



# Can Social Media Challenges Determine Life or Death? Two Adolescent Cases from the Pediatric Intensive Care Unit

Sosyal Medya Meydan Okumaları Yaşamı mı Ölümü mü Belirliyor? Yoğun Bakımda İzlenen İki Ergen Olgu

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## Abstract

Adolescence is a critical developmental period characterized by rapid social, cognitive, and behavioral changes, during which risk-taking behaviors tend to increase. Social media-driven "challenge" activities can pose serious health threats, particularly when reinforced by peer pressure and group dynamics. This report presents two pediatric cases involving previously healthy adolescents who experienced life-threatening consequences as a result of engaging in such risky behaviors, one of which resulted in death. The first case involved a 12-year-old male who consumed approximately 4-5 liters of water in a short time as part of a peer challenge. He presented with seizures and altered mental status secondary to severe hyponatremia ( $\text{Na}^+$ : 116 mmol/L) and was admitted to the pediatric intensive care unit. Following individualized fluid therapy and normalization of electrolytes, the patient recovered fully and was discharged. The second case involved an 11-year-old male who experienced sudden aspiration during a eating contest, leading to cardiac arrest. Despite immediate cardiopulmonary resuscitation, intensive support, and advanced resuscitative efforts, no neurological improvement was observed, and the patient was declared deceased on the third day of admission. Both cases underscore that life-threatening complications can arise in healthy adolescents due to risk-laden behaviors influenced by social media. These cases highlight the need for comprehensive risk assessment in adolescent patients, as well as the importance of implementing multidisciplinary preventive strategies in pediatric healthcare practice.

**Keywords:** Adolescence, social media, risk-taking, pediatric intensive care units, cognition

## Öz

Ergenlik dönemi, bireylerin sosyal, bilişsel ve davranışsal olarak hızla değiştiği, bu süreçte risk alma eğilimlerinin arttığı kritik bir gelişim evresidir. Sosyal medya aracılığıyla yayılan dijital meydan okumalar (challenge) özellikle ergen bireylerde akran baskısı ve grup dinamiklerinin etkisiyle ciddi sağlık risklerine neden olabilmektedir. Bu bildiride, sosyal medya kaynaklı meydan okuma davranışlarının neden olduğu, bilinen bir hastalık öyküsü bulunmayan iki sağlıklı ergen bireyde gelişen, biri mortalite ile sonuçlanan iki ciddi olgu sunulmaktadır. Birinci olguda, arkadaş çevresiyle girdiği su içme iddiası sonrası yaklaşık 4-5 litre su tüketen 12 yaşında erkek hasta, gelişen hiponatremi ( $\text{Na}^+$ : 116 mmol/L) nedeniyle konvülsiyon geçirmiş ve bilinç bozukluğu tablosuyla çocuk yoğun bakım ünitesine yatırılmıştır. Elektrolit dengesi sağlandıktan sonra tam klinik iyilik haliyle taburcu edilmiştir. İkinci olguda ise, 11 yaşında erkek hasta bir yeme yarışması sırasında ani aspirasyon sonucu kardiyak arrest gelişmesiyle acil müdahale sonrası yoğun bakım ünitesine alınmış; yoğun tedavi ve ileri yaşam desteğine rağmen nörolojik yanıt alınamayan hasta, üçüncü gününde eksitus kabul edilmiştir. Her iki olguda da altta yatan medikal hastalık bulunmamasına rağmen, sosyal medya kaynaklı riskli davranışlar hayati komplikasyonlara yol açmıştır. Bu olgular, pediatri pratiğinde ergen bireylerde riskli davranış öyküsünün ayrıntılı olarak sorgulanması gerektiğini ve önleyici sağlık hizmetlerinin multidisipliner bir yaklaşımla ele alınmasının önemini ortaya koymaktadır.

