European Heart Journal (2016) **0**, 1–4
doi:10.1093/eurheartj/ehw455

SPECIAL ARTICLE

European Heart Rhythm Association (EHRA) consensus document on the management of supraventricular arrhythmias, endorsed by Heart Rhythm Society (HRS), Asia-Pacific Heart Rhythm Society (APHRS), and Sociedad Latinoamericana de Estimulación Cardiaca y Electrofisiologia (SOLAECE)

Demosthenes G. Katritsis, (Chair)[1]*, Giuseppe Boriani[2], Francisco G. Cosio[3], Gerhard Hindricks[4], Pierre Jais[5], Mark E. Josephson[6], Roberto Keegan[7], Young-Hoon Kim[8], Bradley P. Knight[9], Karl-Heinz Kuck[10], Deirdre A. Lane[11], Gregory Y. H. Lip[11], Helena Malmborg[12], Hakan Oral[13], Carlo Pappone[14], Sakis Themistoclakis[15], Kathryn A. Wood[16], and Carina Blomström-Lundqvist, (Co-chair)[12]

[1]Athens Euroclinic, Athens, Greece; and Beth Israel Deaconess Medical Center, Harvard Medical School, Boston, MA, USA; [2]Cardiology Department, Modena University Hospital, University of Modena and Reggio Emilia, Modena, Italy; [3]Hospital Universitario De Getafe, Madrid, Spain; [4]University of Leipzig, Heartcenter, Leipzig, Germany; [5]University of Bordeaux, CHU Bordeaux, LIRYC, France; [6]Berth Israel Deaconess Medical Center, Boston, MA, USA; [7]Hospital Privado del Sur y Hospital Español, Bahia Blanca, Argentina; [8]Korea University Medical Center, Seoul, Republic of Korea; [9]Northwestern Memorial Hospital, Chicago, IL, USA; [10]Asklepios Hospital St Georg, Hamburg, Germany; [11]University of Birmingham Institute of Cardiovascular Science, City Hospital, Birmingham, UK; and Aalborg Thrombosis Research Unit, Department of Clinical Medicine, Aalborg University, Aalborg, Denmark; [12]Department of Cardiology and Medical Science, Uppsala University, Uppsala, Sweden; [13]University of Michigan, Ann Arbor, MI, USA; [14]IRCCS Policlinico San Donato, San Donato Milanese, Italy; [15]Dell'Angelo Hosiptal, Venice-Mestre, Italy; and [16]Emory University School of Nursing, Atlanta, USA

Received 20 June 2016; revised 11 September 2016; accepted 12 September 2016

Keywords Supraventricular • Tachycardia • Arrhythmia • European heart rhythm association

This is an executive summary of the full consensus document on the management of supraventricular tachycardia (SVT) patients, published in *Europace*. The consensus document was prepared by a Task Force from the European Heart Rhythm Association (EHRA) with representation from the Heart Rhythm Society (HRS), Asia-Pacific Heart Rhythm Society (APHRS), and Sociedad Latinoamericana de Estimulación Cardiaca y Electrofisiologia (SOLAECE). It summarizes current developments in the field, and provides recommendations for the management of patients with SVT based on the principles of evidence-based medicine, with focus on new advances since the last ESC guidelines.[1] It does not cover atrial fibrillation (AF), which is the subject of a separate clinical guideline.

The process for evidence review has been described in the full document. Consensus statements are evidence-based and derived primarily from published data. Current systems of ranking level of evidence are becoming complicated in a way that their practical utility might be compromised. We have, therefore, opted for an easier and, perhaps, more user-friendly system of ranking that should allow physicians to easily assess current status of evidence and consequent guidance (Supplementary material online, *Table S1*). EHRA grading of

*Corresponding author. Tel: +30 6944845505, Fax: +30 210 6416661, Email: dkatrits@bidmc.harvard.edu and dkatrits@dgkatritsis.gr

