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Osborn wave in ECG in elderly patient with so-called urban hypothermia

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Abstract

The Osborn wave is a characteristic twisting at the termination of the QRS complex visible at the J point. Its presence is most commonly associated with hypothermia, electrolyte imbalance, primary cardiac disorders or CNS pathologies. A case of a 78-year–old male with Osborne wave caused by deep hypothermia is presented.

Key words: electrocardiography, hypothermia, Osborn wave.

Introduction

The Osborn wave is a characteristic twisting at the termination of the QRS complex visible at the J point. Its presence is most commonly associated with hypothermia, electrolyte imbalance (hypercalcaemia), primary cardiac disorders (e.g. variant angina pectoris,

myocardial hypertrophy) or CNS pathologies (e.g. subarachnoid haemorrhage, craniocerebral trauma) [1].

Case description

A 78-year–old male was brought by an ambulance to the emergency department (ER) after he had been found unconscious lying on the floor at home. Paramedics determined that although infirm and suffering from the dementia, the patient lived alone in an old house heated by a coal stove and was visited only by a carer during the day.

On admission to ER, the patient presented consciousness disorders (GCS 9), hypotension (70/45 mm Hg) and markedly cooled limbs. The core temperature measured in the oesophagus was 28 °C. Analysis of blood gas and critical parameters revealed metabolic acidosisd (pH=7.25), increased concentration of lactates; no significant ion disturbances were detected. The patient's treatment was continued at the intensive care unit (ICU) where several hours later the patient developed cardiac arrest due to ventricular fibrillation followed by asystole. Cardiopulmonary resuscitation was ineffective.

An ECG recorded on admission is presented in Fig.1. The Osborn wave best visible in leads V2-3 is noteworthy.

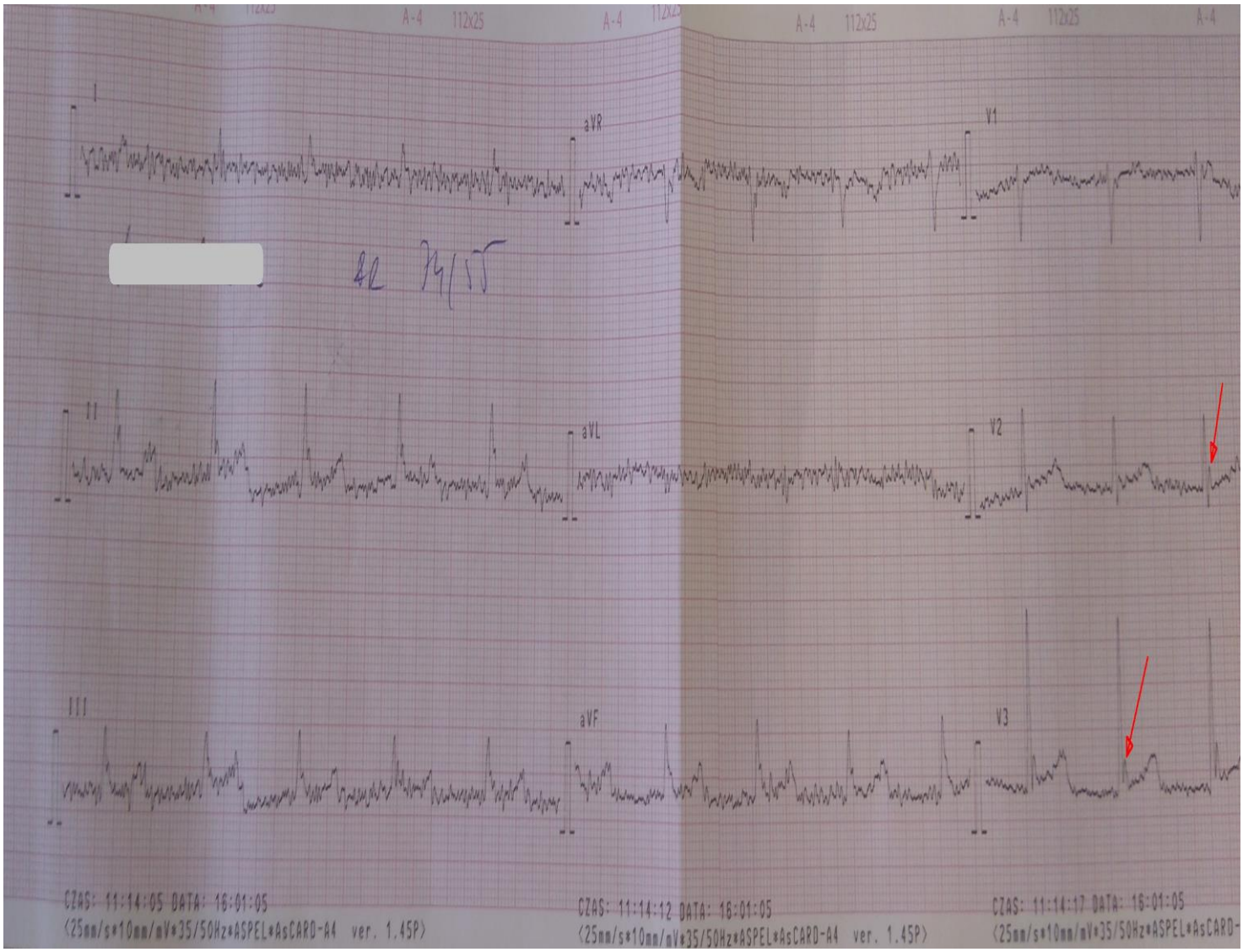

Figure 1. ECG on admission to ER. Sinus bradycardia 50 bpm. Osborn waves indicated by arrows. Baseline artifacts due to muscle tremor.

Discussion

In hypothermia, the electrocardiographic changes (besides the Osborn wave) include sinus bradycardia, PQ and QT prolongation and supraventricular arrhythmias. At core temperature of about 30 °C, the QRS complexes considerably widen and the risk of ventricular fibrillation increases. When the core temperature decreases below 15-20 °C, patients are at risk of asystole [2].

It is believed that the Osborn wave can occur already at body temperature below 35 °C; its amplitude increases with decreasing temperature and disappears once normothermia is achieved [1-3].

The prognostic value of the Osborn wave is not fully clear and literature reports indicating its correlation with an increased risk of ventricular fibrillation are conflicting [3].

Conclusion

The Osborn wave is not pathognomic of hypothermia but should be suspected (particularly in emergency settings) [4]. Further studies are required to determine its clinical importance.

References

1. Milewska A., Guzik P., Baranowski R., Jankowski R., Rudzka M., Nowak S., Wysocki H.: Fala Osborna u chorego ze śmiercią pnia mózgu. Pol Przegl Kardiol 2007; 9(1): 65-66.

2. Alhaddad I., Khalil M., Brown E.: Osborn waves of hypothermia. Circulation 2000; 101:e233-e244.

3. Maruyama M., Kobayashi Y., Kodani E., Hirayama Y., Atarashi H., Katoh T., Takano T.: Osborn waves: history and significance. Indian Pacing Electrophysiol J 2004; 4(1): 33-39.

4. Patel A., Getsos J., Moussa G., Damato A.: The Osborn wave of hypothermia in normothermic patients. Clin Cardiol 1994; 17:273-276.