Case report / *Olgu sunumu*

White matter hyperintensity in patient with treatment resistant obsessive compulsive disorder: a case report

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ABSTRACT

Neurobiological models of obsessive compulsive disorder (OCD) suggest that there are structural and functional abnormalities in frontal-striatal-thalamic-cortical circuits. These cortical and subcortical microcircuits are physically and functionally connected through the white matter. Therefore, the disrupted white matter microstructure may be implicated in the pathophysiology of OCD. Neuroanatomical studies have reported various regional white matter abnormalities in patients with OCD. In this case, we present subcortical white matter lesions or hyperintensities in a patient with treatment resistant OCD. ***(Anatolian Journal of Psychiatry 2015; 16(2):150-153)***

Key words: *Neurobiology of OCD, white matter lesions, treatment resistance*

Tedaviye dirençli obsesif kompulsif bozukluk hastasında beyaz cevher lezyonları: Olgu sunumu

ÖZET

Obsessif kompulsif bozukluğun (OKB) nörobiyolojisinde fronto-striatal devrelerdeki yapısal ve işlevsel bozuklukların rol oynadığı bildirilmiştir. Bu kortikal ve subkortikal devreler arasındaki bağlantılar beyaz cevher aracılığı ile sağlanmaktadır. Bu nedenle beyaz cevher yapısının bozulmasının OKB patofizyolojisinde rol alabileceği öne sürülmüştür. Nöroanatomik görüntüleme çalışmaları OKB hastalarında çeşitli bölgelerde anormallikler olduğunu bildirmiştir. Bu yazıda, manyetik rezonans görüntülemede beyaz cevher lezyonu saptanan tedaviye dirençli bir OKB hastası sunulmuştur. ***(Anadolu Psikiyatri Derg 2015; 16(2):150-153)***

Anahtar sözcükler: *Obsesif kompulsif bozukluğun nörobiyolojisi, beyaz cevher lezyonları, tedaviye direnç*

INTRODUCTION

Obsessive compulsive disorder (OCD) that negatively affect young people's academic, social and familial functioningis one of the most disabling psychiatric disorder that is characterized by a persistent and intrusive thoughts, repetitive, maladaptive compulsive behaviors, and dysphoric feelings.[1,2] Neurobiological models of OCD suggest that there arestructural and functional abnormalities in frontal-striatal-thalamic-cortical circuits.[3] These cortical and subcortical microcircuits are physically and functionally connected through the white matter. Therefore,

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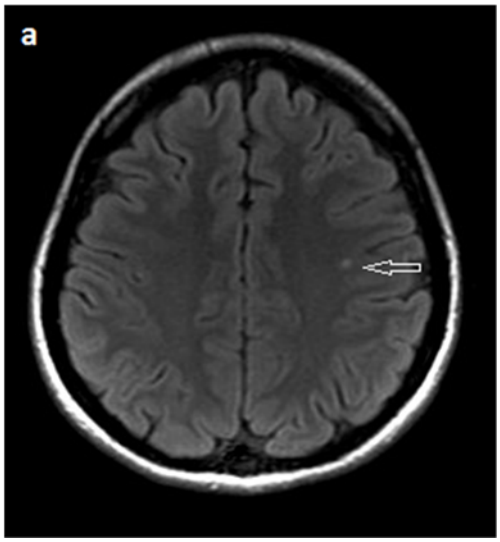
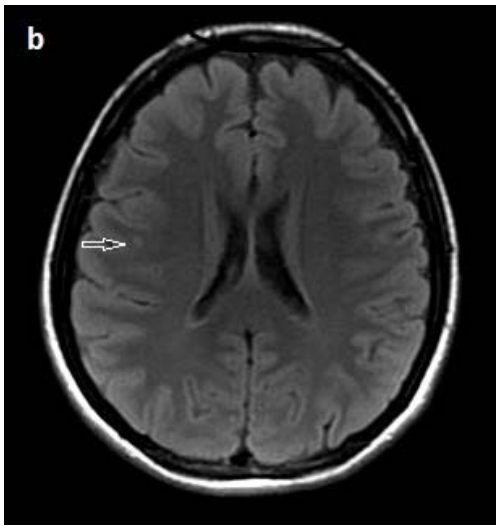
the disrupted white matter microstructure may be implicated in the pathophysiology of OCD. Neuroanatomical studies have reported various regional white matter abnormalities in patients with OCD.[4]

WMHs seen on MRI are pathologic processes that are related break down of white matter structural integrity.[5] WMHs may be seen in congenital, inflammatory (infectious and noninfectious), neoplastic, traumatic, metabolic, toxic, vascular, degenerative and demyelinating diseases.[5,6] Numerous studies have shown a significant association between WMHs and certain neuropsychiatric disorders such as affective disorders, psychotic disorders, cognitive deficits.[6,7] In addition, deep WMHs are associated with treatment resistant and poor outcome in some patients.[6] There are few studies examining relationship between treatment resistant OCD and WMHs. In this case, we present subcortical WMHs in a patient with treatment resistant OCD.