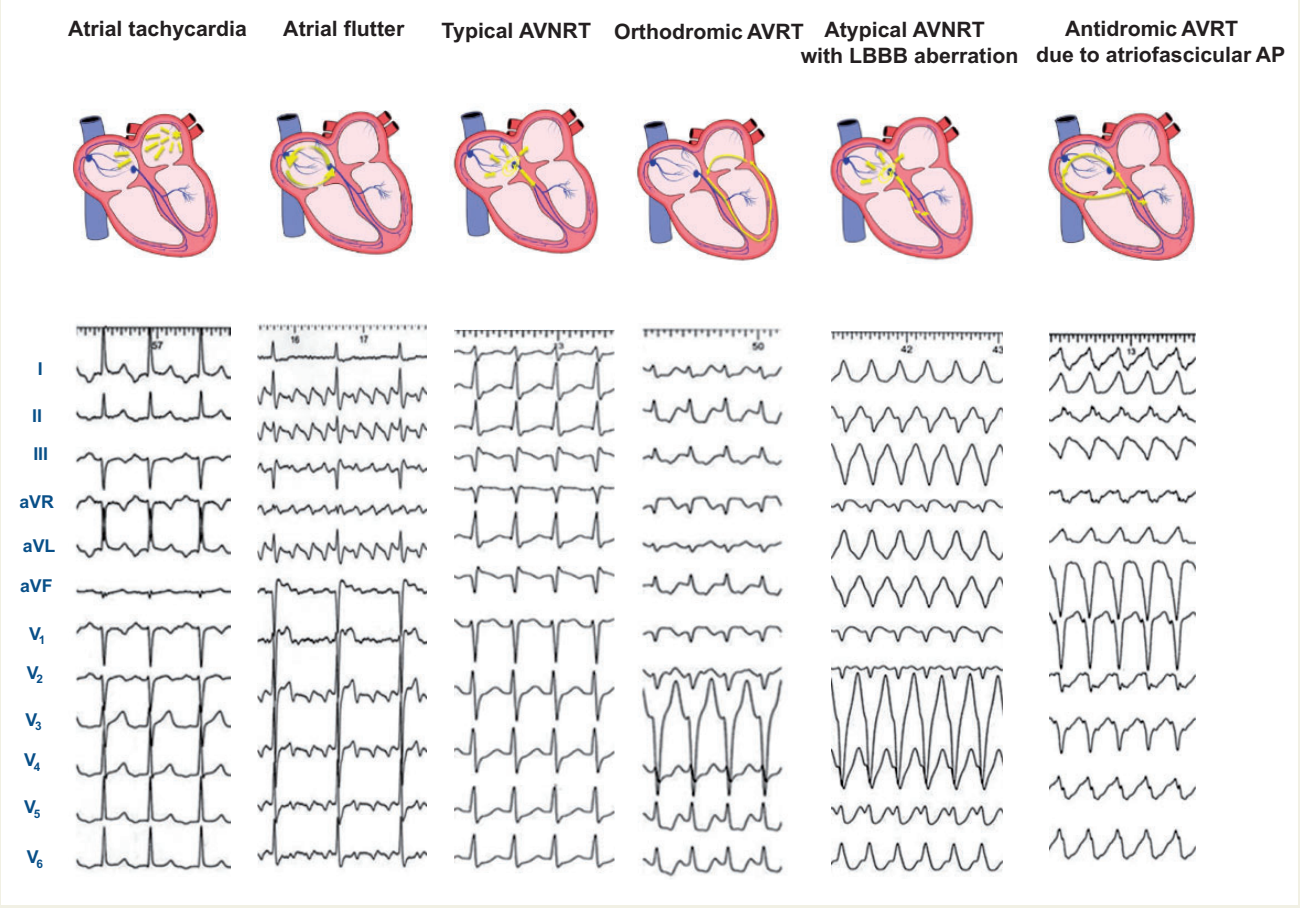

Figure 1 Tachycardia circuit and typical 12-lead ECGs in different types of narrow- and wide-QRS supraventricular tachycardia. From left to right: typical (anti-clockwise) atrial flutter; left atrial tachycardia; typical atrioventricular nodal reentrant tachycardia (slow-fast); orthodromic atrioventricular reentrant tachycardia due to a left lateral accessory pathway; atypical atrioventricular nodal reentrant tachycardia with left bundle branch reentry aberration; antidromic atrioventricular reentrant tachycardia due to an atriofascicular pathway (usually produces a horizontal or superior QRS axis, but normal axis may also occur, depending on the way of insertion into the right bundle and fusion over the left anterior fascicle).

Table 1 Clinical entities and issues addressed in the consensus document

Preamble-definitions
Evidence review
Relationships with industry and other conflicts
Definitions and classification
Epidemiology of SVT
Clinical presentation
Differential diagnosis of tachycardias
Narrow QRS (≤120 ms) tachycardias
Wide QRS (>120 ms) tachycardias
Acute management in the absence of an established diagnosis
Acute management of narrow QRS tachycardia
Acute management of wide QRS tachycardia
Atrial tachycardias
Sinus tachycardias
Physiological sinus tachycardia

Continued

Table 1 *Continued*

Inappropriate sinus tachycardia
Sinus node reentrant tachycardia
Focal atrial tachycardia
Multifocal atrial tachycardia
Macroreentrant atrial tachycardias
Cavotricuspid isthmus-dependent, counter-clockwise or clockwise (typical atrial flutter)
Non-cavotricuspid isthmus-dependent, mitral isthmus-dependent, and other atypical left or right atrial flutters
Atrioventricular junctional tachycardias
Atrioventricular nodal reentrant tachycardia
Typical
Atypical
Non-paroxysmal junctional tachycardia
Focal junctional tachycardia
Other non-reentrant variants
Atrioventricular tachycardias
WPW syndrome and atrioventricular reentrant tachycardias
Concealed and other accessory pathways
The asymptomatic patient with ventricular preexcitation
SVT in congenital heart disease
SVT in pregnancy
Heath economics
Patient preferences
Areas for future research

consensus statements does not have separate definitions of Level of Evidence.

