Ventricular extrasystoles

Ventricular extrasystoles (ventricular premature contractions, VES) arise as a result of the presence of an ectopic focus in the cardiac conduction system distal to the bifurcation of the bundle of His or in the ventricular myocardium. VES can also occur in healthy individuals.

Ventricular extrasystoles:

Clinical symptoms

VES are often asymptomatic. If they manifest clinically, it is mostly **palpitations**. Accumulation of VES can result in syncope or chest pain.

Diagnostics

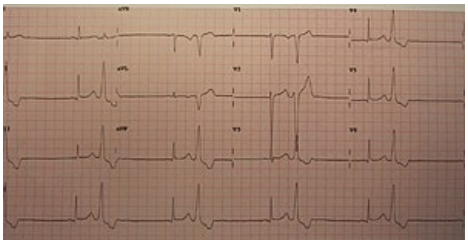
Diagnosis is based on EKG. We observe the following changes on the ECG:[1][2][3]

- The **QRS** complex comes **prematurely**, it is not preceded by a P wave (in the case of retrograde conduction of the impulse AV node the P wave can be located after the QRS complex) ;
- The **QRS** complex is **abnormal** (different in shape from the QRS complex originating from the SA node; it is wide - lasts longer than 120 ms);
- The **QRS** complex is **followed by a complete compensatory pause** (R-R^{VES} before VES and R^{VES}-R after VES is equal to twice R-R interval sinus rhythm);
- The **T wave** is large, usually discordant to the QRS complex.
- If there is **one ectopic focus** in the myocardium, the extrasystoles originating from it have the same shape and are referred to as **monotopic**.
- If there are **multiple ectopic foci** in the myocardium generating premature excitations, the extrasystoles have a different shape and are called **polytopic**.

A more frequent occurrence of KES should lead to a more detailed cardiology examination. We are looking for organic heart disease and left ventricular dysfunction (echocardiography, Holter monitoring, stress EKG, electrophysiological examination).[4]

Classification

The "Lown classification" is still used to classify VES today.



Bigeminy (ventricular extrasystoles in bigeminal connection)

	Classification of VES according to Lown[2]
Degree	**VES type**
0	no VES
1a	isolated, sporadic, monomorphic VES, < 1/min. and < 30/hour
1b	isolated, sporadic, monomorphic VES, > 1/min., but < 30/hr
2	isolated, frequent, monomorphic VES > 30/hr
3a'	isolated, polymorphic VES
3b	bigeminically bound mono- or polymorphic VES
4a	VES in pairs (couplets)
4b	VES in bursts ie 3 or more consecutive VES
5	early VES ("R on T" phenomenon)
VES 3-5 are referred to as "complex forms of VES"	

- **Couplet** (pair) – 2 extrasystoles coming in a row.
- **Nonsustained ventricular tachycardia** (salvo, triplet) – 3 extrasystoles in a row.
- **Bigeminia** - each supraventricular contraction is followed by 1 ES.
- **Trigeminy** - every 2 supraventricular contractions are followed by 1 ES.

Treatment

Treatment for VES includes:

- **antiarrhythmics group I–III** (β-blockers, sotalol, propafenone; the possible proarrhythmogenic effect of antiarrhythmics must also be kept in mind);
- **catheter radiofrequency ablation** of ectopic focus;
- VES triggering ventricular tachycardia runs can be treated by implanting a **defibrillator**.

Links

Related Articles

- Extrasystole
- Flutter halls
- Ventricular fibrillation
- Antiarrhythmics

External links

- Komorová extrasystola (TECHmED) (https://www.techmed.sk/komorova-extrasystola/)

References

1. ASCHERMANN, Michael, et al. *Cardiology.* 1. edition. Galén, 2004. pp. 1158-1159. ISBN 80-7262-290-0.
2. HEINC, Petr. Kdy léčit komorové extrasystoly. *Interní Med* [online]. 2007, y. 9, vol. 10, p. 448-452, Available from <http://www.solen.cz/pdfs/int/2007/10/07.pdf>. ISSN 1803-5256.
3. NEČAS, Emanuel, et al. *Pathological physiology of organ systems : Part I.* 1. edition. Praha : Karolinum, 2007. ISBN 978-80-246-0675-0 (file).
4. HOLAJ, Robert. Cardiology ring. III. internal clinic of VFN and 1st Faculty of Medicine, Charles University in Prague, 2009.

Used literature

- HAMPTON, John R. *EKG briefly, clearly, simply.* 6. edition. Grada, 2005. 149 pp. ISBN 80-247-0960-0.
- HAMAN, Petr. *Lecture web EKG : Basics EKG* [online]. [cit. 2010-12-11]. <http://www.ekg.kvalitne.cz/tvorba.htm#Supraventrikul%C3%A1rn%C3%AD%20extrasystoly>.
- HOLAJ, Robert. Cardiological group. III. internal clinic VFN a 1. LF UK in Prague, 2009.
- VILIKUS, Zdeněk. Interpretation of EKG at rest and during exercise. Institute of Physical Education Medicine 1. LF UK and VFN; 2010.