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Case Report / Olgu Sunumu

Subclinic Hepatic Encephalopathy Presented with Progressive Cognitive Impairment

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ABSTRACT

Subclinic hepatic encephalopathy presented with progressive cognitive impairment

Hepatic encephalopathy reflects a spectrum of neuropsychiatric abnormalities seen in patients with liver dysfunction.

A 62 year old male was admitted to our neurology policlinic with progressive cognitive impairement lasting for a year. No abnormality was detected in his systemic and neurological examination except time disorientation. His cranial MRI demonstrated high signal intensity in the bilateral globus pallidus on T1-weighted images and high signal intensity along the hemispheric white matter on FLAIR-T2-weighted images. Also diffusion restriction was seen in bilateral centrum semiovale. Laboratory data showed thrombopenia, increased transaminase and gamma glutamyl transferase, decreased albumin levels. The plasma ammonia level was high. Abdominal echosonography and CT revealed atrophic cirrhotic liver and splenomegaly. EEG was associated with low-frequency waves in both hemispheres. His detailed neuropsychiatric evaluation revealed severe cognitive impairment. In combination with laboratory and radiological data, hepatic encephalopathy was suspected.

In conclusion, in a 62 year old male without any pathologic systematic or neurological examination findings, subclinic hepatic encephalopathy can be seen with progressive cognitive impairment. By presenting this case, we aimed to keep in mind the diagnosis of subclinic hepatic encephalopathy especially in elderly people with progressive cognitive impairment.

Key words: Hepatic encephalopathy, cognitive impairment, cranial magnetic resonance

ÖZET

Progresif kognitif bozuklukla prezante olan subklinik hepatik ensefalopati olgusu

Hepatik ensefalopati (HE), karaciğer fonksiyon bozukluğuna bağlı olarak hastalarda nöropsikiyatrik belirtilerin gelişimi ile karakterize bir tablodur.

Altmış iki yaşındaki erkek hasta, son bir yıl içinde gelişen unutkanlık yakınması nedeni ile nöroloji polikliniğine başvurdu. Nörolojik ve sistemik muayenesinde zaman oryantasyonu bozukluğu dışında özellik yoktu. Kraniyal MR'da, bilateral globus pallidusta, T1 ağırlıklı incelemede hiperintens, T2 ve FLAIR ağırlıklı incelemelerde bilateral ak maddede hiperintens lezyonlar ve difüzyon kesitte ADC'de karşılığı olmayan bilateral sentrum semiovalede difüzyon kısıtlılığı gösteren alanlar gözlendi. EEG'de her iki hemisferde biyoelektrik aksama ve yavaş dalga paroksizmal aktiviteleri mevcuttu. Laboratuvar incelemelerinde karaciğer fonksiyon testlerinde bozukluk, serum amonyak düzeyinde yükseklik tespit edildi. Batın ultrasonunda splenomegali, batın tomografisinde karaciğerde siroz bulguları mevcuttu. Detaylı nöropsikiyatrik muayene sonucunda ciddi bilişsel bozukluk saptandı. Hastada kronik karaciğer hastalığı zemininde gelişen HE tablosu düşünüldü.

HE'nin özellikle yaşlı hastalarda progresif kognitif yıkıma neden olabilecek subklinik bir tablo olarak akılda tutulması gerektiği bu olgu sunumu ile vurgulanmaya çalışıldı.

Anahtar kelimeler: Hepatik ensefalopati, kognitif bozukluk, kraniyal magnetik rezonans

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INTRODUCTION

Hepatic encephalopathy (HE) reflects a spectrum of neuropsychiatric abnormalities seen in patients with liver dysfunction. Previously, neurological disorders were considered only for cases of acute hepatic failure. However, in past 70 years, it was shown that neurological changes may occur also in chronic

hepatic failure and cranial lesions may accompany in these cases (1).

In hepatic encephalopathy, magnetic resonance imaging (MRI) reveals T1 hyperintensities involving bilateral putamen, globus pallidus, lentiform nucleus, internal capsule and cerebral peduncles. There are few studies about MRI revealing cortical laminar intensities (2,3).

