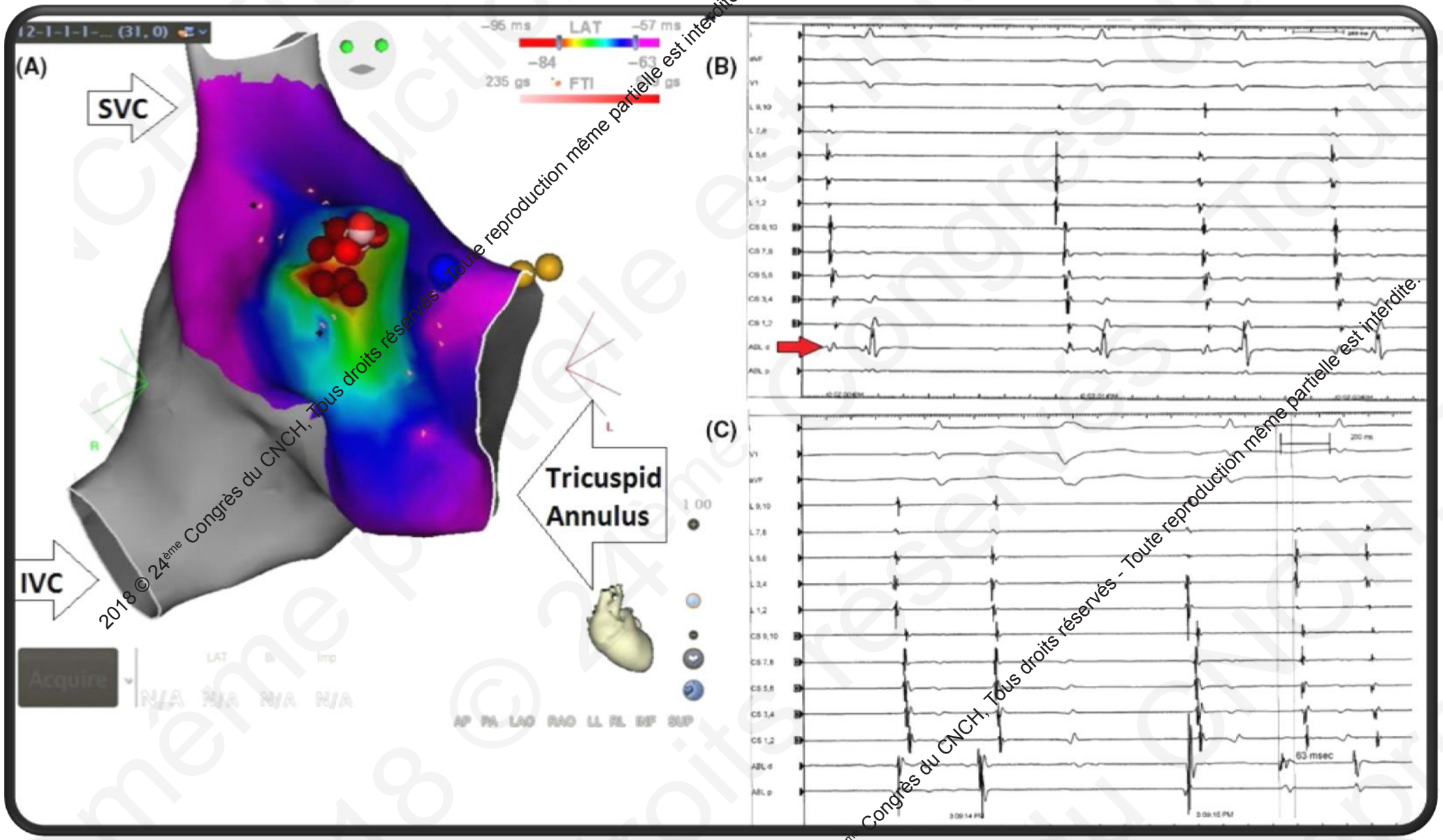
Cardioversion : peu de risque, monitoring fœtal après la cardioversion

