

Lown-Ganong-Levine syndrome

Lown-Ganong-Levine syndrome (LGL syndrome, short PQ syndrome, Clerc-Levy-Christesco syndrome, CLC syndrome) is a syndrome of **pre-excitation of the valves**. It is a heart arrhythmia, in which the depolarisation wave spreads through the **accessory James branch** (bundle of James). Bundle of James connects **the myocardium of the valves with the bundle His** (atrio-Hisian pathway). The wave of depolarisation **bypasses the AV node** which leads to the shortening of the PQ interval and premature activation of the valve myocardium (there is no delay of the potential in the AV node).

Etiology

The disease is mostly congenital. It can be also caused by an endocarditis or a myocarditis.

A very rare or a familial form of the LGL syndrome also exists.

Symptoms

During the paroxysm of a supra-ventricular tachycardia a patient might list following symptoms:

- palpitations (feelings of a heartbeat);
- feeling of a "short breath", the need to "finish a breath".

Diagnostics

The diagnostics leans on a **ECG** scan. It is mostly an asymptomatic patient that has an ECG for a different indication (e.g. preop examination). In ECG we can see:

- **shortening of the PQ interval** → $PQ \leq 0,12 \text{ s}$ (the depolarisation wave bypasses the AV node);
- **normal QRS complex, no delta wave** (Bundle of James connects the valves with the bundle of His, the valves are therefore excited the natural way).

To get a LGL syndrome diagnosis a **symptomatic tachycardia** must be added to the mentioned changes.

Pro stanovení diagnózy LGL syndromu musí k výše uvedeným změnám na EKG přibýt i **symptomatická tachykardie**. Shortened PQ interval with normal QRS complex without the tachycardia is called an "accelerated AV pass".

The most common tachycardia associated with the LGL syndrom is a **supra-ventricular tachycardia**, which originates by reentry mechanism (**AVRT**, atrioventricular reentry tachycardia; **AVNRT**, atrioventricular node reentry tachycardia).

AV node leads the wave of depolarisation very slowly, which makes the desirable **delay of the potential** from the atriums to the valves (first the atrium contraction must finish, then the valve one). The AV node also works as a "**physiological filter**" - it works on the "all or nothing" principle, it does not let through an insufficient potential. That is why e.g. during atrial fibrillation **not every** depolarisation wave gets to the valves. The accessory branch (bypassing the AV node) does not have this ability and if the frequency during a atrial fibrillation is a 250/min, all 250 potentials are transferred onto the valves which leads to ventricular fibrillation and potentially even a sudden death.

Complications

Listed LGL syndrome complications:

1. atrial fibrillation;
2. ventricular tachycardia;
3. ventricular fibrillation;
4. sudden death.

Treatment

The therapeutic effort is directed towards an etiological treatment of the tachycardia (mostly its treatment of the paroxysmal supra-ventricular tachycardia). Basically it may be a

- pharmacological (**antiarrhythmics**) treatment or
- non-pharmacological (**radiofrequency ablation of the accessory branch**)

Links

External links

- Lown Ganong Levine (LGL) syndróm (TECHmED) (<https://www.techmed.sk/lown-ganong-levine-lgl-syndrom/>)

References

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Literature

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Source

- ws:Lownův-Ganongův-Levineův syndrom