**Anahtar Kelimeler:** Ergenlik, sosyal medya, riskli davranış, çocuk yoğun bakım, bilinç

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## Introduction

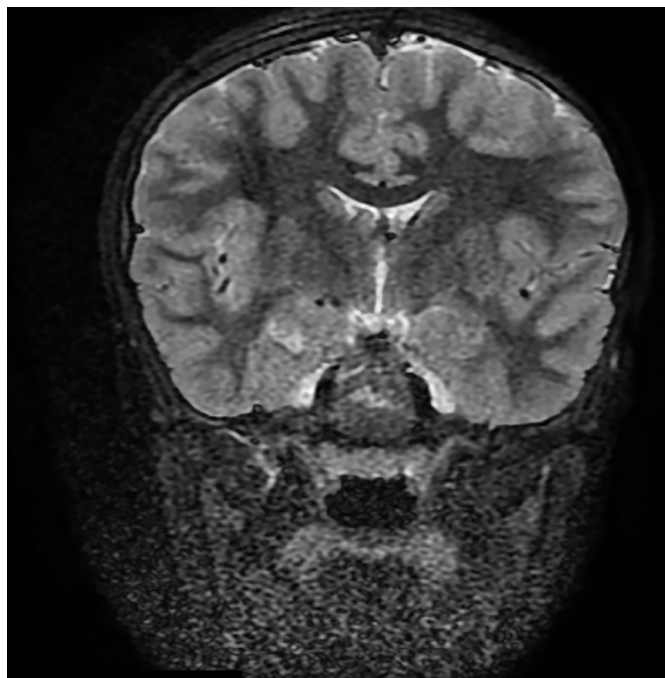
Adolescence is a critical developmental stage in which physical, cognitive and emotional changes are experienced intensely and risk-taking behaviors increase.<sup>1</sup> In this process, the desire to be accepted in peer groups, the fact that impulse control is not yet fully developed, and the influence of digital media can make adolescents more prone to dangerous and unhealthy behaviors.<sup>2</sup> Digital trends called “challenge”s, which spread rapidly through social media, become widespread among adolescents in a short time and can lead to serious health problems and even life-threatening situations. In this study, we aimed to draw attention to the potential dangers of such digital interactions by presenting two cases of adolescents who were hospitalized in the pediatric intensive care unit (PICU) as a result of risky behaviors caused by social media.

## Case Reports

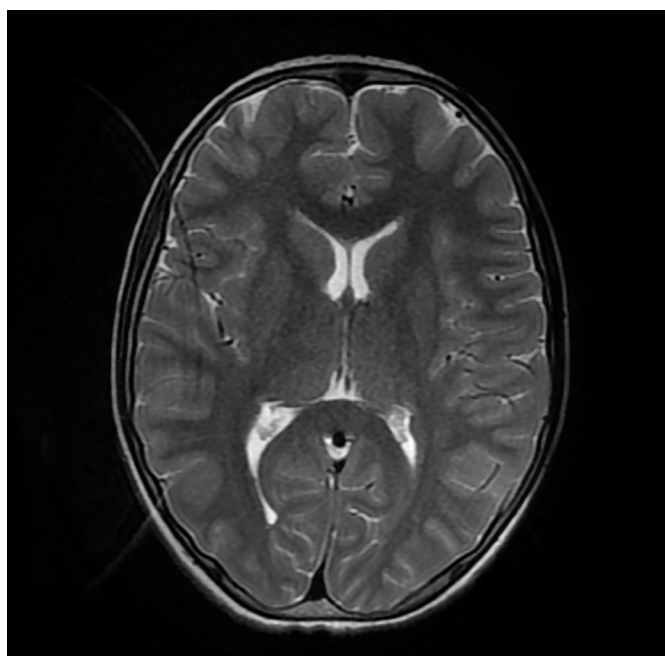
### Case 1: Hyponatremia Due to Excessive Water Intake