Drugs	Classification (Vaughan Williams	Former FDA	Placenta permeable	Transfer to breast milk	Pre-clinical/clinical safety data
Adenosine[c]	Antiarrhythmic	C	No	No	No foetal adverse effects reported (limited human data)
Digoxin[e]	Cardiac glycoside	C	Yes	Yes[b]	Serum levels unreliable, safe
Quinidine	Antiarrhythmic (Class IA)	C	Yes	Yes[b]	Thrombocytopenia, premature birth, eighth nerve toxicity
Procainamide	Antiarrhythmic (Class IA)	C	Yes	Yes	• Unknown (limited experience) • No animal data
Lidocaine	Antiarrhythmic (Class IB)	C	Yes	Yes[b]	Foetal bradycardia, acidosis, central nervous system toxicity Animal data: • reproduction studies in rats (6× RHD): no evidence of harm to the foetus
Propafenone	Antiarrhythmic (Class IC)	C	Yes	Unknown	Unknown (limited experience) Animal data: • rabbits (3× MRHD) and rats (6× MRHD): embryotoxic (decreased survival) • rats (1× MRHD): increases in maternal deaths, and reductions in neonatal survival, body weight gain, and physiological development at 4× MRHD
Flecainide	Antiarrhythmic (Class IC)	C	Yes	Yes[b]	Inadequate human data Animal data: • teratogenic effects (e.g. club paws, sternebral and vertebral abnormalities, pale hearts with contracted ventricular septa) and an embryotoxic effect (e.g. increased resorptions) in one breed of rabbit (New Zealand White) but not in another (Dutch Belted) (4× MRHD)

