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Focus on cardiac rhythm disorders

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EDITORIAL



Focus on cardiac rhythm disorders

We have already had the opportunity, in previous issues, to address atrial fibrillation (AF) [1, 2]. This issue of Acta Cardiologica is dedicated to cardiac rhythm disorders, a frequent cause of consultation and hospitalisation in car-

diology. AF and myocardial infarction (MI) share multiple cardiovascular risk factors, such as high body mass index, hypertension and diabetes mellitus, coexistence of AF and MI is very common [3]. In their study, Wu et al.

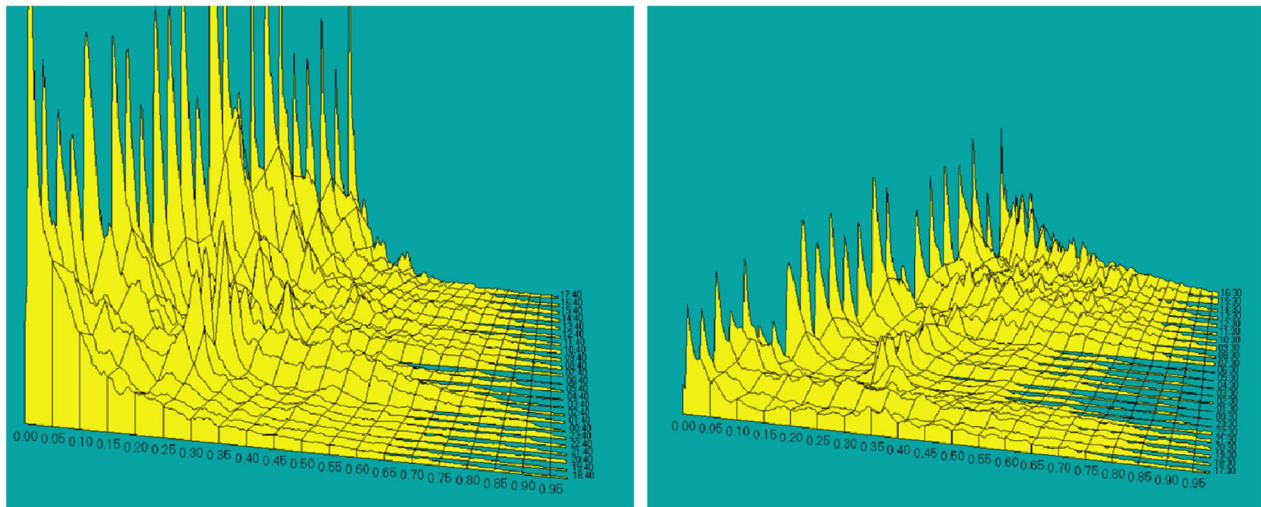


Figure 1. Example of the effect of ablation on the ICNS (*intrinsic cardiac nervous system*): VLFs (*very low frequency*) are almost completely suppressed after the procedure (3D plot of 24H hour by hour recordings, same scale). left: before pulmonary vein isolation for AF in a paroxysmal AF patient; right: after pulmonary vein isolation in the same patient (from reference [6]).

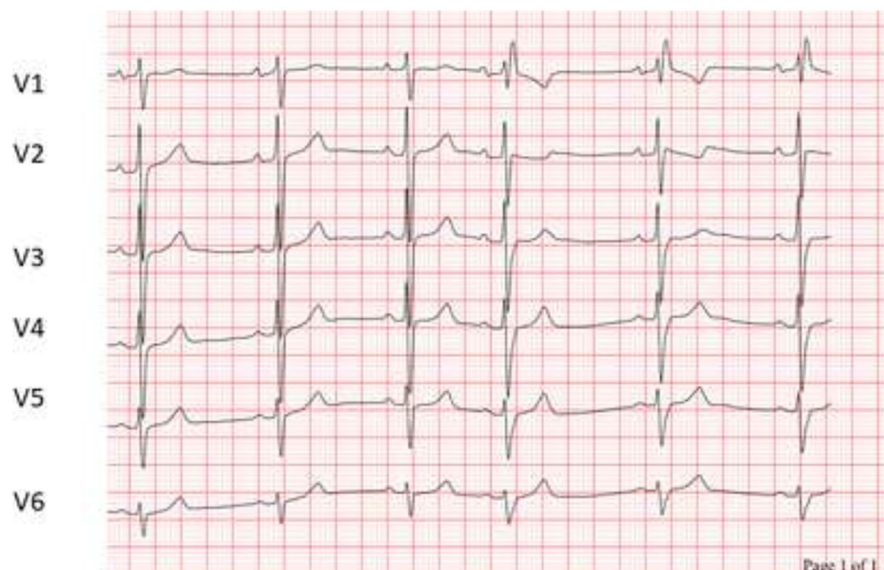


Figure 2. Example of an ECG with Intermittent RBBB with normal QRS complexes followed by RBBB (from reference [8]).

