

## CASE REPORT

# Epilepsy and Bipolar Disorder Associated with Empty Sella Syndrome: A Case Report

## Epilepsi ve Bipolar Bozukluk ile İlişkili Boş Sella Sendromu: Bir Olgu Sunumu

<sup>1</sup>Beyazıt GARİP 

<sup>1</sup>Gulhane Training and Research Hospital, Department of Psychiatry, Ankara, Türkiye

### Correspondence

Beyazıt GARİP, MD,  
Gulhane Training and Research Hospital, Department of Psychiatry, General Tevfik Sağlık Caddesi, Emrah Mahallesi, No: 85, Etilik-Ankara, Türkiye

**E-Mail:** beyazitgarip@gmail.com

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### ABSTRACT

**Aim:** To present a rare case of empty sella syndrome (ESS) associated with comorbid bipolar disorder and epilepsy, and to discuss its potential neuropsychiatric implications.

**Methods:** A detailed clinical evaluation, psychiatric assessment, cranial magnetic resonance imaging (MRI), and electroencephalographic (EEG) studies were performed. The patient's medical history, treatment response, and neuropsychiatric presentation were comprehensively reviewed.

**Results:** Cranial MRI revealed a partially empty sella. The patient exhibited treatment-resistant affective symptoms consistent with bipolar disorder, as well as focal seizures responsive to antiepileptic therapy. The coexistence of ESS with both psychiatric and neurological symptoms raised the possibility of a shared pathophysiological mechanism, potentially involving congenital or structural brain abnormalities affecting the hypothalamic-pituitary axis and limbic regions.

**Conclusions:** This case underscores the importance of considering underlying structural brain anomalies, such as ESS, in patients with refractory mood disorders and neurological comorbidities. ESS may not be merely incidental but rather contribute to the clinical picture through neurodevelopmental disruption or functional dysregulation. Comprehensive radiological and neuropsychiatric assessments are essential in such complex cases.

**Keywords:** Empty sella syndrome, bipolar disorder, epilepsy, treatment resistance, hypothalamic-pituitary axis, neuropsychiatry

### ÖZ

**Amaç:** Boş sella sendromu (BSS) ile birlikte bipolar bozukluk ve epilepsi komorbiditesinin nadir görülen bir olgusunu sunmak ve bu durumun nöropsikiyatrik etkilerini tartışmak.

**Yöntemler:** Hastanın ayrıntılı klinik değerlendirmesi, psikiyatrik muayenesi, kraniyal manyetik rezonans görüntüleme (MRG) ve elektroensefalografi (EEG) çalışmaları yapıldı. Tıbbi öykü, tedavi yanıtı ve nöropsikiyatrik bulgular kapsamlı şekilde incelendi.

**Bulgular:** MRG'de kısmi boş sella tespit edildi. Hasta, bipolar bozukluğa uygun tedaviye dirençli duyuğu durum belirtileri ve antiepileptik tedaviye yanıt veren fokal nöbetler gösterdi. BSS'nin hem psikiyatrik hem de nörolojik semptomlarla birlikte görülmesi, hipotalamik-hipofizer aks ve limbik sistem gibi beyin bölgelerinde konjenital veya yapısal anormalliklerin ortak bir patofizyolojik mekanizmaya işaret edebileceğini düşündürdü.

**Sonuç:** Bu olgu, tedaviye dirençli duyuğu durum bozuklukları ve nörolojik komorbiditeleri olan hastalarda BSS gibi yapısal beyin anomalilerinin göz önünde bulundurulmasının önemini vurgulamaktadır. BSS, sadece tesadüfi bir bulgu olmayıp nörogelişimsel bozukluklar veya fonksiyonel düzensizliklerle klinik tabloya katkıda bulunabilir. Böyle karmaşık vakalarda kapsamlı radyolojik ve nöropsikiyatrik değerlendirme gereklidir.

**Anahtar Kelimeler:** Boş sella sendromu, bipolar bozukluk, epilepsi, tedaviye direnç, hipotalamik-hipofizer aks, nöropsikiyatri

## INTRODUCTION

ESS is a rare condition characterized by a partially or empty sella turcica, often associated with headaches, fatigue, high blood pressure, and loss of libido, due to anatomical or functional impairment of the pituitary gland. However, some patients may remain asymptomatic (1,2). ESS is classified into two forms: primary and secondary. Primary ESS results from congenital defects above the sella turcica, where cerebrospinal fluid fills the sella, exerting pressure on the pituitary gland. In contrast, secondary ESS arises from conditions such as pituitary tumors, radiation therapy, trauma, or injury affecting the gland (3).