A 12-year-old male patient with no previous known systemic or psychiatric disease presented to the emergency department because of confusion and a generalized tonic-clonic seizure that developed after he consumed approximately 4-5 liters of water in a short period of time as part of a bet with his friends. In the history taken from the patient’s parents, it was reported that the patient developed confusion and had a seizure shortly after the incident. He hit his head on a hard surface during the seizure. In the initial evaluation in the emergency department, Glasgow Coma score (GCS) was determined as 10, and the patient was in a stupor. Vital signs included peak heart rate 120/min, blood pressure 110/70 mmHg, body temperature 37 °C, and respiratory rate 15/min. Laboratory tests revealed blood gas values at the time of admission: pH 7.38, pCO<sub>2</sub> 44.6 mmHg, HCO<sub>3</sub><sup>-</sup> 25.1 mmol/L, standard base excess (SBE) +1.3 mmol/L, and lactate 2 mmol/L. Serum glucose level was 110 mg/dL, serum sodium (Na) 116 mmol/L, chloride (Cl<sup>-</sup>) 80 mmol/L, calcium (Ca) 9.1 mg/dL, magnesium (Mg) 1.6 mg/dL, and phosphorus (P) 4.9 mg/dL, uric acid 3.8 mg/dL and urea 13 mg/dL. Hemogram and acute phase reactants were within normal limits. No pathologic findings appeared in liver and kidney function tests. Serum osmolality was 266 mOsm/kg, spot urine Na was 20 mmol/L, urine creatinine was <4 mg/dL, and urine osmolality was 250 mOsm/kg. The patient was hospitalized in the PICU with a prediagnosis of convulsion due to hyponatremia. Lumbar puncture was performed to differentiate between encephalopathy and meningitis. Cerebrospinal fluid examination revealed no findings suggestive of central nervous system infection. Ceftriaxone and acyclovir treatment were started empirically.

Cranial computed tomography (CT) and magnetic resonance imaging (MRI) were within normal limits (Figures 1-2). Electroencephalography (EEG) showed no epileptiform activity. Serum thyroid function tests, adrenocorticotropic hormone (ACTH), cortisol, and electrolyte analysis were performed. Cortisol level was 38.1 µg/dL and ACTH level was 17.5 pg/mL. As a result of the evaluations, the findings were thought to be compatible with primary polydipsia.



**Figure 1.** Cranial MRI  
MRI: Magnetic resonance imaging



**Figure 2.** Cranial CT image  
CT: Computed tomography

Antidiuretic hormone and B-type natriuretic peptide (BNP) levels could not be evaluated. Consultations from infectious diseases, endocrinology, and child psychiatry clinics did not suggest an underlying systemic or psychiatric disease.

The initial serum Na level of the patient upon admission was 124 mmol/L. At the 6<sup>th</sup> hour, the level had dropped to 116 mmol/L prior to transfer to the PICU. Upon PICU admission, the Na was 126 mmol/L, increasing to 129 mmol/L at the 12<sup>th</sup> hour and 131 mmol/L at the 24<sup>th</sup> hour. Electrolytes and urine output were monitored every 6 hours throughout the correction process. Care was taken to avoid rapid correction to prevent cerebral edema, and the correction was completed without complications.

The patient was started on 3% hypertonic saline fluid therapy. During follow-up, electrolyte values gradually improved, and clinical status stabilized. On the 3<sup>rd</sup> day of hospitalization, electrolyte balance was restored, and the patient was transferred to the relevant ward on the 4<sup>th</sup> day. In the social history evaluation performed before discharge, it was learned that the patient performed this behavior within the scope of a challenge spread in the digital environment and did not have a history of psychiatric illness. After an informative interview with the family, the patient was referred to the pediatric adolescent mental health and diseases outpatient clinic, to address relationships and social media usage habits.

### Case 2: Aspiration and Cardiac Arrest During Food Challenge

An 11-year-old boy with no known systemic, neurologic or developmental disease had a sudden cardiac arrest due to aspiration during a hamburger eating contest with a group of friends. Cardiopulmonary resuscitation was performed immediately after the arrest, which was witnessed at the scene. He was intubated and admitted to the PICU.

On admission to intensive care unit, GCS was 3; spontaneous respiration was absent, pupils were dilated and fixed, and there was no response to painful stimuli. Vital signs were peak heart rate 100/min, blood pressure 80/40 mmHg, and body temperature 36 °C. On arrival, arterial blood gas analysis indicated: pH 6.97, pCO<sub>2</sub> 79.7 mmHg, HCO<sub>3</sub><sup>-</sup> 12.7 mmol/L, SBE -13.3 mmol/L, and severe respiratory/metabolic acidosis was observed. Dense food residues were observed in the mouth during intubation (Figure 3).

