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A 60-year-old male patient with recurrent unexplained syncope on standing was studied. During continuous, noninvasive blood pressure (BP) recording with a Finapres device, an abnormally large and symptomatic initial decrease in systemic BP was documented. After 2 minutes of standing, BP had recovered. The transient decrease in BP was attributed to the use of a combination of antidepressants known to interfere with sympathetic function. This case shows the importance of continuous, noninvasive BP measurement on standing: routine intermittent BP recording would have missed the abnormality. In patients using medications such as antidepressants, initial transient hypotension should be considered as the cause of falls and syncope.

Key words: syncope, hypotension, orthostasis, antidepressants, Finapres.

Initial orthostatic hypotension as a cause of recurrent syncope: a case report

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We studied a 60-year-old man who had six months of recurrent unexplained syncope. The episodes occurred suddenly, usually on standing up. The patient was taking pimiperone (a neuroleptic), fluvoxamine (an antidepressant), and clobazam (a benzodiazepine) for depression, and sotalol and acenocoumarol for paroxysmal atrial fibrillation. The patient had been recently hospitalized after a syncopal episode that occurred on standing from the squatting position. The episode was accompanied by myoclonic jerks and a large hematoma in the lumbar region. During the patient's two-week hospital stay, his test evaluations, including physical examination, electrocardiography, echocardiography, and blood analysis, were entirely negative. Results of investigation by the consultant in neurology were normal as well. During 24-hr electrocardiography monitoring, sinus rhythm was observed during episodes of near syncope. In one instance, the patient's BP decreased from supine values of approximately 100/70 mm Hg to values approximately 80 mm Hg systolic after 2 to 3 minutes of standing, but there were no accompanying symptoms of near-collapse and this finding could not be reproduced. The patient was referred to the syncope unit of the Academic Medical Center for tilt-table testing.

The patient reported severe lightheadedness and near-syncope, which occurred reproducibly on arising from the lying or sitting position several times a day. The symptoms usually disappeared within one minute. Movements of the head and neck did not elicit symptoms of near-syncope. Accordingly, an active standing-up maneuver was per-

formed to test initial orthostatic adjustment [1]. Supine brachial BP was 109/59 mm Hg, and simultaneous noninvasive finger BP (using a Finapres device; TNO-TPD Biomedical Instrumentation [BMI], Amsterdam, The Netherlands) was 85/43 mm Hg. Heart rate was 55 beats/min (Fig. 1). After standing, systolic BP almost immediately decreased to less than 40 mm Hg (by Finapres) with a reflex increase in heart rate. The patient reported lightheadedness, which lasted for only 20 seconds and then gradually disappeared as his BP rose.

During a second standing-up maneuver, an almost identical BP was observed. On standing from a squatting position, an even larger decrease in finger arterial pressure (from 120/75 to 40/30 mm Hg) and near fainting was observed. The patient recognized his symptoms as those that preceded his syncopal episodes.

The patient received an explanation about the cause of his syncope, that it was initial orthostatic intolerance, related to the use of antidepressants, and he was advised to arise slowly from supine positions. Changing his medications was problematic because of the severity of his psychiatric disorder, and therefore orthostatic symptoms, including syncope, remained a significant problem.

Comments

Most people have experience with a brief feeling of lightheadedness 5–10 seconds after standing, especially after prolonged supine rest. Such common episodes of lightheaded-

Figure 1. Blood pressure and heart rate responses on standing. Note transient symptomatic decrease in systemic blood pressure almost immediately after standing. The interruptions in the blood pressure tracing are a result of calibration of the finger arterial blood pressure.

ness are caused by a transient decrease in systemic BP, which occurs on active standing, but not on passive head-up tilt [1–3]. This initial transient decrease in BP is ascribed to vasodilatation in the active muscles during standing and characterized by its time of onset and short duration. The transient decrease in systemic BP does not increase with age, and a decrease up to 40 mm Hg systolic and 20 mm Hg diastolic is considered normal (95% confidence limits obtained in 74 healthy subjects aged 10–86 y) [4]. Larger decreases in BP are considered abnormal [1].

