

A case of prolonged asystole during head-up tilt testing

Tilt testi sırasında uzamış asistol: Olgu sunumu

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Head-up tilt test is used for assessing patients with vasovagal syncope. A 45-year-old man was examined for two syncopal and three presyncopal episodes during the past three months, all of which preceded by nausea and sweating. Examinations including electrocardiography and echocardiography showed normal findings. A head-up tilt table testing was performed at an angle of 75 degrees. At about 12 minutes, syncope associated with bradycardia and asystole was observed. He became hypotensive, and there was a ventricular asystolic pause lasting 18 seconds, associated with loss of consciousness. He was placed in the supine position and cardiac massage was started. After 25 seconds, he slowly returned to sinus rhythm and regained consciousness. The patient was treated with dual-chamber pacemaker implantation. During one year of follow-up, no major events occurred.

Key words: Heart arrest/etiology; syncope/diagnosis; tilt-table test.

Tilt testi vazovagal senkoplu hastalarda kullanılan bir yöntemdir. Kırk beş yaşında erkek hasta, son üç aydır bulantı ve terlemeyi takiben ortaya çıkan iki senkop ve üç presenkop atağı nedeniyle kardiyolojik açıdan incelendi. Hastanın elektrokardiyografi ve ekokardiyografi de dahil tüm sistem incelemeleri normal bulundu. Bunun üzerine, hastaya eğimi 75 dereceye ayarlanan tilt testi uygulandı. Testin yaklaşık 12. dakikasında hastada bradikardi ve asistolün eşlik ettiği senkop gelişti. Hipotansiyonla birlikte 18 saniye süren ventriküler asistol ve bilinç kaybı görülmesi üzerine hasta sırtüstü pozisyonda yatırıldı ve kalp masajına başlandı. Yaklaşık 25 saniye sonra hasta yavaş yavaş sinüs ritmine döndü ve ardından bilinci yerine geldi. Tedavi olarak hastaya iki odacıklı kalp pili takıldı. Bir yıllık izlemi içinde hastanın semptomlarında herhangi bir tekrarlama olmadı.

Anahtar sözcükler: Kalp durması/etyoloji; senkop/tanı; eğik masa testi.

Head-up tilt testing (HUT) is a very useful tool for the diagnosis of neurocardiogenic syncope (NCS) in patients with recurrent unexplained syncope. The incidence of prolonged asystole during HUT is about 18% (>3 sec) and 9.1% (>5 sec) in patients with NCS.^[1,2] However, there are only a few reports describing asystole longer than 10 seconds.^[3-7] We describe an adult male patient with frequent episodes of syncope in whom HUT was positive for a cardio-inhibitory response with a prolonged asystole of 18 seconds.

CASE REPORT

A 45-year-old man was referred because of two syncopal and three presyncopal episodes during the past three months, all of which preceded by nausea and sweating. The initial work-up including physical

examination, chest X-ray, electrocardiogram (ECG), complete blood count, serum electrolytes, fasting blood sugar, thyroid function studies, echocardiography, exercise stress test, neurological consultation, and Holter-ECG monitoring showed normal findings. He was not on any medication. Carotid sinus massage performed to exclude carotid sinus hypersensitivity was normal. A head-up tilt table testing was performed.^[8] The patient was subjected to an HUT at an angle of 75 degrees. At about 12 minutes of the test, syncope associated with bradycardia and asystole was demonstrated without sublingual nitroglycerin stimulation. At the beginning of the test, his heart rate was 84/min. He became bradycardic and hypotensive (80/50 mmHg), and there was a ventricular asystolic pause lasting 18 seconds, associated with loss of consciousness (Fig 1).

