

## Patient with previously misdiagnosed total situs inversus

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### *Abstract*

**Background:** The case of 30 years-old patient with recently diagnosed dextrocardia is discussed herein.

**Material and methods:** Dextrocardia, a specific anomaly of heart position in the chest, usually associated with situs inversus and sometimes by Kartenerger's syndrome was diagnosed in the patient by careful physical examination proven by electrocardiography and imaging.

**Results:** Specific ECG changes were crucial to recognize the syndrome. The patient presented total situs inversus in physical examination. The case is a good exemplification of frequent dextrocardia oversight, since it has not been found during previous 30 years by medical professionals, including both pediatrician and occupational medicine specialist.

**Conclusions:** The attention should be always turned to make a proper diagnosis because it allows to recognize properly additional diseases as well as avoid misdiagnosis in future.

**Keywords:** ECG, dextrocardia, total situs inversus

### *Introduction*

Dextrocardia with situs inversus is a congenital syndrome in which the organs are mirrored or reversed. It can be correlated with Kartagener's syndrome (sinusitis and bronchiectases). It was first described in the first half of the 17<sup>th</sup> century by Hieronymus Fabricius and Marco Aurelio Severino [1].

If dextrocardia is associated with isomerism, polysplenia syndrome is likely to be diagnosed. Most patients with situs inversus are asymptomatic [2]. When these patients develop new symptoms or conditions, such as coronary artery disease or hypertension, they are treated like the general population, but diagnosing them can be more difficult [3,4].

### *Case description*

A 30-year-old patient with an unknown history of dextrocardia came in (he was admitted to the out-patient cardiology unit) to have his blood pressure

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(BP) assessed. He had found elevated BP by chance when he checked it up together with his family over Easter. He had had no cardiologic symptoms before.

The patient had had an ECG performed on two previous occasions for occupational medicine, and both times there was a problem with the ECG machine and it had to be redone on another machine.

The standard ECG (Fig. 1) was notable for inverted P waves in the lateral leads (I and aVL), suggesting rightward atrial electric forces and no R wave progression. There were also T wave inversions in I and aVL, which are also consistent with dextrocardia, but less specific than the other findings.

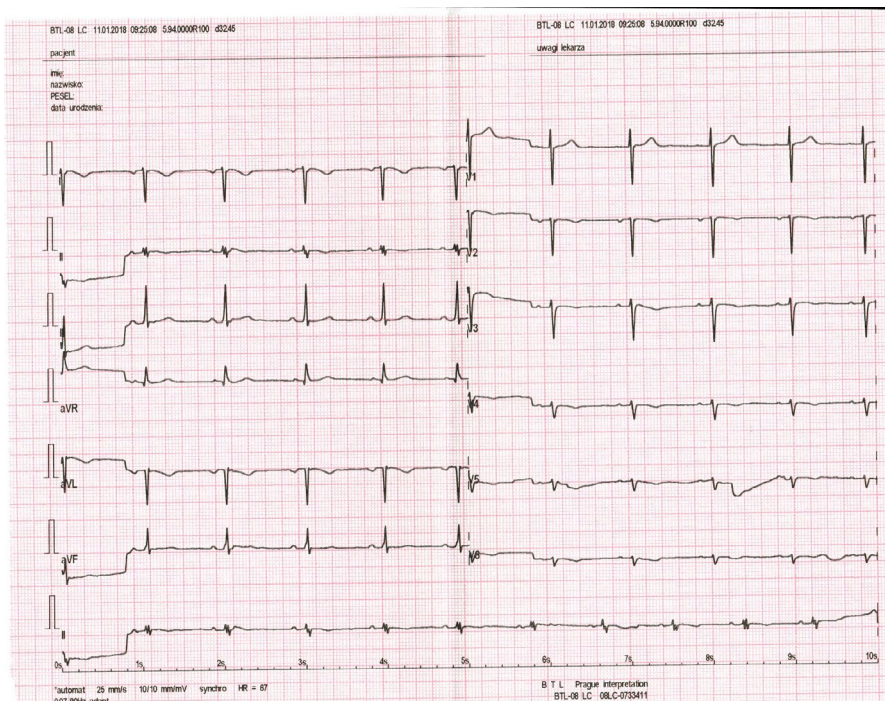


Fig. 1. The standard ECG

At the cardiologist's office an ECG with right-sided precordial leads (Figure 2 and 2a) was performed. The right-sided precordial lead ECG showed normalized R wave progression. These summations of ECG findings are suggestive of dextrocardia. In addition to this, an apical impulse was palpated in the right 5<sup>th</sup> intercostals space, 1.75 cm lateral to the right midclavicular line. The lower liver span was palpated in the left upper quadrant of the abdominal cavity.