Diagnosing ESS can be challenging due to its diverse and often nonspecific symptoms. In many cases, the condition is incidentally identified during investigations for comorbid neuropsychiatric or endocrinologic abnormalities (4-6). Neuropsychiatric manifestations of ESS may include headaches, visual disturbances, and affective symptoms such as mood disorders (7). This case report focuses on a unique presentation of ESS with bipolar affective disorder and comorbid epilepsy, exploring the potential interplay between these conditions.

## CASE REPORT

A 40-year-old male first presented in 2016 with complaints of insomnia, restlessness, and anxiety. Quetiapine (200 mg/day) was initiated to address these symptoms. Over time, additional symptoms of unhappiness, lack of enjoyment, unwillingness, and hallucinations emerged, prompting the addition of escitalopram (20 mg/day) and aripiprazole (5 mg/day). Shortly after starting escitalopram, the patient developed affective symptoms such as

restlessness, insomnia, increased spending, wandering, and disorganized behavior. Escitalopram was discontinued, and the patient was diagnosed with bipolar affective disorder. Treatment with valproate (1000 mg/day) and olanzapine (7.5 mg/day) was introduced.

Despite this regimen, symptoms relapsed, including unhappiness, lack of sleep, and depressive episodes with suicidal ideation. Escitalopram (10 mg/day) was reintroduced but again triggered affective symptoms, including heightened speech, mobility, and insomnia. Management became increasingly challenging, as mood stabilizers and antipsychotics showed limited efficacy.

In 2018, the patient reported severe gastric and dyspeptic symptoms, leading to the discontinuation of valproate. Lithium (1200 mg/day), olanzapine (7.5 mg/day), and quetiapine (600 mg/day) were initiated. During this time, the patient experienced a seizure and was diagnosed with epilepsy based on EEG findings. While the seizure occurred following a high dose of quetiapine, subsequent independent episodes and persistent EEG abnormalities supported the diagnosis of idiopathic epilepsy. Lamotrigine (200 mg/day) was added for epilepsy management, along with lithium and venlafaxine (150 mg/day), but the patient failed to respond to these therapies. Following a suicide attempt involving quetiapine overdose, the patient developed status epilepticus and was admitted to the intensive care unit. Post-discharge, phenytoin (300 mg/day) was initiated for epilepsy, alongside sertraline (100 mg/day), quetiapine (900 mg/day), lithium (1200 mg/day), and lamotrigine (200 mg/day). However, no significant

clinical improvement was observed, with persistent depressive symptoms and repeated suicide attempts.

At subsequent follow-ups, medication regimens were adjusted multiple times. Final therapies included lamotrigine (150 mg/day), trazodone (100 mg/day), risperidone (1 mg/day), levetiracetam (1000 mg/day), propranolol (30 mg/day), and quetiapine (400 mg/day). Despite extensive treatment efforts, depressive symptoms and suicidal behaviors persisted. Endocrine and biochemical tests performed after radiological diagnosis of ESS showed normal levels of serum prolactin, growth hormone (GH), adrenocorticotropic hormone (ACTH), thyroid-stimulating hormone (TSH), luteinizing hormone (LH), and follicle-stimulating hormone (FSH).

Functionally, the patient remained significantly impaired. He was unable to sustain employment and experienced persistent social withdrawal. Over a six-year follow-up period, he was hospitalized four times and attempted suicide on three occasions.

### **Neurological Examination**

The patient was alert and oriented, with no signs of head trauma or scarring. Sensory and motor functions were intact, and no deficits were detected. Direct and indirect light reflexes were present and symmetrical. Cerebellar examination revealed no abnormalities, with normal coordination and balance. Babinski reflex was negative bilaterally. There was no evidence of neck rigidity. Muscle strength was normal, graded 5/5 in all four extremities. Cranial nerve examination showed no abnormalities, with all functions intact.

### **Electroencephalography (EEG)**

The EEG revealed intermittent anomalies characterized by slow theta waves and sharp wave paroxysms localized to the left temporal region. These findings were observed sporadically throughout the recording.

### **DISCUSSION**

ESS is a neuroradiological condition defined by herniation of the subarachnoid space into the sella turcica, leading to partial or complete flattening of the pituitary gland. Traditionally considered an incidental imaging finding, recent studies have increasingly reported its association with a range of neuropsychiatric symptoms, including mood disorders, psychosis, and cognitive deficits (8,9).

In this case, the co-occurrence of primary ESS, treatment-resistant bipolar disorder, and epilepsy presents a unique and clinically significant constellation that, to our knowledge, has not been previously documented in the literature. This triad highlights the need to explore underlying neurobiological mechanisms that may link these conditions.