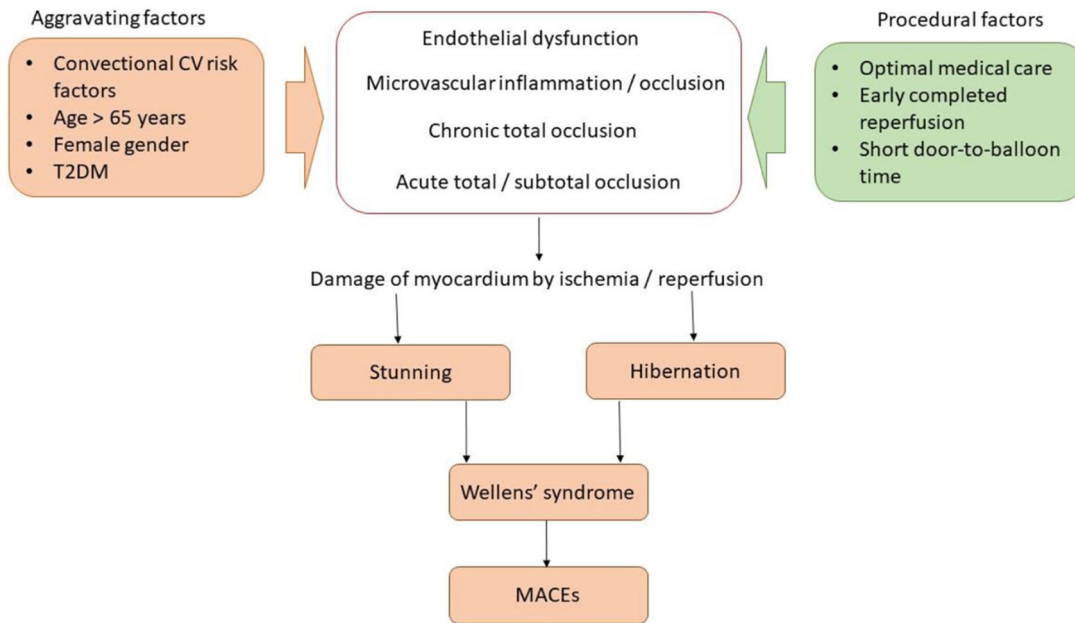


Figure 3. Plausible pathogenesis of Wellens' syndrome. CV, cardiovascular; T2DM, type 2 diabetes mellitus (from reference [14]).

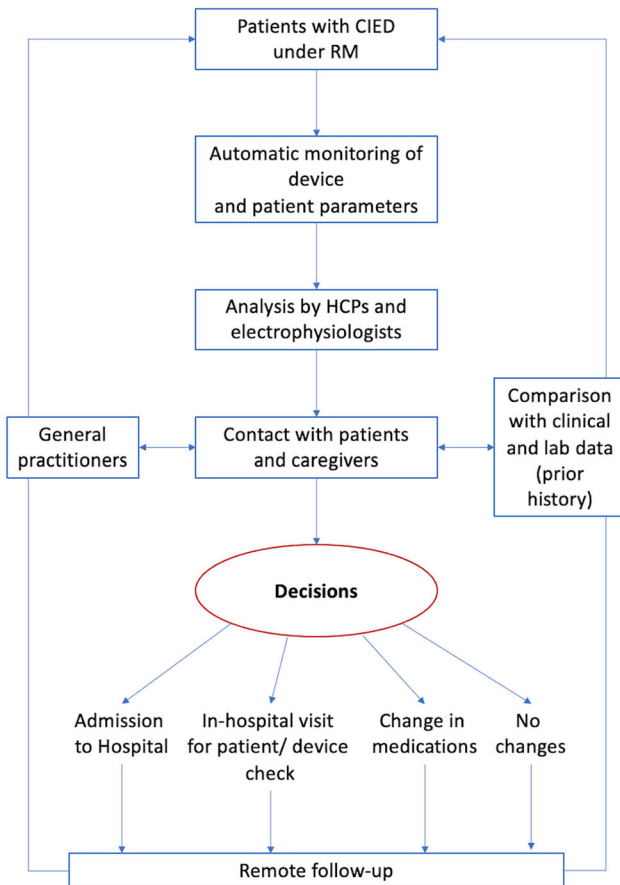


Figure 4. Integrated network for multidisciplinary remote management of patients with cardiac implantable electronic devices. CIED: cardiac implantable electronic device; HCPs: healthcare professionals; lab: laboratory; RM: remote monitoring (from reference [16]).

reported that AF represents an independent risk factor for new-onset MI in an industrial population of North China [4]. In their editorial, Murat et al. supported the need for further studies addressing the pathophysiological pathways by which the two entities are linked [5].