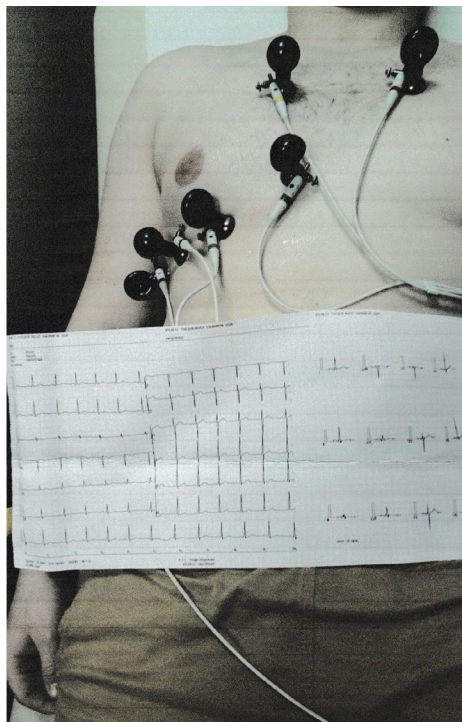
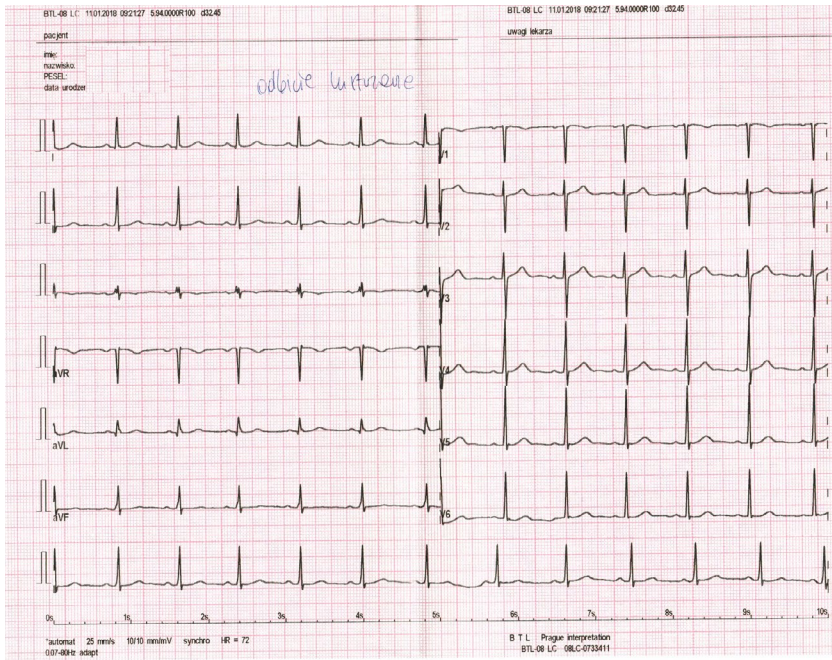


Fig. 2, 2a. ECG with right-sided precordial leads



Fig. 3. Chest radiography

IMAGES: A 12-lead surface electrocardiography (ECG) with both standard precordial leads (Figure 1) and right-sided precordial leads (Figure 2) was performed. The standard ECG was notable for inverted P waves in the lateral leads (I and aVL), suggesting rightward atrial electric forces and no R wave progression. The right-sided precordial lead ECG showed normalized R wave progression. These summations of ECG findings are suggestive of dextrocardia. There were also T wave inversions in I and aVL, which are also consistent with dextrocardia but less specific than the other findings. The patient subsequently underwent echocardiography, which confirmed dextrocardia with proper anatomy and function.

### *Results*

Because of possible anomalies [5], the patient subsequently underwent an echocardiography which confirmed dextrocardia with proper anatomy and function. The patient also underwent an ultrasound examination of the abdomen to check for possible anomalies. All organs were normal but located on the opposite side. The patient was prescribed ACEI to control his blood pressure. After a few days of treatment the blood pressure was normalized.

Summary: For the diagnosis of dextrocardia a proper physical examination supported by a properly interpreted ECG is crucial [6,7]. An appropriate diagnosis can help avoid misleading symptoms of typical diseases.

## Conclusions

We confirmed the presence of dextrocardia with situs inversus using chest radiography (Fig. 3) and abdomen ultrasound.

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