ESS may contribute to neuropsychiatric manifestations through structural and functional changes in the hypothalamic-pituitary axis, as well as altered intracranial pressure dynamics. Increased cerebrospinal fluid pressure in the sella turcica may result in pituitary compression, potentially disrupting neuroendocrine regulation of mood and behavior. The pituitary gland plays a central role in the hypothalamic-pituitary-adrenal axis, which has been implicated in the pathophysiology

of affective disorders, including bipolar disorder (10).

Neuroimaging in this patient revealed classic features of ESS—enlarged sella, flattened pituitary, and cerebrospinal fluid filling the sella space. Despite suboptimal image resolution due to technical limitations, cranial magnetic resonance imaging (MRI) findings were consistent with primary ESS. The use of higher-resolution sequences and annotated images could further enhance diagnostic clarity.

In this case, the treatment-resistant nature and presence of rapid cycling raised the question of underlying neuroendocrine or neuroanatomical contributors. Although a direct causal relationship between ESS and bipolar disorder is not established, functional neuroimaging studies have demonstrated altered connectivity in patients with both conditions, suggesting a possible shared vulnerability (11).

The presence of epilepsy further complicates the clinical picture. EEG demonstrated persistent epileptiform activity, confirming an independent seizure disorder rather than an isolated drug-related event. Although ESS is rarely associated with seizures, structural deformations or pressure effects in adjacent brain regions may alter cortical excitability thresholds. A prior antipsychotic overdose may have acted as a precipitating factor in a neurologically predisposed brain.

To assess the patient's psychiatric status, standardized clinical tools such as the Structured Clinical Interview for DSM-5 Disorders (SCID-5) and the Young Mania Rating Scale (YMRS) were utilized. These assessments helped confirm the bipolar diagnosis and quantify symptom severity. Incorporating such validated tools

improves diagnostic reliability and supports consistency in longitudinal monitoring.

Clinically, this case underscores the importance of a multidisciplinary approach to complex neuropsychiatric presentations. Neurological, endocrinological, and psychiatric assessments, supported by imaging and neurophysiological tools, are critical for comprehensive care. In particular, patients with mood instability, cognitive changes, or seizure-like symptoms should be evaluated for possible structural abnormalities, including ESS.

Further research using multimodal imaging (e.g., fMRI, DTI), hormonal profiling, and genomic testing may help clarify potential shared pathophysiological pathways between ESS and psychiatric illness. Moreover, clinicians should be aware of this rare but potentially impactful comorbidity when encountering atypical presentations of mood disorders or treatment resistance.

## CONCLUSION

The comorbidity of ESS with bipolar disorder and epilepsy may either represent an incidental finding or reflect a potential association linked to congenital defects in specific brain regions. These defects could serve as triggering factors for neuropsychiatric manifestations. In cases of treatment-resistant affective disorders, particularly when accompanied by neuropsychiatric and electrophysiological findings, the possibility of underlying congenital or functional brain abnormalities should be considered.

## Conflict of interest

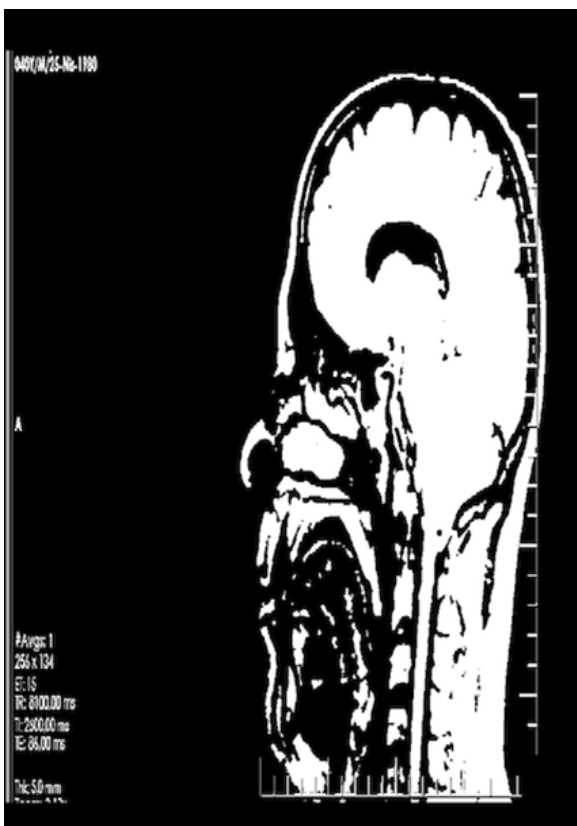
There are no conflicts of interest

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**Figure 1.** Magnetic Resonance Imaging (MRI) showing empty sella syndrome (image quality limited due to technical constraints).

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