Inotropic treatment was started, but hypotension persisted. Cranial and thoracic CT imaging performed in the emergency department revealed no intracranial pathology; thoracic CT showed infiltrative findings compatible with aspiration pneumonia (Figure 4). Food residues were aspirated from the tracheobronchial system by bronchoscopy: white blood cell 13.500/μL, hemoglobin 16.5 g/dL, platelet 212.000/μL; Na<sup>+</sup> 153 mmol/L, potassium 6.0 mmol/L, Cl<sup>-</sup> 106 mmol/L,

Ca<sup>2+</sup> 10.9 mg/dL, P 9.7 mg/dL, Mg<sup>2+</sup> 3.0 mg/dL, glucose 198 mg/dL. Cefotaxime and clindamycin were started as empirical antibiotic treatment.

In cardiac examination, normal sinus rhythm was observed on electrocardiography; no pathologic waveform was observed. Cardiac biomarkers were measured as follows: troponin 50 ng/L, creatine kinase (CK)-muscle brain 10.7 μg/L, CK 342 U/L, and pro-BNP 282 pg/mL. Echocardiography showed normal cardiac function. Neuron-specific enolase and S100-B, which are serum neurologic markers with diagnostic value for hypoxic brain injury, were requested but could not be studied. EEG was planned but could not be performed. Brain MRI was planned but could not be performed due to hemodynamic instability.



Figure 3. Food residue observed in the mouth during intubation

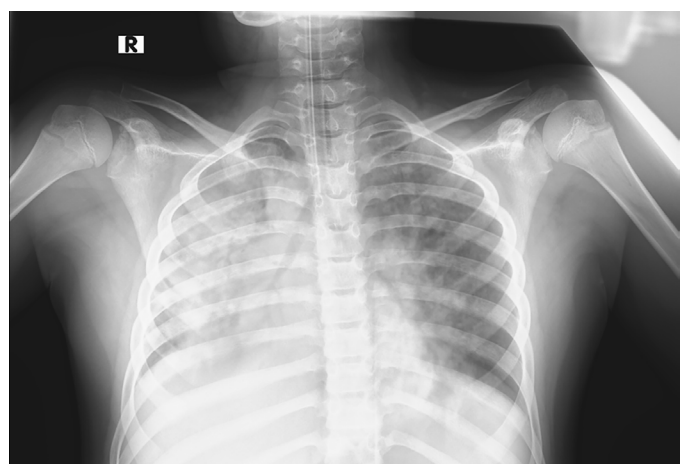


Figure 4. Bilateral perihilar infiltrations and bronchial airway filling on posterior-anterior chest radiograph images

The patient presented with a GCS score of 3, with absent brainstem reflexes. Due to the unstable clinical condition, advanced neuroimaging (MRI, EEG) could not be performed. Neurological deterioration was attributed to hypoxic-ischemic encephalopathy. Supportive care was initiated, including hemodynamic stabilization and fluid-electrolyte management. Despite all supportive efforts, neurological recovery could not be achieved.

Renal impairment secondary to hypoxic injury was suspected. With decreased urine output, intravenous furosemide was administered, and an adequate diuretic response was achieved. Pediatric nephrology was consulted, and close monitoring of renal function and blood pressure within physiological ranges was recommended. Despite the increase in creatinine from 0.97 mg/dL at admission to 2.51 mg/dL at the last follow-up, urine output remained sufficient and fluid-electrolyte balance was preserved. Although severe lactic acidosis was present, continuous renal replacement therapy (CRRT) was not indicated after nephrology reassessment; however, preparations for prompt CRRT initiation were made in case of clinical deterioration.

Despite all medical and supportive treatments in intensive care unit follow-up, there was no neurologic response, so the patient was considered deceased on the third day, with cardiopulmonary and neurologic findings. There was no family history of developmental delay, dysphagia, epilepsy or other neurologic diseases. The incident was witnessed during an "eating contest" he participated in with a group of friends in his social circle, and no information on the use of toxic agents or substances was found in the anamnesis.

