

CONTINUING MEDICAL EDUCATION ΣΥΝΕΧΙΖΟΜΕΝΗ ΙΑΤΡΙΚΗ ΕΚΠΑΙΔΕΥΣΗ

Electrocardiogram Quiz – Case 30

A 6-year-old male with no past medical history was referred to our Department for episodes of exertional dyspnea and chest pain. The clinical examination and the two-dimensional and Doppler echocardiography were normal. The 12-lead surface electrocardiogram (ECG) is depicted in figure 1.

Questions

- What abnormalities are depicted on the 12-lead ECG (fig. 1)?
- What is the clinical significance of these abnormalities?

Comment

An ECG may be requested as part of the investigation of a wide range of problems in pediatrics. The basic principles of interpretation of the ECG in children are identical to those in adults; however, the progressive changes in anatomy and physiology that take place between birth and adolescence result in some features which differ

significantly from the normal adult pattern and vary according to the age of the child.

The depicted pattern is a normal child's ECG, displaying multiple age-appropriate features. These features include: Heart rate of 110 beats/min, dominant R waves in V1–V3 chest leads, partial right bundle branch block (RBBB) (RSR' pattern in V1), juvenile T-wave pattern (T wave inversion in V1–V3).

Any of the following findings may be normal on the pediatric ECG:

Heart rate >100 beats/min, marked sinus arrhythmia, rightward QRS axis >+90, dominant R wave in V1, RSR' pattern in V1, T wave inversions in V1–3 ("juvenile T-wave pattern"), lightly peaked P waves (<3 mm in height is normal if ≤6 months), short PR interval (<120 ms) and QRS duration (<80 ms), slightly long QTc (≤490 ms)

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Figure 1

in infants ≤ 6 months), Q waves in the inferior and left precordial leads (pseudo-infarction patterns).

Correct interpretation of the pediatric ECG can be potentially difficult, and a detailed knowledge of these age dependent changes is critically important if errors are to be avoided.

References

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