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IMAGES IN CARDIOLOGY

Earthquake tachycardia in Belgium

A 52 year old woman complained of recurrent palpitation. Clinical examination, electrocardiogram, echocardiogram, and exercise testing were entirely normal. Holter monitoring showed a normal sinus rhythm (average 69 beats per minute) at night, until on 20 June 1995 she was woken suddenly at 4:05 am by an earthquake (4.4 on the Richter scale). The earthquake was followed by sinus tachycardia (recognised by the patient as her usual arrhythmia) of up to 150 beats per minute.

The figure shows (A) the electrocardiographic tracing and (B) the heart rate trend. The standard deviation of the normal RR intervals measured in the 15 minutes immediately before she was woken was 42 ms. Heart rate (HR) variability was further analysed with power (P) spectral analysis using fast Fourier transformation (FFT). This quantifies the high frequency (HF) and low frequency (LF)

components of the total (T) power spectrum. Her sudden awakening probably induced sympathetic activation with disappearance of vagal tone. This is reflected by the change in the LF/HF balance, caused by the loss of the HF component—(C) before waking (D) after waking.

These findings confirm how external factors (and others such as pain and emotion) can induce sudden and strong adrenergic stimulation. In Los Angeles and Kobe earthquakes were associated with an increase in the cardiac event rate.¹

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¹ Leor J, Kloner RA. Scared to death? The occurrence of sudden cardiac death during the 1994 Northridge Earthquake (abstract). *Circulation* 1995;92 suppl:I 96.