## Discussion

Two cases are presented showing that social media-based challenging behaviors may result in serious morbidity and even mortality in adolescents. Adolescence is a period in which identity development continues, peer approval is at the forefront, and impulse control mechanisms are not yet fully developed. These psychosocial characteristics may lead individuals to high-risk behaviors for the sake of social acceptance or digital popularity.<sup>3</sup> In both cases, severe clinical manifestations developed as a direct result of these risky digital behaviors (Table 1).

In the first case, hyponatremia and related neurologic symptoms were observed in a 12-year-old boy who participated in a water drinking challenge with group pressure. He presented with confusion and convulsions, and laboratory tests revealed severe hyponatremia (Na: 116 mmol/L). After electrolyte balance was restored, the patient recovered completely and was discharged. This case shows that social media-based "drinking water" challenges can lead to serious complications such as hyponatremia, which can be life-threatening within a short period. In this case, only the external factor of social media was found to be decisive.

In the second case, we report an 11-year-old boy who aspirated after a hamburger eating contest with his peers, and presented with cardiac arrest. At presentation, the patient had a GCS of 3, no spontaneous breathing, and was in a deep coma with fixed-dilated pupils. Blood gas analysis revealed severe metabolic acidosis (pH: 6.97) and marked lactic acidosis. The hemodynamic instability that persisted despite inotropic treatment indicated severe deterioration in organ perfusion, and the patient died on the 3<sup>rd</sup> day in the intensive care unit. This case illustrates that hypoxic-ischemic encephalopathy and respiratory failure resulting in fatal complications may occur as a result of digital challenges.

**Table 1. Comparison of clinical and laboratory characteristics of two adolescent patients who developed after digital challenge**

|                      | Case 1: Hyponatremia  | Case 2: Aspiration  |
|----------------------|---|---|
| Age/gender           | 12 years/male   | 11 years/male   |
| Triggering event     | Peer pressure challenge, ingestion of 4-5 liters of water           | Bet with peers, hamburger eating contest  |
| Reason for admission | Confusion, seizure  | Cardiac arrest after aspiration   |
| GCS                  | 10  | 3   |
| Neurological status  | Altered mental status, convulsion                                   | Areflexic, fixed and dilated pupils   |
| Laboratory findings  | Na: 116 mmol/L, Cl: 80 mmol/L                                       | pH: 6.97, pCO <sub>2</sub> : 79.7 mmHg, HCO <sub>3</sub> <sup>-</sup> : 12.7 mmol/L, SBE: -13.3 |
| Treatment            | 3% NaCl, fluid management, ceftriaxone, acyclovir                   | Cefotaxime, clindamycin, inotropic support  |
| Imaging              | Brain CT, cranial MRI, EEG  | Chest X-ray, thorax CT, brain CT  |
| Procedures           | Lumbar puncture   | Bronchoscopy  |
| Hospital course      | Electrolyte balance achieved on day 3, transferred to ward on day 4 | Deceased on day 3 in PICU   |
| Clinical outcome     | Discharged in full recovery   | Exitus  |

GCS: Glasgow Coma score, Na: Sodium, Cl: Chloride, CT: Computed tomography, MRI: Magnetic resonance imaging, EEG: Electroencephalography, PICU: Pediatric intensive care unit, SBE: Standard base excess

In recent years, there has been an increase in dangerous challenges that spread rapidly through social media platforms. Behaviors such as “choking game”, “Benadryl challenge”, “salt and ice game”, “swallowing cinnamon” and “eating laundry capsules”, especially supported by video content, reach large masses and are rapidly spreading among adolescents.<sup>4</sup> Such challenges are known to cause life-threatening complications such as severe neurological damage, hyponatremia, aspiration, and cardiac arrest.