Diagnosis and management of SVT

The term SVT literally indicates tachycardias (atrial and/or ventricular rates >100 b.p.m. at rest), the mechanism of which involves tissue from the His bundle or above. Traditionally, however, SVT has been used to describe all kinds of tachycardias apart from ventricular tachycardias and AF (Supplementary material online, *Table S2*), the mechanisms of which are illustrated in *Figure 1*. The term narrow-QRS tachycardia indicates those with a QRS duration ≤ 120 ms. A wide-QRS tachycardia refers to one with a QRS duration >120 ms (Supplementary material online, *Table S3*). In clinical practice, SVT may present as narrow- or wide-QRS tachycardias, and most of them usually, although not invariably, manifest as regular rhythms.

Recommendations for the differential diagnosis of various forms of SVT, as well as supporting references, are included in figures and tables in the Supplementary material online. Recommendations for acute treatment preferences are given. Indications for long-term treatment with antiarrhythmic drugs and/or catheter ablation are also presented and described for each type of SVT, with detailed recommendations given in the figures and tables in Supplementary mate rial online. As compared with the previous SVT Guideline from 2003, this consensus document contains several new recommendations based on new trials and meta-analyses, such as the management of patients with asymptomatic WPW syndrome, and the cautious use of certain antiarrhythmic drugs in adult congenital heart diseases. Some discrepancies with the corresponding ACC/AHA/HRS guidelines of 2015,[2] may be related to differences in interpretation of studies and experts opinion. *Table 1* presents clinical entities and issues that are addressed in the consensus document.

Supplementary material

Supplementary material is available at *European Heart Journal* online.

Conflict of interest: D.G.K: Research funds from Medtronic and Boston Scientific. G.Y.H.L: Consultant for Bayer/Janssen, BMS/Pfizer, Biotronik, Medtronic, Boehringer Ingelheim, Microlife and Daiichi-Sankyo. Speaker for Bayer, BMS/Pfizer, Medtronic, Boehringer Ingelheim, Microlife, Roche and Daiichi-Sankyo. G.B: Speaker's fees from Boston and Medtronic. B.K: Honoraria for services as a consultant and speaker from Medtronic, Boston Scientific, Biosense Webster. D.A.L: Investigator-initiated educational grants from Bayer Healthcare, Bristol Myers Squibb and Boehringer Ingelheim, has been a speaker for Boehringer Ingelheim, Bayer, and Bristol Myers Squibb/Pfizer, and consulted for Bristol Myers Squibb, Bayer, and Boehringer Ingelheim.

References

1. Blomstrom-Lundqvist C, Scheinman MM, Aliot EM, Alpert JS, Calkins H, Camm AJ, Campbell WB, Haines DE, Kuck KH, Lerman BB, Miller DD, Shaeffer CW Jr, Stevenson WG, Tomaselli GF, Antman EM, Smith SC Jr, Alpert JS, Faxon DP, Fuster V, Gibbons RJ, Gregoratos G, Hiratzka LF, Hunt SA, Jacobs AK, Russell RO Jr, Priori SG, Blanc JJ, Budaj A, Burgos EF, Cowie M, Deckers JW, Garcia MA, Klein WW, Lekakis J, Lindahl B, Mazzotta G, Morais JC, Oto A, Smiseth O, Trappe HJ. American College of C, American Heart Association Task Force on Practice G, European

Society of Cardiology Committee for Practice Guidelines; Writing Committee to Develop Guidelines for the Management of Patients With Supraventricular Arrhythmias. ACC/AHA/ESC guidelines for the management of patients with supraventricular arrhythmias-executive summary: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines and the European Society of Cardiology Committee for Practice Guidelines (Writing Committee to Develop Guidelines for the Management of Patients with Supraventricular Arrhythmias). *Circulation* 2003;**108**:1871–1909.

2. Page RL, Joglar JA, Caldwell MA, Calkins H, Conti JB, Deal BJ, Estes NA III, Field ME, Goldberger ZD, Hammill SC, Indik JH, Lindsay BD, Olshansky B, Russo AM, Shen WK, Tracy CM, Al-Khatib SM. 2015 ACC/AHA/HRS guideline for the management of adult patients with supraventricular tachycardia: a report of the American College of Cardiology/American Heart Association Task Force on Clinical Practice Guidelines and the Heart Rhythm Society. *J Am Coll Cardiol* 2016;**67**:e27–e115.