Our case was considered as a subclinic hepatic encephalopathy, presented with progressive cognitive impairment accompanied by cortical and subcortical cranial lesions with underlying asymptomatic liver disease.

CASE REPORT

A 62 year old male was admitted to our neurology out-patient clinic with progressive forgetfulness and social withdrawal lasting for a year. He could not recognize his relatives and had disorientation to place for the last 3 days. He had used an antipsychotic drug before his complaints began. He did not have a history of any disease or extra drug usage. In his neurological examination, he was disoriented to time. His detailed neuropsychiatric management revealed severe cognitive impairment involving mean-advanced verbal-nonverbal memory, visuospatial dysfunction with impairments related to frontal axe findings. Laboratory data showed thrombocytopenia (80000), hypoalbuminemia (3.1g/dl), elevated liver enzymes (AST (36 IU/L), GGT (151 U/L)), hyperammonemia (326.7 ug/dl) and elevated INR level (1.4). Other laboratory tests were in normal ranges including urea and creatinine levels (24 mg/dL, 0.76 mg/dL). His cranial MRI demonstrated high signal intensity in the bilateral globus pallidus on T1-weighted images and high signal intensity along the hemispheric white matter on FLAIR-T2- weighted images. Also diffusion restriction was seen in bilateral centrum semiovale. In his electroencephalogram (EEG), there was a gradual slowing of the frequency with the appearance of theta (5-7 Hz) and delta (1-2 Hz) waves. He had splenomegaly detected by abdominal ultrasonography and cirrhotic liver findings in abdominal tomography. He was consultated to gastroenterology clinic and biopsy was not necessarilly required. Hepatamine and propronolol therapies and policlinic controls were proposed. According to these findings, our case was considered as hepatic encephalopathy secondary to chronic liver disease.

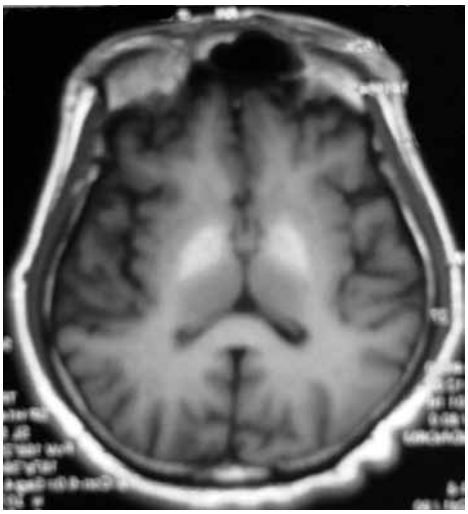

Figure 1: T1 hyperintensities in bilateral globus pallidus on cranial MRI

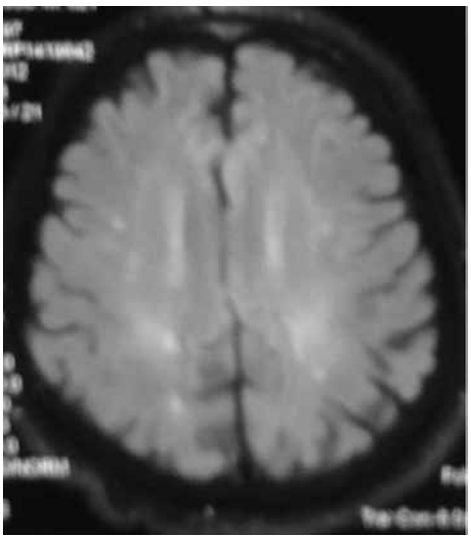

Figure 2: Bilateral white matter hyperintensities in FLAIR-weighted images on MRI

