

# Etiology in pediatric patient presented to emergency department with altered state of consciousness: Is it trauma or not?

## Bilinç değişikliği ile acil servise başvuran çocuk hasta: Travma mı değil mi?

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### SUMMARY

Consciousness is the state of ability of a person to perceive himself/herself and environment and to give an appropriate response to stimuli. The most frequent causes of childhood consciousness change include electrolyte disorders, encephalopathy, infections, overdose, intoxication, uremia, trauma, seizures, stroke, hypo-hyperglycaemia. Hypoglycemia is a very common metabolic problem in children. Our aim is to make sure that the diagnosis of hypoglycemia, one of the most common causes of consciousness change in children, is kept in mind and considered in differential diagnosis.

**Keywords:** Emergency department, child, falling, altered consciousness, hypoglycemia

### ÖZET

Bilinç; kişinin kendisini ve çevresini algılayabilmesi ve uyarılara uygun yanıt verebilmesi durumudur. Çocuklarda çok sayıda bilinç değişikliği nedeni olmakla birlikte bunların en sık görülenleri: elektrolit bozuklukları, ensefalopati, enfeksiyonlar, aşırı doz ilaç alımı, zehirlenmeler, üremi, travma, nöbet, inme, hipo-hiperglisemi gibi sıralanabilir. Hipoglisemi çocuklarda çok yaygın görülen metabolik bir problemdir. Amacımız çocuklarda bilinç bozukluğunun çok sık görülen nedenlerinden biri olan hipoglisemi yapıtığımız muayene ve tetkiklerle diğer nedenlerden ayırt etmektir.

**Anahtar Sözcükler:** Acil servis, çocuk, düşme, bilinç değişikliği, hipoglisemi

### INTRODUCTION

The state of consciousness change is a very important health problem in the pediatric population and is an emergency. For this reason, in pediatric cases, the cause of consciousness change should be determined shortly and treatment should be started as soon as possible. Head traumas is a disease group which is commonly seen in children and may cause altered state of consciousness. Minor head trauma (MHT) is accounted for 70-80% of all head traumas. Glasgow coma scale

(GCS) is between 13 and 15. Brain computed tomography (BCT) of patients with a GSC 13 has revealed pathology by 38% with surgery has been performed in 8% of these patients (1). One of the other common causes of altered consciousness is hypoglycemia. Hypoglycemia is a common metabolic problem in children<sup>2</sup>. In this study, we present a pediatric patient presented to emergency department with the history of falling and altered state of consciousness that after ruling out trauma

we identified to be resulted from hypoglycemia which is a metabolic problem.

## CASE REPORT

A previously healthy 5-year-old male patient was playing in the street alone with bike, his relatives had found him unconscious near the bike and considering he had experienced head trauma because of the small trauma sign in the forehead, they brought him to emergency department. There was no one with him to report how the incident occurred when the child was playing. After the incident, he was brought to the public hospital with mental fog. No nausea and vomiting were observed. In physical examination of the patient, his general status was moderate to poor with confused consciousness and tending to sleep. Glasgow Coma Score was found as 12. Other neurologic examination findings were normal. There was an ecchymosis of about 2 cm on the forehead. Vital signs were found as 90/60 mmHg of blood pressure and 96 bpm of heart rate. On blood glucose measured from the fingertip, his glucose was found to be low and could not be read. With the prediagnosis of hypoglycemia, the patient was immediately administered 0.2g/kg 10% dextrose 40 cc bolus and 10% dextrose infusion was initiated with 8mg/kg/min. Because there were trauma findings on examination of the patient, simultaneously BCT was performed accompanied by healthcare staff. Administration of 10% dextrose was continued during the imaging. In the brain tomography, no any pathology was found that would caused altered state of consciousness. Consciousness of the patient began to recover after about 20 minutes. Fingertip control blood glucose was measured as 96 mg/dL. Pediatric consultations were requested with the prediagnosis of hypoglycemia and after hospitalized in pediatric department. Further follow-up was not detected in any pathologies causing hypoglycemia and the patient was considered to have idiopathic hypoglycemia.

## DISCUSSION

Head injuries from trauma is a commonly seen event in children<sup>3-6</sup>. Post-traumatic brain injury is the most common cause of trauma-related deaths in children<sup>4</sup>.

Hypoglycemia is a very common metabolic problem in children and infants<sup>1</sup>. It is one of the life threaten complications in children and, signs

and symptoms related to hypoglycemia provide confirmation of hypoglycemia and enable to take life saving measures<sup>7</sup>.

Pediatric patients may be presented to emergency department with altered state of consciousness with traumatic and non-traumatic etiologies. Verbal assess of the neurologic status may be challenging especially in pediatric population<sup>5</sup>. Therefore, laboratory and imaging methods are more commonly used to establish differential diagnosis. The most common emergencies altered state of consciousness include hypo-hyperglycemia, head traumas, infections, poisonings, convulsions, electrolyte disturbances, arrhythmias and other cardiogenic problems. Vital signs, arterial blood gas, blood glucose and electrocardiography are the parameters that should be immediately assessed in cases of altered consciousness. Due to our patient also presented with altered state of consciousness, we immediately measured fingertip blood glucose which we found low and initiated the treatment.

In a study by Kanik et al., loss of consciousness was observed following minor head trauma<sup>8</sup>. In another study by Arrey et al., altered mental status or loss of consciousness was seen in 13% of patients who had experienced head trauma<sup>9</sup>. Bru et al. observed syncope like altered consciousness in 11 of 51 pediatric patients evaluated due to minor head trauma<sup>10</sup>. Similarly, considering that our patient might have altered state of consciousness due to head trauma, we ordered brain tomography, evaluated the results and found no any pathology that would caused altered state of consciousness.

Hypoglycemia at exercise is a common and feared condition<sup>11</sup>. In our case, hypoglycemia developed due to playing. Lagi et al. found hypoglycemia in 1% of the patients experiencing transient loss of consciousness<sup>12</sup>. In another study, Bo et al. found hypoglycaemia in 2 out of 150 children with syncope<sup>13</sup>. We also concluded that, altered state of consciousness in our patient was developed secondary to hypoglycemia, consistently with the other studies in the literature.

We concluded that, trauma and metabolic condition must definitely be evaluated in conjunction in patients presented to emergency department in unconscious state. Even if the reason can not be established, hypoglycemia is a common metabolic problem both in children and adults. Especially in patients admitted to emergency services with the cause of change of consciousness even if the physical examination findings indicate trauma, hypoglycemia should be kept in mind and considered as one of the first diagnostic tests.

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