Such digitally oriented behaviors point to a systemic and social problem, that cannot be explained only by individual psychiatric disorders. Social media interactions represent a new public health problem in child and adolescent health. Pediatricians should consider digital defiance behaviors as a differential diagnosis in adolescent patients presenting with unexplained symptoms or atypical clinical pictures. During the clinical evaluation, not only physical findings but also behavioral and social histories such as social media usage habits, peer relationships, exposure to digital content, and family communication style should be questioned in detail.<sup>4</sup>

Monitoring of metabolic parameters is of great importance in intensive care processes. Especially in the second case, blood gas monitoring played a critical role in treatment planning in terms of ventilation failure, tissue perfusion impairment, and hemodynamic instability management (Table 2). As emphasized in the literature, arterial blood gas analysis performed at frequent intervals in similar severe cases is an important tool in directing the effectiveness of the treatment process and prognosis prediction.<sup>5</sup>

Media literacy programs in schools should inform both children and parents and make students aware of the risks they may face in the digital world. These programs can raise awareness among children and adolescents about harmful or manipulative content on the internet. Social media platforms should also take responsibility in this process.

Systems need to be strengthened and ethical mechanisms developed to prevent the spread of risky content. These technological measures can play an important role in protecting groups of children in particular. The presented cases clearly demonstrate that social interactions on digital platforms can lead to life-threatening and even fatal consequences in adolescents. This situation shows that risky behaviors exposed to digital media are a public health problem that needs to be addressed not only at the individual level but also at the societal level. In this context, it is critical that health professionals, families, educators, and digital content providers cooperate using a multidisciplinary approach.

In conclusion, digital challenges during adolescence may pose serious risks to child and adolescent health. These facts suggest that digital media may create a new public health problem at the societal level. Therefore, health professionals, parents, educators, digital platform providers, and politicians should act in cooperation. Finally, social media platforms need to increase ethical and technological measures for content moderation and user safety. This is a vital step in protecting child and adolescent health in the digital age.

**Table 2. Changes in metabolic and respiratory parameters over time in adolescent patients hospitalized in intensive care unit due to aspiration**

| Time                              | Vital signs              | pH   | PCO <sub>2</sub> (mmHg) | HCO <sub>3</sub> <sup>-</sup> (mmol/L) | Lactate (mmol/L) (Normal <2 mmol/L) | Ventilation status | Clinical interpretation   |
|-----------------------------------|--------------------------|------|-------------------------|--|-------------------------------------|--------------------|---|
| Emergency admission               | Hypotensive, bradycardic | 6.68 | 49.5                    | 4.7                                    | 20.0                                | Intubated          | Severe mixed acidosis (metabolic + respiratory), elevated lactate indicates tissue hypoperfusion.   |
| 6 <sup>th</sup> hour              | Hypotensive, bradycardic | 7.00 | 66.7                    | 12.5                                   | 5.7                                 | Intubated          | Respiratory acidosis has worsened; metabolic correction is insufficient; hemodynamic instability persists.  |
| 1 <sup>st</sup> day               | Hypotensive, bradycardic | 7.11 | 47.1                    | 13.8                                   | 5.4                                 | Intubated          | Partial improvement in pH and HCO <sub>3</sub> <sup>-</sup> levels; slow decrease in lactate suggests ongoing poor tissue perfusion.  |
| 2 <sup>nd</sup> day               | Hypotensive, bradycardic | 7.09 | 56.8                    | 14.5                                   | 3.7                                 | Intubated          | Persistent metabolic acidosis and elevated lactate levels suggest ongoing tissue hypoperfusion.   |
| 2 <sup>nd</sup> day clinical note | -                        | -    | -                       | -                                      | -                                   | -                  | Despite intensive inotropic support, cardiovascular stability could not be achieved; suggests refractory shock. Arterial blood gas monitoring was critical for treatment and prognosis. |

## Ethics

**Informed Consent:** Informed consent for participating in the study was obtained from the parents of the patient.

## Footnotes

### Authorship Contributions

Surgical and Medical Practices: K.E.A., F.B., Concept: K.E.A., F.B., Design: K.E.A., F.B., Data Collection or Processing: K.E.A., F.B., Analysis or Interpretation: K.E.A., F.B., Literature Search: K.E.A., F.B., Writing: K.E.A., F.B.

**Conflict of Interest:** No conflict of interest was declared by the authors.

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