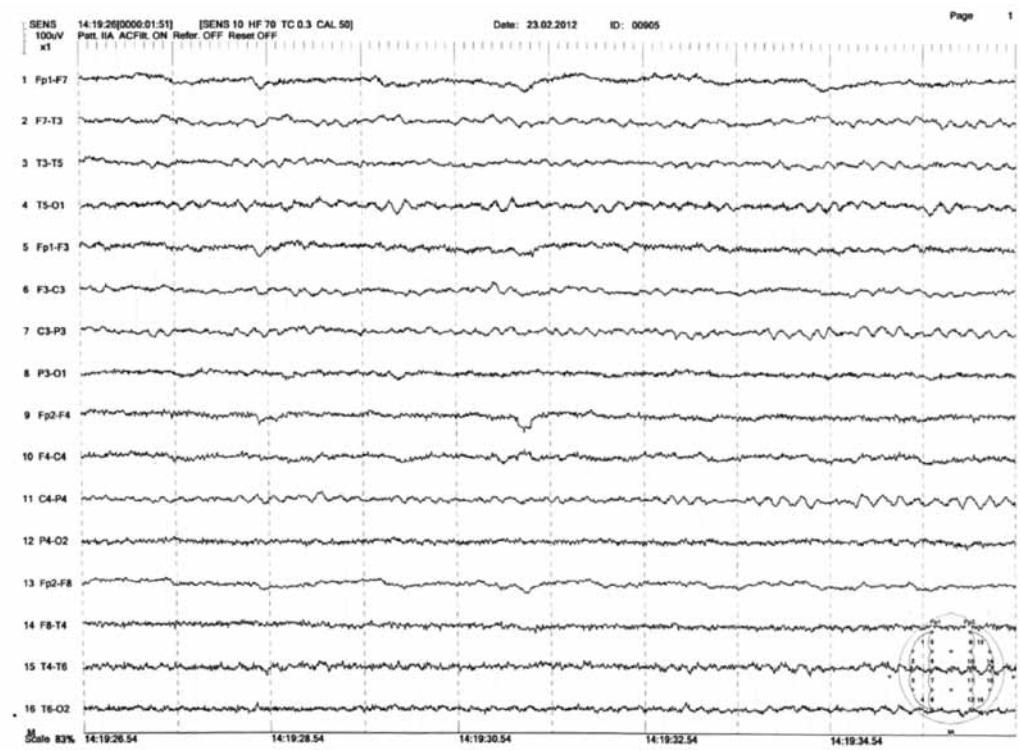

Figure 3: Disorganisation of both hemispheres in the EEG

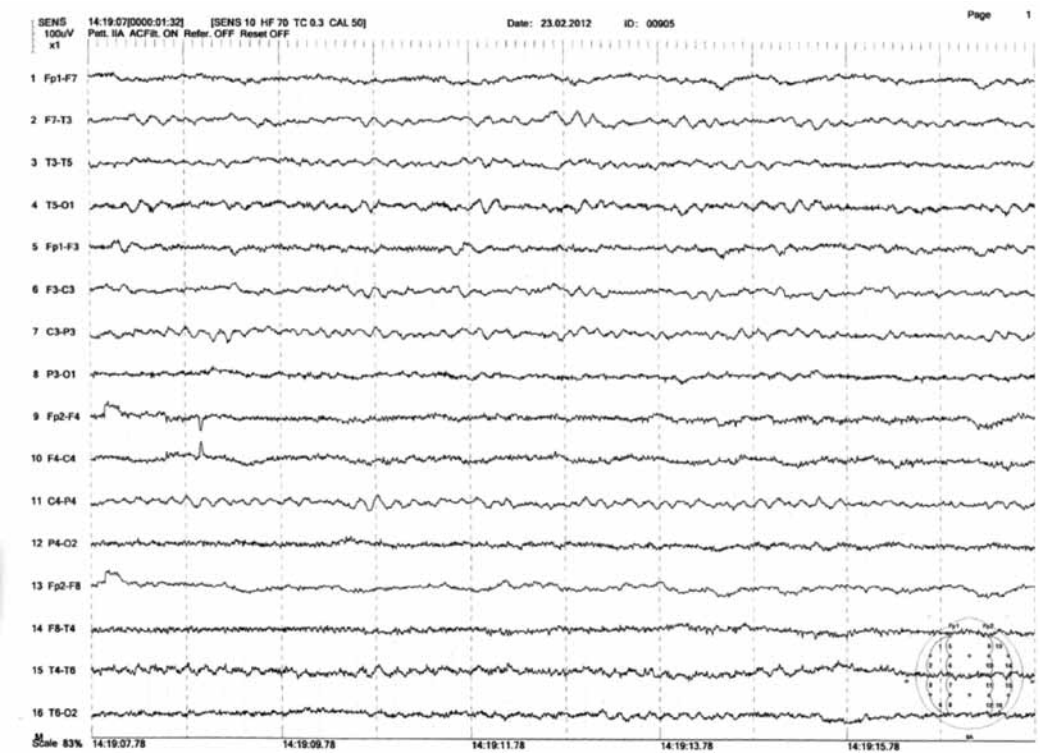

Figure 4: Disorganisation of both hemispheres in the EEG

DISCUSSION

HE, is a neuropsychiatric syndrome with motor and mental changes. The mental changes range to mild cognitive impairment to deep coma (4,5). HE is classified as episodic, chronic, sub clinic/latent according to its duration and clinical findings. Subclinic HE is identified in cirrhotic patients with mild cognitive dysfunction and it is hardly detected by standard clinical examination (6). Our patient also had progressive social withdrawal, autism and mild memory loss for about one year and he had a confusional state for lasting 3 days. His detailed neuropsychiatric examination could manifest his cognitive impairment.

The relationship between the neurological dysfunction and liver diseases is known. But it was suggested that neurological disorders were just due to acute hepatic failure. But now we know that neurological damage also continues in chronic disease due to high ammonia level in portal veins and high ammonia levels lead to Alzheimer like changes in Type 2 astrocytes (7). Also in our patient blood ammonia level was two-fold higher and it was thought to be the reason of cognitive dysfunction.

HE represents acute episodes in case of precipitating factors like gastrointestinal bleeding, uremia, constipation, infections and antipsychotic usage. Except these episodes there could be no sign of cognitive disorder (8). Also, there was an antipsychotic drug usage in the history of our patient before his confusional state.

Patients with HE have little changes on MRI's. In severe cases we see white matter changes. The characteristic signs of chronic HE, are the T1 hyperintensities in bilateral globus pallidus and substantia nigra and white matter hyperintensities in T2 and FLAIR-weighted images (9). T2 hyperintensities in white matter reflect the myelin and