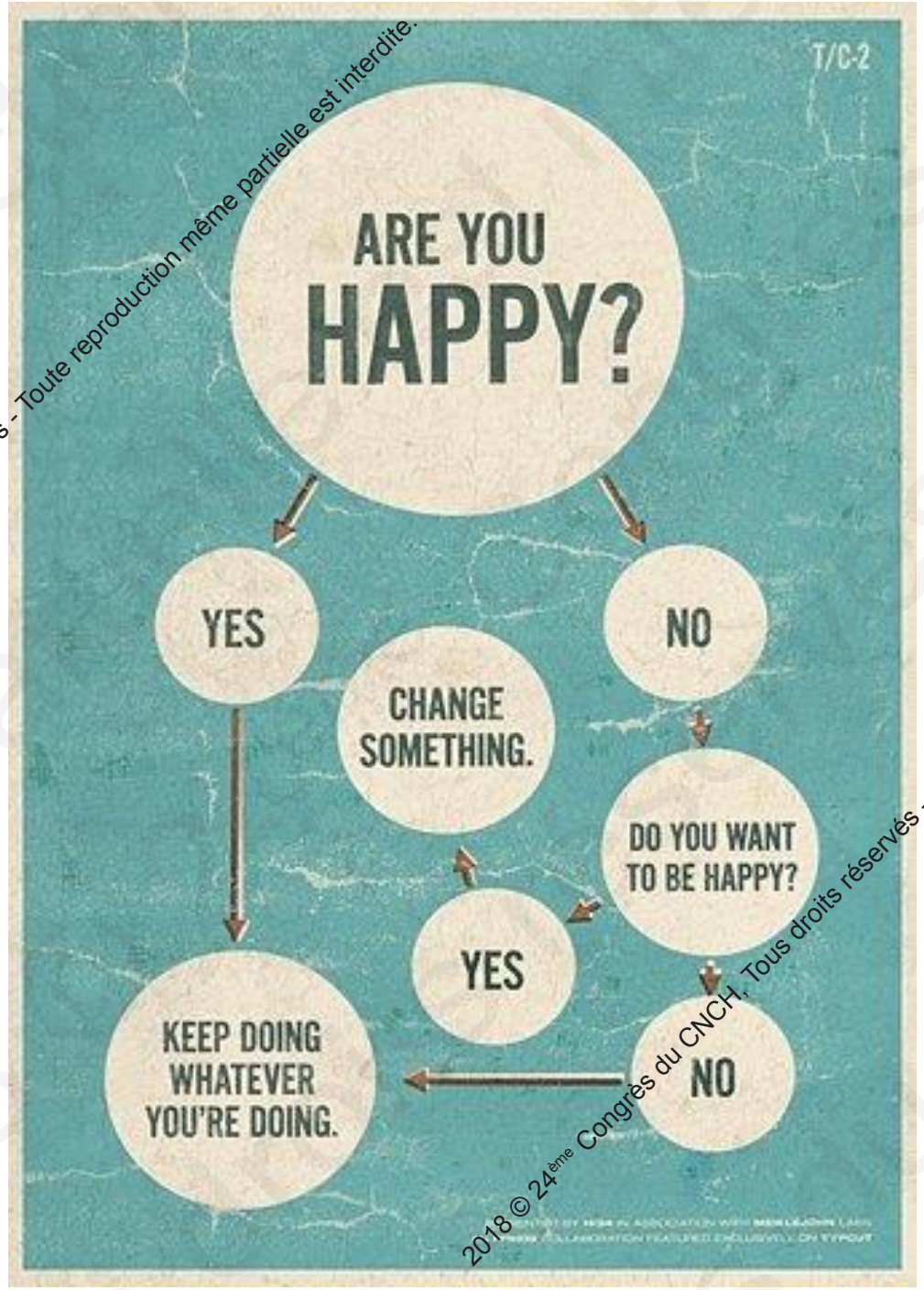
Drugs	Classification (Vaughan Williams	Former FDA	Placenta permeable	Transfer to breast milk	Pre-clinical/clinical safety data
Bisoprolol	Beta-blocker (Class II)	C	Yes	Yes	Foetal bradycardia and hypoglycaemia
Metoprolol	Beta-blocker (Class II)	C	Yes	Yes[b]	Bradycardia and hypoglycaemia in foetus Animal data: • rats: no evidence of teratogenicity
Propranolol	Beta-blocker (Class II)	C	Yes	Yes[b]	Bradycardia and hypoglycaemia in foetus Animal data: • rats (1× MRHD) embryotoxicity (reduced litter size, increased resorption rates) and toxicity (deaths) • rabbits (5× MRHD): no embryo or neonatal toxicity
Nadolol	Beta-blocker (Class II)	C	Unknown	Yes	Foetal bradycardia and hypoglycaemia Animal data: • evidence of embryo- and foetotoxicity was found in rabbits, but not in rats or hamsters, at doses 5–10× MRHD; no teratogenic potential was observed in any of these species
Carvedilol	Alpha/beta-blocker	C	Yes (data from rats; no human data available)	Yes • (data in rats, increased, no human data) • (increased mortality at 1 week post-partum in neonates from rats	No adequate human data • bradycardia and hypoglycaemia in foetus • use only if potential benefit outweighs potential risk Animal data: • increased post-implantation loss, decrease in foetal body weight, and delayed skeletal development in rats (50× MRHD). No developmental toxicity in rats at 10× MRHD
Labetalol	α/β-blocker	C	Yes	Yes[b]	Animal data: • rats and rabbits (4× or 6× MRHD): no foetal malformations

Drugs	Classification (Vaughan Williams	Former FDA	Placenta permeable	Transfer to breast milk	Pre-clinical/clinical safety data
Sotalol	Antiarrhythmic (Class III)	B	Yes	Yes[b]	Bradycardia and hypoglycaemia Animal data: • no teratogenic potential in rats (9× MRHD) and rabbits (7× MRHD) • rabbits: a high dose of sotalol hydrochloride (6× MRHD) produced a slight increase in foetal death, likely due to maternal toxicity • rats (18× MRHD): increased number of early resorptions
Amiodarone	Antiarrhythmic (Class III)	D	Yes	Yes	Thyroid insufficiency (9%), hyperthyroidism, goitre, bradycardia, growth retardation, premature birth

