

## “Suffocation Roulette”: A Case of Recurrent Syncope in an Adolescent Boy

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We present the case of a 12-year-old boy admitted with a complaint of recurrent syncopal episodes. A careful history taking revealed the cause of the syncopal episodes to be a dangerous game played by adolescents called “suffocation roulette.” We believe that recognition of this game as a possible cause of syncopal events, together with prompt educative intervention, might prevent adolescent morbidity and mortality and also might eliminate the need for unnecessary medical investigations.

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## INTRODUCTION

Adolescents have acute and chronic medical problems, but the main sources of disease, death, and disability in this population result from risky behaviors and risky environments. The leading cause of death for adolescents and young adults (age 10 to 24 years) in both the United States and Canada is unintentional or intentional injury, which includes motor vehicle crashes or other unintentional injuries, homicides, and suicides. Together, these 4 causes account for almost 75% of deaths in this age group and for more than 80% of deaths of those aged 15 to 19 years.<sup>1</sup>

A variety of biological, psychological, social, and cultural factors contribute to the likelihood of involvement in risky behaviors. Health-risk behaviors and risky environmental factors occur together among adolescents.<sup>2</sup> Unintentional injuries, including drowning, fires, and accidental firearms deaths, account for a large number of adolescent deaths.<sup>3</sup> Alcohol and drugs are thought to be related to a considerable proportion of these fatalities.<sup>4</sup> We would like to add to the list of practices causing unintentional injuries in adolescents a new game that causes repeated syncopal events.

We could not find any previous reports of such injurious games in the medical literature.

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## CASE REPORT

A 12-year-old boy with a medical history of mild asthma was brought to the emergency department by his father because of an episode of unconsciousness that lasted approximately 4 minutes. The patient did not recall any aura before his collapse and did not remember the events preceding his loss of consciousness. According to the history that was provided by his father, the patient collapsed while playing outdoors with his peers, who did not observe any tonic or clonic movements, change of facial color, urine or fecal incontinence, or salivation during the episode. The patient regained consciousness after approximately 4 minutes, walked back home, and was brought to the hospital. The patient stated that a

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similar episode of unconsciousness had occurred the day before.

The patient denied cigarette smoking, alcohol consumption, and use of illicit drugs or solvent inhalation. He could not recall the events preceding both episodes of unconsciousness and denied physical abuse by his peers. The patient's older brother provided additional information, stating that the patient was confused and sleepy on returning home from both episodes.

On arrival at the ED, the patient was fully alert, with blood pressure of 128/75 mm Hg, supine pulse rate of 78 beats/min, and temperature of 36.4°C (98.4°F), with normal orthostatic changes. The physical examination revealed right occipitoparietal scalp tenderness with normal neurologic examination results and no other abnormal physical findings. The patient's CBC count, electrolyte level, serum glucose level, blood urea nitrogen level, and urinalysis results were normal. The ECG was interpreted as normal sinus rhythm with a normal QTc interval.

The patient was admitted with a diagnosis of recurrent syncope for observation and further evaluation. Our primary differential diagnosis included epilepsy, brain tumor, cardiac dysrhythmia, and substance abuse. The primary workup plan included an ECG, head computed tomography, and inpatient consultations with a neurologist and a cardiologist.

On the morning after admission, the patient complained of a worsening headache with no change in his physical examination results. A computed tomographic scan demonstrated mild right parietal subcutaneous tissue swelling, with no evidence of fracture, fresh bleeding, or midline shift.

The cause of the recurrent episodes of unconsciousness was revealed on a projective manipulation performed by one of our physicians. During a discussion with the patient's brother about a neck-choking game played by "children," the physician suddenly addressed the patient with a question: "Do you know this game?" The patient said that he did, adding, "That is not the correct description of the game." The patient then described a game in which 1 player takes a deep

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breath and holds it while another participant hugs him strongly from behind until "I" feel dizzy and pass out.

The patient noticed his slip of the tongue and admitted that this was the cause of his syncopal episodes and added that in the current episode, he probably fell down and hit his head on the floor. He reported at least 4 previous episodes and added that sometimes the game is played in a pair and that the "loser" is the one who passes out first. The patient denied any exhilaration or orgasmic sensations during the practice of this game and stated that the thrill of the game is watching the victim pass out and then regain consciousness.

A social worker's interview with the patient and his family revealed that the patient moved to a new school at the beginning of this year and was not socially accepted among his new classmates. The patient's feeling of being socially rejected in his new school seems to be the main reason for his willingness to participate in this dangerous game, seeking acceptance into a group of peers.

The morbidity and mortality risks of this game were explained to the patient, and he was instructed not to participate in such a game. The headache subsided, and the patient was discharged with a follow-up by his pediatrician and the municipal social services.

We contacted the Israeli National Association for Child Protection to learn about the scope of this game. Only 2 reports were filed with the association about similar games. In the first report, the participants used towels to apply constricting force around their necks until one of them passed out. In the second report, 2 victims took a deep breath and were then manually strangulated by 2 other participants. In both reports, all participants were male, and the victims experienced mild head trauma from falling and were transported to an ED.

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## DISCUSSION

In the United States, a teenager attempts suicide every 78 seconds, commits suicide every 90 minutes, dies in an accident every 20 minutes, and is murdered every 90 minutes.<sup>5</sup> Mortality statistics represent only one aspect of adolescent health status. For every fatal injury,

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approximately 41 injuries require hospitalization, and at least 1,100 injuries are evaluated in an ED. For every fatality from a motor vehicle crash, there are more than 100 injuries. For every gun-related death, there are 5 to 7 gun-related injuries.<sup>1</sup>

This case report provides insight about a dangerous game played by adolescents called "suffocation roulette." We hypothesize that the mechanism of loss of consciousness in this case has 2 components. The first relates to the hypoxia that results from both the breath holding and the external limitation of chest wall expansion. The second component relates to hemodynamic depression caused by the increased intrathoracic pressure, which results in both decreased preload and decreased heart rate that together reduce the cardiac output to the point of syncope.

On the basis of the hypothesized pathophysiologic nature of this game, we deduced that its possible complications are similar to those of syncope, hypoxia, external chest compression, and the resulting fall. We believe that the more common complications include soft-tissue injuries and minor fractures resulting from both the chest compression and the fall.

The characteristics of this game differ from a paraphilia called the syndrome of autoerotic asphyxiation that can be encountered in adolescents. Autoerotic asphyxiation syndrome has been described as "erotized repetitive hanging." Also known as asphyxophilia or hypoxyphilia, it is a paraphilia of the sacrificial type in which sexual arousal and attainment of orgasm depend on self-strangulation and asphyxiation up to, but not including, loss of consciousness.<sup>6</sup> The fatal victim of autoerotic asphyxia is typically a single male aged 15 to 29 years. Autoerotic sexual activity is typically performed in isolation; often there is evidence of repetitive practice. Accidental death usually results when the safety mechanism designed to alleviate neck compression fails.<sup>7</sup> The game described in this case report is practiced in a group of peers and not alone, reportedly does not include sexual contexts, and seems to be driven by peer pressure and risk seeking rather than erotic impulses.

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We believe that this dangerous game should be brought to the attention of parents, physicians, educators, and social service personnel. Recognition of this game as a possible cause of syncopal events, together with prompt educative intervention, might prevent adolescent morbidity and mortality and might also eliminate the need for unnecessary medical investigations.

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