



## ORIGINAL ARTICLE

# Cardiac arrhythmias in stroke unit patients. Evaluation of the cardiac monitoring data<sup>☆,☆☆</sup>



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### KEYWORDS

Cardiac arrhythmias;  
Stroke unit;  
Stroke;  
Telemetry;  
Cardiac monitoring;  
Therapeutic implications

### Abstract

**Introduction:** Cardiac arrhythmias are frequent in acute stroke. Stroke units are widely equipped with cardiac monitoring systems. Pre-existing heart diseases and heart–brain interactions may be implicated in causing cardiac arrhythmias in acute stroke. This article analyses cardiac arrhythmias detected in patients hospitalised in a stroke unit.

**Method:** Prospective observational study of consecutive patients admitted to a stroke unit with cardiac monitoring. We collected clinical data from patients and the characteristics of their cardiac arrhythmias over a 1-year period (2013). Time of arrhythmia onset, associated predisposing factors, and the therapeutic decisions made after detection of arrhythmia were examined. All patients underwent continuous cardiac monitoring during no less than 48 hours.

**Results:** Of a total of 332 patients admitted, significant cardiac arrhythmias occurred in 98 patients (29.5%) during their stay in the stroke unit. Tachyarrhythmia (ventricular tachyarrhythmias, supraventricular tachyarrhythmias, complex ventricular ectopy) was present in 90 patients (27.1%); bradyarrhythmia was present in 13 patients (3.91%). Arrhythmias were independently associated with larger size of brain lesion and older age. In 10% of the patient total, therapeutic actions were taken after detection of significant cardiac arrhythmias. Most events occurred within the first 48 hours after stroke unit admission.

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**PALABRAS CLAVE**

Arritmias cardiacas;  
Unidad de ictus;  
Ictus;  
Telemetría;  
Monitorización  
cardiaca;  
Consecuencias  
terapéuticas

**Conclusions:** Systematic cardiac monitoring in patients with acute stroke is useful for detecting clinically relevant cardiac arrhythmias. Incidence of arrhythmia is higher in the first 48 hours after stroke unit admission. Age and lesion size were predicted appearance of arrhythmias. Detection of cardiac arrhythmias in a stroke unit has important implications for treatment.

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## Arritmias cardiacas en la unidad de ictus: análisis de los datos de la monitorización cardiaca

### Resumen

**Introducción:** Las arritmias cardiacas son frecuentes en el ictus agudo. La monitorización cardiaca telemétrica es una técnica extendida en las unidades de ictus. La aparición de arritmias en el ictus agudo puede relacionarse con las interacciones cerebro-corazón o con la patología cardiaca. Se analiza las arritmias relevantes en pacientes ingresados en una unidad de ictus.

**Método:** Estudio descriptivo observacional prospectivo de pacientes ingresados en una unidad de ictus con monitorización cardiaca. Se analizan las características de los pacientes y las arritmias registradas durante un año (2013). Se investigó el tiempo de aparición, su asociación con factores predisponentes y las consecuencias terapéuticas de la detección. Todos los pacientes al menos tuvieron 48 h de monitorización cardiaca.

**Resultados:** Se analizó a 332 pacientes, de los cuales 98 (29,5%) presentaron algún tipo de arritmia relevante. Se registraron taquiarritmias (taquiarritmias ventriculares, taquiarritmias supraventriculares, actividad ectópica ventricular compleja) en 90 pacientes (27,1%), y bradiarritmias en 13 pacientes (3,91%). La aparición de arritmias se asoció a un mayor tamaño de la lesión y mayor edad de los pacientes. La detección de arritmias relevantes tuvo consecuencia terapéutica en el 10% de todos los pacientes. La incidencia de arritmias fue mayor durante las primeras 48 h.

**Conclusiones:** La evaluación sistemática de la monitorización cardiaca en pacientes con ictus agudo permite detectar arritmias cardiacas clínicamente relevantes. Su incidencia es mayor durante las primeras 48 h. La edad y el tamaño de la lesión cerebral se relacionan con su aparición. La detección de arritmias en una unidad de ictus tiene consecuencias terapéuticas fundamentales.

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## Introduction

Cardiac arrhythmias, a frequent complication during the acute phase of cerebral ischaemia, are associated with increased morbidity and mortality.<sup>1–3</sup> Their presence is related not only to a history of heart disease but also to a number of other factors, including autonomic dysfunction secondary to heart–brain interactions.<sup>3–7</sup> Cardiac monitoring is a widely used technique in stroke units that enables better management of any cardiac arrhythmias that may arise.<sup>8</sup> Although the utility of cardiac monitoring is widely recognised, some aspects of great practical importance, such as time of monitoring, have not yet been fully explained in guidelines for acute ischaemic stroke management.<sup>9,10</sup>

In light of the above, and with a view to furthering our knowledge of cardiac arrhythmias in stroke units, we have designed a study with the following objectives: to describe the types of cardiac arrhythmias usually detected while monitoring patients in the acute phase of stroke, to identify profiles at a high risk of presenting clinically relevant

arrhythmias, and to evaluate the therapeutic consequences of detecting arrhythmias in cardiac monitoring.

## Material and methods

### Patients

We conducted a prospective observational descriptive study of patients admitted to the stroke unit at the Complejo Asistencial Universitario de León, in Spain, between 1 January and 31 December 2013. We included all patients admitted to our stroke unit with a diagnosis of ischaemic stroke, transient ischaemic attack, or intraparenchymal haemorrhage. Patients had to meet 2 additional inclusion criteria: being admitted within 48 hours of symptom onset and being monitored by telemetry for more than 48 hours.

Diagnoses at admission to the stroke unit were based on clinical and radiological findings. We excluded all patients

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