Recent studies have reported that an abnormally large initial decrease in BP occurs in a variety of conditions that affect arterial baroreflex control of sympathetic activation of resistance vessels; for example, in patients with deafferented carotid sinus baroreceptors after neck surgery (impairment of afferent pathways), and in subjects receiving clonidine (blockade of central pathways) [1]. Symptomatic initial orthostatic hypotension is also reported to occur frequently in young subjects with a tendency to faint, but the site of the lesion in the baroreflex arc in these subjects remains to be determined [3,5].

The patient's description of his episodes of fainting indicates that initial orthostatic hypotension was the cause of syncope. The cardiovascular examination documented the postulated abnormally large initial decrease in pressure (Fig. 1). The combination of medications used by our patient

almost certainly is involved in the initial orthostatic hypotension. Pipamperone, fluvoxamine, clobazam and sotalol all have been reported to impair orthostatic BP control [6–9].

This case shows the importance of continuous, noninvasive BP measurement on standing, because the rapid BP changes would be difficult to assess with cuff and stethoscope [1,10,11]. The case also shows the importance of initial orthostatic hypotension, a phenomenon of which many physicians are still unaware; standard teaching is to measure BP supine and after standing for 2 to 3 minutes. This would clearly miss any abrupt decreases in BP that may be the cause of symptoms. The prevalence of initial orthostatic hypotension due to medications should be further assessed with prospective valuation of patients taking medications, such as antidepressants, that are known to interfere with sympathetic function.

References

1. Wieling W, Karemaker JM. Recording of heart rate and blood pressure in the evaluation of neuro-cardiovascular control. In: Mathias CJ, Bannister R, eds. *Autonomic Failure. A textbook of clinical disorders of the autonomic nervous system*. 4th ed. Oxford, Oxford University Press; 1998. pp. 196–210.
2. Sprangers RLH, Wesseling KH, Imholz ALT, et al. The initial blood pressure fall upon stand up and onset to exercise explained by changes in total peripheral resistance. *J Appl Physiol* 1991; 70:523–530.
3. Tanaka H, Yamaguchi H, Matashima R, et al. Instantaneous orthostatic hypotension in children and adolescents: a new entity of orthostatic intolerance. *Pediatric Res* 1999; 46:691–697.
4. Wieling W, Veerman DP, Dambrink JHA, et al. Disparities in circulatory adjustment to standing between young and elderly subjects explained by pulse contour analysis. *Clin Sci* 1992; 83:149–155.
5. Dambrink JHA, Imholz BPM, Karemaker JM, et al. Postural and transient hypotension in two healthy teenagers. *Clin Auton Res* 1991; 1:281–287.
6. Price LH, Goodman WK, Charney DS, et al. Treatment of severe obsessive-compulsive disorder with fluvoxamine. *Am J Psychiatry* 1987; 144:1059–1061.
7. Brogden RN, Heel RC, Speight TM, et al. Clobazam: A review of its pharmacological properties. *Drugs* 1980; 20:161–178.
8. Pipamperon product information. Farmacotherapeutisch kompas. Amstelveen, The Netherlands: Ziekenfondsraad; 2000/2001. pp. 102.
9. Singh BN, Deedwania P, Nademanee K, et al. Sotalol. A review of its pharmacodynamic and pharmacokinetic properties and therapeutic use. *Drugs* 1987; 34:311–349.
10. Imholz BPM, Wieling W, Monfrans GA, et al. Fifteen-years-experience with finger arterial pressure monitoring: Assessment of the technology. *Cardiovasc Res* 1998; 38:605–616.
11. Schlingemann RO, Smit AAJ, Lunel HF, et al. Amaurosis fugax on standing and angle-closure glaucoma with clomipramine [letter]. *Lancet* 1996; 347:465.