Drugs	Classification (Vaughan Williams	Former FDA	Placenta permeable	Transfer to breast milk	Pre-clinical/clinical safety data
Verapamil oral	Calcium channel blocker (Class IV)	C	Yes	Yes[b]	Well tolerated Animal data:- rabbits (oral, 1.5× RHD): no teratogenicity; rats (oral, 6× RHD): no teratogenicity, but embryocidal, retarded foetal growth and development, and hypotension
Verapamil i.v.	Calcium channel blocker (Class IV)	C	Yes	Yes[b]	i.v. use is associated with a greater risk of hypotension and subsequent foetal hypoperfusion • see verapamil oral
Diltiazem	Calcium channel blocker (Class IV)	C	No	Yes[b]	• possible teratogenic effects • use only when benefit outweighs risk Animal data: • embryo and foetal lethality in mice, rats, and rabbits (4–6× RHD), and abnormalities of the skeleton, heart, retina, and tongue • mice, rats, or rabbits: reductions in early individual pup weights and pup survival, prolonged delivery, and increased incidence of stillbirths



Kaspar G, Successful fluoroless radiofrequency catheter ablation of supraventricular tachycardia during pregnancy. *Clin Case Rep*. 2018;6:1334–1337



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Recommendations	Class[a]	Level[b]
Acute management (intravenous administration of drugs) of SVT and AF		
Vagal manoeuvres and if these fails, adenosine are recommended for acute conversion of PSVT.[12,326,327]	I	C
Immediate electrical cardioversion is recommended for any tachycardia with haemodynamic instability and for pre-excited AF.[12,306,326,336–338]	I	C
Beta-1-selective blockers should be considered for acute conversion of PSVT.[12,326]	IIa	C
Ibutilide or flecainide may be considered for termination of atrial flutter and AF in stable patients with structurally normal hearts.[c] [12,329]	IIb	C
Long-term management (oral administration of drugs) of SVT and AF		
Beta-1-selective blockers or verapamil[d] is recommended for the prevention of SVT in patients without pre-excitation on resting ECG.[12,327]	I	C
Flecainide[e] or propafenone[e] are recommended for the prevention of SVT in patients with WPW syndrome.[12]	I	C
Beta-selective blockers are recommended for rate control of AT or AF.[12]	I	C
Flecainide[e], propafenone,[e] or sotalol[f] should be considered to prevent SVT, AT, and AF if AV nodal blocking agents fail.[12]	IIa	C
Digoxin[d] and verapamil[d] should be considered for rate control of AT or AF if beta-blockers fail.	IIa	C
Catheter ablation with electroanatomical systems should be considered in experienced centres in cases of drug-refractory and poorly tolerated SVT.[15–17]	IIa	C
Acute management (intravenous administration of drugs) of ventricular tachyarrhythmias		
Immediate electrical cardioversion is recommended for sustained both unstable and stable VT.[72,326,336–338]	I	C
For acute conversion of sustained, haemodynamically stable, monomorphic VT (e.g. idiopathic VT), a beta-blocker, sotalol,[f] flecainide,[e] procainamide, or overdrive ventricular pacing should be considered.[72]	IIa	C
Long-term management (oral administration of drugs) of ventricular tachyarrhythmias		
ICD (preferably one chamber) is recommended prior to pregnancy if clinically indicated. If indication emerges during pregnancy, ICD implantation is recommended using echocardiographic guidance or mapping, especially if the foetus is beyond 8 weeks of gestation.[72,330,340]	I	C
Beta-blocking agents are recommended during pregnancy and post-partum in patients with long QT syndrome or catecholaminergic polymorphic VT.[72,323]	I	C
Beta-blocking agents or verapamil[d,e] are recommended for the prevention of idiopathic sustained VT if associated with severe symptoms or haemodynamic compromise.[72,331]	I	C
In idiopathic sustained VT, sotalol[f] or flecainide[e] should be considered for prevention if other drugs fail.[72]	IIa	C
Catheter ablation with electroanatomical mapping systems may be considered in experienced centres in sustained drug-refractory and poorly tolerated VT if there are no other alternatives.[15–17]	IIb	C