axon loss due to edema of HE (10). Our patient had no sign of a liver disease till his cognitive dysfunction began. But his MRI findings showed signs of a chronic hepatic failure, his abdominal CT revealed cirrhotic changes. The laboratory abnormalities lead us to investigate HE. Also the MRI findings were typical for the disease.

On the other hand in a 62 year old patient the white matter changes can be due to microvascular disease. The localization and the size of the lesions can mimic chronic ischemic changes. In cirrhotic patients the lesions disappear as HE is cured, however vascular lesions remain (11). Also our patient had no risk factor for a vascular disease and he had abnormal laboratory findings that supports hepatic dysfunction.

Diffusion restriction in the white matter is also seen in HE. The probable reason of this is the elevated levels of ammonia leading to an interstitial edema by increasing the capillary permeability. And the cognitive dysfunction is the result of these changes (12). Also our patient's MRI showed diffusion restriction in bilateral centrum semiovales. That's why the white matter changes were not thought to be ischemic lesions.

There was a gradual slowing of the frequency with the appearance of theta and delta waves in our patient's EEG. There were no triphasic waves. But the high levels of ammonia, elevated liver enzymes, hypoalbuminenia, and elevated INR level supported hepatic cell damage.

In conclusion, the laboratory and MRI findings lead us to investigate HE in a 62 year old man who had a progressive cognitive dysfunction without any signs of a systemic disease. A severe cognitive dysfunction just managed by a detailed neuropsychiatric test or rich MRI findings are not always due to a symptomatic liver disease. Thus, with this case report, we aimed to keep it in mind that HE may cause progressive cognitive impairment as a subclinic entity especially in elderly people.

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