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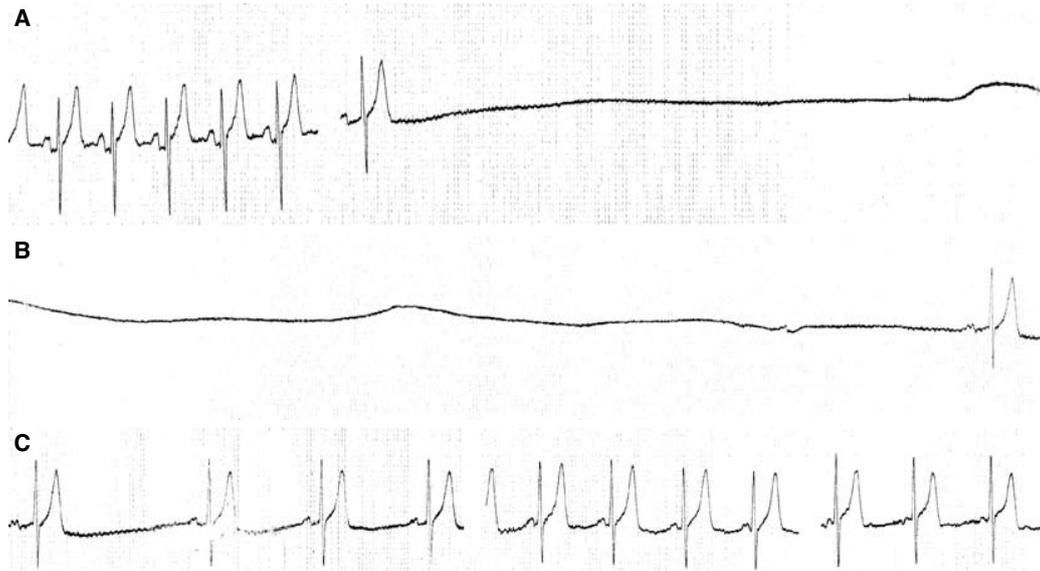


Figure 1. (A, B) Electrocardiograms showing an asystolic pause lasting 18 seconds associated with loss of consciousness. (C) Restoration of sinus rhythm followed by regaining consciousness.

He recovered after being placed in the supine position and external cardiac massage was started. After about 25 seconds, he slowly returned to sinus rhythm and regained consciousness a few seconds later. The patient was treated with dual-chamber pacemaker implantation. During a follow-up period of one year, no major events occurred and symptoms were controlled.

DISCUSSION

We describe a case of an adult male with frequent episodes of syncope, in whom HUT was positive for a cardioinhibitory response with a prolonged asystole of 18 seconds, which is not common in the literature.^[3-7] The incidence of prolonged asystole during HUT is about 18% (>3 sec) and 9.1% (>5 sec) in patients with NCS.^[1,2] The longest period of reported asystole during HUT is 70 seconds, which occurred with clomipramine.^[7] In another case with a history of neurocardiogenic syncope, the length of asystole during HUT was 34 seconds.^[9]

Vasovagal syncope is considered to have a good prognosis. In a review of 1,322 patients with asystole, it was concluded that (i) asystole during HUT did not necessarily imply a malignant outcome despite recurrences, (ii) pacemaker or drug therapy did not influence outcome significantly, and (iii) tilting protocol (angle) might influence time to and incidence of asystole during HUT.^[6] Little is known about patients whose condition is termed “malignant” due to severe symptoms.^[10] Prolonged asystole with collapse has been reported in apparently healthy individuals dur-

ing or after strenuous exercise.^[10] Milstein et al.^[11] proposed that life threatening cardiac asystole might occur in patients with the malignant form of NCS, and that this possibility should be considered when studying survivors of asystolic sudden cardiac arrest. In their study, all six survivors of suspected asystolic arrest with normal conventional baseline electrophysiological evaluation developed syncope during upright tilt provocation, with pauses of 16 and 20 seconds in two of them, respectively.^[11]

Head-up tilt testing is an important diagnostic tool for the evaluation of NCS. The pathophysiological mechanism underlying HUT-induced asystole is not fully known. If prolonged asystole occurs during HUT, as seen in our case, external cardiac massage should be initiated without any delay to prevent irreversible ischemic damage.^[7] Although HUT is valuable in the evaluation of syncope, it should be noted that it can yield false positive results especially in healthy young adults.^[12]

Tilt-induced prolonged asystole has been proposed to identify a distinct subgroup of patients with neurally mediated syncope, for whom management including permanent pacemaker implantation has been recommended. Several studies showed improvement in the prevention of vasovagal syncope following pacemaker implantation.^[13-15]

In a randomized, controlled study, pacemakers were found to be superior to beta-blocker treatment

in preventing syncopal recurrences.^[16] In our case, treatment with dual-chamber pacemaker implantation resulted in improvement and during a follow-up of one year no major events occurred.

Although HUT is a very useful diagnostic tool in patients with unexplained syncope, physicians should be aware of its potential complications such as prolonged asystole.

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