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Recommendations for the management of arrhythmias		
Acute management (intravenous administration of drugs) of SVT and AF		
Immediate electrical cardioversion is recommended for any tachycardia with haemodynamic instability and for pre-excited AF.[12,306]	I	C
Long-term management (oral administration of drugs) of SVT and AF		
Beta-1-selective blockers or verapamil[b] are recommended for the prevention of SVT in patients without pre-excitation on resting ECG.[12,327]	I	C
Flecainide or propafenone[c] are recommended for the prevention of SVT in patients with WPW syndrome.[12]	I	C
Beta-1-selective blockers are recommended for rate control of AT or AF.[12]	I	C
Acute management (intravenous administration of drugs) of ventricular tachyarrhythmias		
Immediate electrical cardioversion is recommended for both sustained unstable and stable VT.[72]	I	C
Long-term management (oral administration of drugs) of ventricular tachyarrhythmias		
Beta-blocking agents are recommended during pregnancy and post-partum in patients with long QT syndrome or catecholaminergic polymorphic ventricular tachycardia.[72]	I	C

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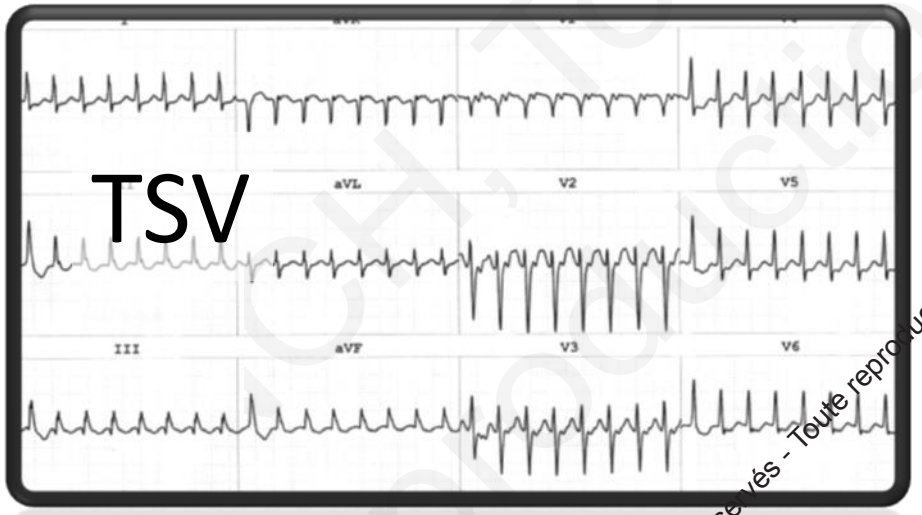
TSV



en aigu

- MANOEUVRES VAGALES (I)
- ADENOSINE (I)
- B1B iv (IIa)

long terme

WPW post réduction ?

non

- B1B VERAPAMIL en prévention des récidives (I)
- FLECAINE ou PROPAFENONE ou SOTALOL (IIa)
- ABLATION (IIa)
  si possible avant...

oui

- FLECAINE ou PROPAFENONE en prévention des récidives (I)
  (disparition du SOTALOL)
- ABLATION (IIa)
  si possible avant...