The role of the autonomic nervous system in the onset of supraventricular and ventricular arrhythmias is well established. All measurements of heart rate variability essentially reflect the modulations of the parasympathetic nervous system on which the influxes of the adrenergic system are superimposed. Measurements performed over long periods such as 24H-variance, total power, deceleration capacity, and turbulence are suitable for estimating the individual basal autonomic status. Graphical methods such as Poincaré plots allow quick screening of AF and are set to play an important role in the e-cardiology networks (Figure 1) [6].

Congenital heart disease is very common. Isolated persistent left superior vena (PLSVC) is, in contrast, a very rare condition. It is usually asymptomatic and is an incidental finding on either imaging or during surgery. Almost half of the patients with isolated PLSVC have other cardiac anomalies. Coronary-pulmonary artery fistulas (CPAF) are a rare clinical entity with a variety of potential clinical manifestations. Celik et al. have reported a rare clinical case combining PLSVC, CPAF and arrhythmogenic cardiomyopathy [7].

The QT interval, an index of cardiac repolarization, is an important indicator of the cardiac toxicity of various medications as well as being an indicator of the predisposition to arrhythmias that have the potential to be fatal. Identifying prolonged QT interval in right bundle

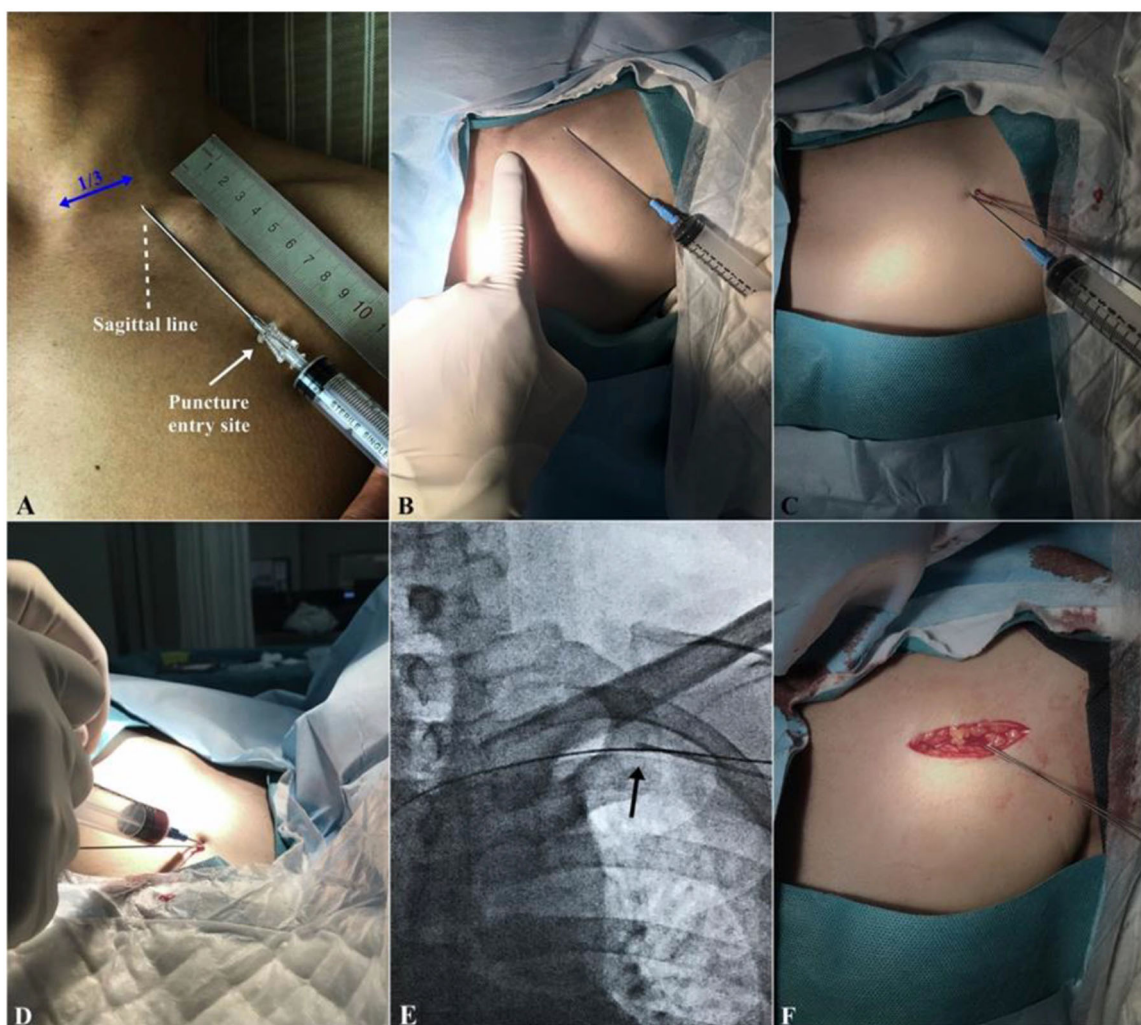


Figure 5. Illustration and photograph of axillary vein puncture using single point on clavicle as the landmark. (A) and (B) Deflected lateral 45° from sagittal line, an 18-gauge needle was laid on the point, tip tangential to upper border of clavicle. The site of needle hub was identified as puncture entry point. (C) and (D) Axillary vein was punctured by advancing the needle attached to syringe from entry site towards the landmark, with continuous suction and at approximately $30\text{--}45^\circ$ relative to body surface. (E) Upon blood aspiration, antero-posterior fluoroscopic view was used to confirm venous access site (identified by arrow) below the inferior border of clavicle. (F) After successful axillary venipuncture, a skin incision and subcutaneous pocket was made at the puncture site (from reference [17]). In smaller paediatric patients, transvenous cardiac pacing remains challenging, since there is no endocardial pacing system custom-made for paediatric patients. The use of select secure[®] transvenous pacing system is safe and feasible in paediatric patients without any major complications and with very stable electrical performance in the acute and midterm period [18]. Twiddler syndrome, and the less-described reel syndrome, are rare but important complications of conventional pacemaker implantation. Advanced age, obesity and cognitive impairment are some of the more common risk factors for Twiddler syndrome [19].

branch block (RBBB) remains problematic. In their study, Rabkin proposed an original formula to recalculate QT intervals in RBBB, which accurately predicts the QT interval in the absence of RBBB (Figure 2) [8].

Myocardial ischaemia is a common cause of arrhythmia, and the potential mechanism of ischaemic arrhythmia is quite complex and diverse. At present, in animal experiments, arrhythmia models can be constructed through a variety of methods, which are associated with high scientific research costs, high technical difficulty, complicated operation, low survival rate of the experimental animals, and poor reproducibility. Guo et al.

