

Marked bradycardia in a young woman with weight loss

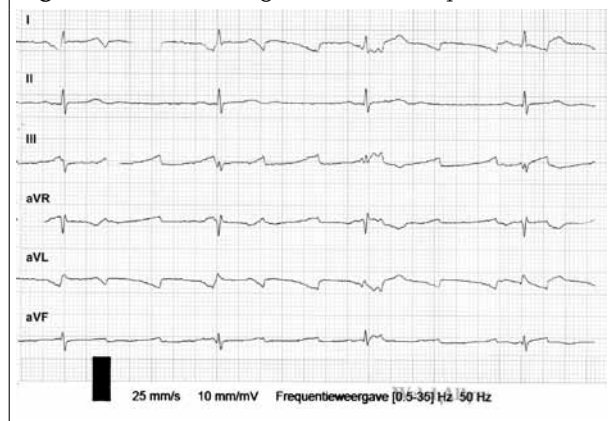
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CASE REPORT

A 21-year-old woman with a history of disabling irritable bowel syndrome (IBS) was admitted to the internal medicine ward with abdominal pain. During the last few weeks she had experienced a 15% weight loss due to malnourishment secondary to the abdominal complaints and light-headedness upon standing, but no syncope. Because of a regular heart rate of 35 beats/min an electrocardiogram was taken (*figure 1*) after which she was transferred to the cardiology department for further examination and observation. All laboratory analyses including serum sodium, potassium, magnesium, calcium, phosphate and thyroid-stimulating hormone were in the normal range. The medication used by our patient was not known to influence cardiac conduction or cause arrhythmias.

Figure 1. *Electrocardiogram with a bradycardia*



WHAT IS YOUR DIAGNOSIS?

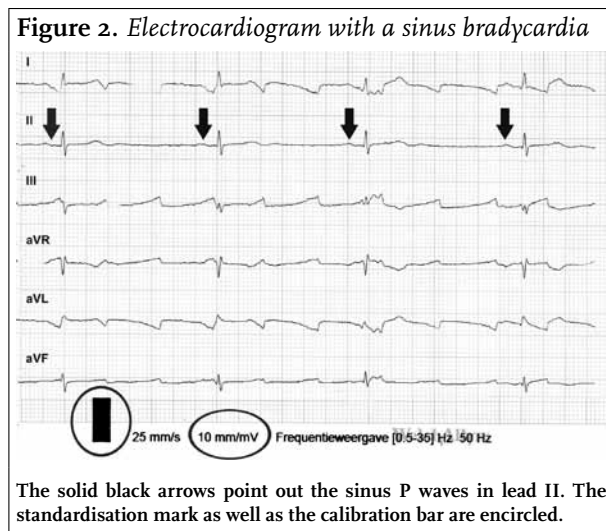
See page 533 for the answer to this photo quiz.

DIAGNOSIS

The ECG shows a sinus bradycardia with a slight sinus arrhythmia. Because of an artefact visible in the leads I, III, aVL and aVF, the bradycardia was thought to be due to a complete atrioventricular block with atrioventricular dissociation. Lead II, however, shows distinct atrial activity consistent with sinus bradycardia (*figure 2*). The presence of sinus P waves can best be examined in lead II because this lead is parallel to the electrical axis of a sinus P wave. An ECG is calibrated so that the 1-mV standardisation mark is 10 mm tall (*figure 2*, the two ovals). When atrial activity is unclear the standardisation can be doubled to make P waves more distinct.

Echocardiography showed no structural abnormalities and during treadmill exercise stress testing normal sinus tachycardia was obtained.

Sinus bradycardia is the single most observed arrhythmia in patients with malnutrition and weight loss, e.g. anorexia nervosa, and is found in almost 50% of the patients.^{1,2} A marked sinus bradycardia with a heart rate of less than 40 beats/min is seen in 8 to 29% of patients with weight loss and was first described in 1966.³ Other electrocardiographic findings are QT dispersion, ST and T-wave changes and diminished heart rate variability. A sympatho-vagal imbalance due to an increased parasympathetic activity is probably the mechanism that causes these electrocardiographic changes and sinus bradycardia can be considered a physiological adaptation to caloric deprivation.⁴ Bradycardia in patients with anorexia nervosa generally resolves once a stable pattern of caloric intake and progressive weight gain is obtained. In this case the patient was admitted because of abdominal complaints, which were ascribed to an exacerbation of her IBS.



Case reports describe atrioventricular block, or ventricular arrhythmia, but these arrhythmias are particularly seen in patients with electrolyte disturbances e.g. hypokalaemia or hypomagnesaemia. In our case all laboratory analyses were within the normal range.

REFERENCES

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4. Kollai M, Bonyhay I, Jokkel G, Szonyi L. Cardiac vagal hyperactivity in adolescent anorexia nervosa. *Eur Heart J.* 1994;15:1113-8.