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FA

en aigu

- CVE si instable ou FA/WPW (I)
- FLECAINE iv si stable et pas de cardiopathie (IIb)

long terme

- B1B pour contrôle de fc (I)
- FLECAINE, PROPAFENONE ou SOTALOL pour prévenir récidive si échec BB (IIa)
- DIGOXINE VERAPAMIL pour contrôle de fc (IIa)

+/- anticoagulation

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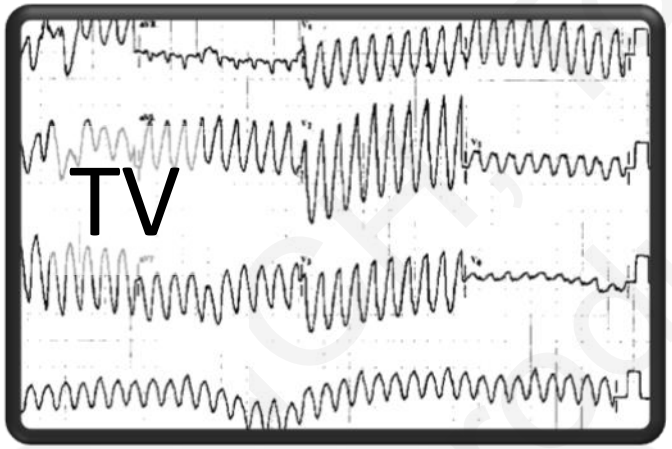

en aigu

- CVE si TV soutenue *stable ou instable* (I)
- Si stable et idiopathique : BB, SOTALOL, FLECAINE, PROPAFENONE ou OVERDRIVE (IIa)

long terme

- DAI ? (si possible avant... ou après 8ème semaine (écho ou mapping) (IIa)
- LQT (*et p.partum +++*) ou TV cathécholergiques : BB (I)
- RVOT mal tolérées, BB ou VERAPAMIL en prévention (I)
- SOTALOL ou FLECAINE si échec (IIa)
- ABLATION 3D si mal tolérée et échec ttt, en dernier recours (IIb)

Table 6 Recommended surveillance levels at time of delivery in women with arrhythmias

Risk for arrhythmia with haemodynamic compromise at delivery		Level of surveillance[a]	Class[b]	Level[c]
Low-risk	PSVT, AF, idiopathic VT, low-risk LQTS, WPW syndrome	1	I	C
Medium-risk	Unstable SVT, VT, those with an implanted ICD, VT and structural heart disease, Brugada syndrome; moderate risk: LQTS, catecholaminergic polymorphic VT	2	I	C
High-risk for life threatening arrhythmia	Unstable VT in structural heart disease/congenital heart disease, unstable VT/TdP in high-risk LQTS patients, short QT syndrome, high-risk catecholaminergic polymorphic VT	3	I	C

Descriptions of actions to be planned	Surveillance level		
	Low 1	Medium 2	High 3
Consult cardiologist	x		
Consultation with multidisciplinary team including arrhythmologists at specialized centre		x	x
Mode and location of delivery as advised by obstetricians	x	x	
Caesarean delivery recommended			x
Monitor cardiac rhythm (telemetry, external rhythm monitor)		x	x
Intravenous line		x	x
Arterial line			x
Prepare for intravenous administration of adenosine		x	
Prepare for intravenous administration of a beta-blocker		x	x
Prepare for intravenous administration of selected antiarrhythmic drugs			x
External cardioverter defibrillator at site		x	x
Delivery at thoracic operating theatre			x
Prepare for transfer to cardiac intensive care unit post-partum if needed			x

bHCG… ??

Arythmie et grossesse

- ACFA associé à une augmentation du risque de mortalité maternelle et fœtale pendant la grossesse
- Patientes aux ATCDs d'arythmie supraventriculaire ou ventriculaire doivent bénéficier si possible d'une ablation avant la grossesse
- Risque accru de mort subite en post-partum chez les patientes porteuses d'un syndrome du QT long
- Ttt choc, pharmaco, Ablation, PM DAI // bénéfice attendu (PLLR>FDA)