showed in a rat model that the combination of subcutaneous and intraperitoneal injections of isoproterenol is more likely to induce arrhythmia than a single injection route [9]. Differential diagnosis of broad QRS tachycardia with left (L) BBB morphology is broad. The analysis of its response to adenosine can allow to make a correct diagnosis. The acceleration of tachycardia with disappearance of LBBB can indicate the presence of an accessory pathway (AP) on the ipsilateral side. However, this is not a phenomenon one would expect as a response to adenosine, which would most likely terminate such tachycardia [10]. Frequent junctional beats occurring in bigeminy are

extremely rare. In very unusual situations, these ectopies may be responsible for a retrograde, but also an antero-grade block, leading to a pseudo paroxysmal atrioventricular bloc [11, 12].

The Wellens' syndrome is referred as a ECG pattern associated with deeply inverted or biphasic T waves in precordial leads mainly in V2-V3 that was considered to be pointed at critical stenosis or occlusion of proximal segment of the left anterior descending coronary artery in patients with unstable angina/acute coronary syndrome. Wellens' Syndrome is independently associated with the appearance of cardiac complications during hospitalisation in patients with non-ST-segment elevation acute coronary syndrome (Figure 3) [13, 14].

Remote monitoring (RM) is used in the follow-up of patients with cardiac implanted electronic devices. Remote monitoring is associated with a significant reduction in cardiovascular related outpatient visits and hospital admissions, a decline in morbidity and a possible reduction in mortality [15]. The future challenge of RM is to narrow data collection to a limited set of information which can be critically interpreted and prompt reactions in terms of clinical management of patients. External data centres could manage ~40% of the transmissions but the decline in workload would only be 15–25% for the in-hospital remote monitoring team, since little time is spent dealing with the many transmissions without events, whereas most time is spent solving clinical problems. Providing sufficient resources, including staff, and optimising communication protocols are necessary to manage the burden on the remote monitoring teams (Figure 4) [15].

Axillary venipuncture for pacemaker lead implantation has been demonstrated to be an effective method without fatal complications encountered with standard subclavian access approach, but the relatively high complexity could limit its clinical practicability. Zhao et al. showed that using single point on clavicle as the landmark for pacemaker leads implantation is simple, effective and safe (Figure 5) [17].

An increased premature ventricular complex (PVC) frequency is related to an increased risk of cardiomyopathy. Individuals with PVC have lower global work index (GWI), global constructive work (GCW), and global work efficiency (GWE) values and a higher global wasted work (GWW) value than the healthy population, similar to patients with cardiomyopathy. Therefore, MW parameters can be used to monitor the progression to cardiomyopathy in patients with frequent PVCs [20].

Disclosure statement


No potential conflict of interest was reported by the author(s).

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