CASE REPORT

Laughter-induced syncope

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SUMMARY

This case report describes a 58-year-old man who is otherwise healthy but has periodic episodes of syncope which only happen when he laughs vigorously. This occurs suddenly with no prodrome, so the patient has no time to react and is unable to brace himself when he falls. The case is one of the very few described in the medical literature, most of which have similar presentations and findings on subsequent investigation. Recognition of the typical presentation, in the absence of more serious causes of syncope, may avoid extensive and expensive evaluation.

BACKGROUND

Knowledge of this unusual entity and its typical presentation may help clinicians feel more comfortable with the diagnosis and not pursue an unnecessary, unrevealing and expensive investigation.

CASE PRESENTATION

The patient is a 58-year-old Caucasian male who is otherwise healthy and has no significant past medical or surgical history, and is on no prescription or over-the-counter medications. He does not smoke or drink. His family history is positive for essential hypertension in his mother and severe hypotension in his father who requires medication to maintain his blood pressure.

The patient presented to our family practice office with a history of episodes of loss of consciousness which had occurred three times over the previous 2 years. Each of these episodes occurred during periods of extreme laughter. There was no prodrome and the patient completely lost consciousness and could not be roused for 2–3 min. He then awoke spontaneously and felt rather weak for a further 20–30 min.

After the first episode occurred, the patient underwent extensive investigations in hospital including laboratory tests, an echocardiogram, a nuclear stress test, Holter monitoring and an MRI of the brain. He later had a tilt table test and EEG. All of these tests were negative.

Six months after the first occurrence he had another loss of consciousness for 1–2 min, again during heavy laughter with similar feelings of weakness after the episode. The patient attended cardiology and neurology specialists, but no specific diagnosis was made or treatment given. Between episodes the patient was completely asymptomatic.

The patient presented to our office after a further episode and was anxious to get a diagnosis. His physical, cardiovascular and neurological examinations were normal. His pulse was 78 beats per minute and his blood pressure was 138/80 and did not change significantly with orthostatic manoeuvres.

DIFFERENTIAL DIAGNOSIS

The differential diagnosis included seizure disorder, bradycardia, hypoglycaemia and cardiac dysrhythmia.

TREATMENT

This disorder is treated by prevention and patient awareness of the problem. All patients described had symptoms lasting seconds to a few minutes and returned to consciousness when they were in a head down position or lying flat.

DISCUSSION

Laughter-induced syncope is a rare entity and is thought to be caused by vasovagal mechanisms. The increase in intrathoracic pressure reduces venous return to the heart and stimulates the baroreceptors. This in turn causes inappropriate parasympathetic tone with stimulation of the vagus nerve, decreasing heart rate with accompanying vasodilatation, and causing a sudden transient decline in cerebrovascular perfusion and loss of consciousness. Other forms of loss of consciousness with the same mechanism of action are syncope secondary to coughing, sneezing or weightlifting. Laughter-induced syncope is rare and has only been described a few times in the literature. The cases described in the literature had a similar presentation as in this case, with the exception that some patients had a short prodrome before the syncope occurred. The described cases also share negative laboratory, cardiac, neurological and imaging studies including negative tilt table studies.

The diagnosis of laughter-induced syncope presents a challenge as the rarity of this disorder means there are no standard investigations. A reasonable approach would be to assess the patient’s medical, family and social history and review medications that could cause hypotension. The patient’s physical examination should include orthostatic blood pressure, heart murmurs and carotid bruits, and a basic neurological examination; an electrocardiogram should also be considered. Basic laboratory testing such as complete blood count and a comprehensive metabolic panel should be considered (Strength of Recommendation Taxonomy (SORT), level C). History and symptoms that are suggestive of more serious causes of syncope include a family history of sudden death, chest pain or palpitations before or during the event, shortness of breath, seizure activity, heart murmur, focal neurological deficits and a loss of consciousness.

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lasting more than 5 min. Depending on the findings from this initial evaluation and risk stratification, a decision can be made as to whether further more advanced testing is required.

In patients with a history of laughter-induced syncope and no suggestion of more serious causes, the clinical decision may be to not perform extensive tests such as EEG, Holter monitoring, tilt testing, neuro-imaging, stress testing or echocardiograms, since none of these tests were helpful in the reported cases (SORT, level C). These decisions must be left to the clinical judgment of the evaluating physician.

**Learning points**

▸ Laughter-induced syncope is a rare entity.
▸ Extensive investigations are unnecessary in the absence of more serious causes for the syncope.
▸ Laughter-induced syncope should be treated through prevention and patient awareness.

**REFERENCES**


**Contributors** CH and JEMH-L contributed equally to the planning, research and writing of this article. Both fully accept responsibility for its content.

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