CASE

A 35 year old-woman who was married and has a child, was teacher but did not work, diagnosed with obsessive compulsive disorder that began postpartum before 10 years. Firstly, she washed her hands excessively due to the fear of contamination. Later, different types of obsessions and compulsions were triggered by psychological stress factors related to marital status. She started spending lots of time every day in the bathroom, counting objects, and constantly checking the computer, television, stove, and iron. The patient had taken sertraline 200





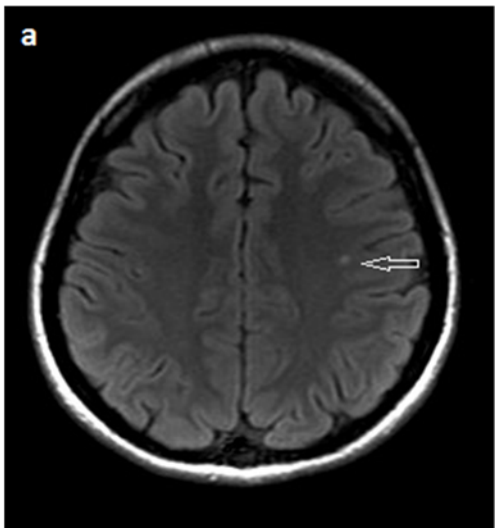


Figure 1. Brain magnetic resonance images (MRI) presentation:
a) T1 weighed and c) T2 weighed subcortical white matter hyperintensity in left posterior frontal region
b) T1 weighed subcortical white matter hyperintensity in right parietal region

mg/day, paroxetine 40 mg/day clomipramine 225 mg/day and atypical antipsychotic augmenttation including risperidone, aripiprazole, paliperidone, also cognitive behavioral techniques have been used. Nevertheless, the patient could not control these obsessions and compulsions. Lastly, she was admitted to our outpatient clinic with her husband for the complaints of increased frequency and severity of obsessive-compulsive symptoms, serious functional impairment, fatigue, anhedonia, and low self-esteem. Thought

content involved contamination (i.e., dirty, germs, viruses, body wastes or secretions, dan gerous chemicals, etc), feeling suspicious and doubtful, needing to know or remember, believing in lucky or unlucky numbers. Compulsive behaviors including repetitive hand washing, cleaning, checking, and counting. The patient need to wash her hands nine times, if someone called her meanwhile, she started all over again. She didn't want to take medicine and want to take electroconvulsive therapy (ECT). Total seven sessions ECT were performed but her symptoms didn't significantly decreased. The Yale-Brown Obsessive Compulsive scale score reduced from 36 to 30 (%15 reduction), the Hamilton Depression Rating Scale score reduced from 24 to 15 (%40 reduction). Because of resistance to treatment Magnetic Resonance Imaging (MRI) examination were performed. MRI revealed white matter hyperintensities in left posterior frontal and right parietal regions (Figure 1).

DISCUSSION

This case was demonstrated white matter abnormalities in patients with treatment resistant OCD. These structural changes indicate key regions in the pathophysiology of OCD and may be related to treatment resistant. This case supports previous case studies of patients who had developed OCD after multiple sclerosis, cerebrovascular diseases, paraneoplastic leukoencephalopathy and controlled studies that have reported white matter changes in patients with OCD.[4,8,9] Furthermore, white matter abnormalities have been associated with greater global severity of OCD symptoms, longer illness duration, earlier age of OCD onset, positive family history for OCD, and refractory to treatment.[9] These findings provide evidence of abnormal white matter microstructure in patients with treatment resistant OCD.

Although the exact etiology and pathogenesis of these white matter abnormalities in OCD is unknown, recent research studies have focused on dismyelination.[9-11] In the present case, white matter hyperintensity in these regions might reflect loss of myelin integrity and/or fiber tracts abnormalities that are due to alterations in axonal density.[8] Few studies have examined myelination in patients with OCD despite models of abnormal brain circuit activity that results from impaired neuronal connectivity have been developed.[8,10] Some authors have found evidence of developmental abnormalities in myelination among patients with OCD.[8,9] They interpreted their results as altering signal transduction and function of ventral prefrontal striatal associations circuits.[8] Studies have also shown that OCD patients had significantly less white matter across the brain than healthy controls.[8,10] These findings may support the existence of abnormalities in myelination in patients with OCD.

Neuroimaging studies have reported different white matter regions abnormalities including basal ganglia, thalamus, striatum, the anterior and posterior cingulate, orbital frontal region, lateral prefrontal cortex, and parietal cortex in patients with OCD.[8,9,12,13] Left posterior frontal and right parietal regions subcortical white matter hyperintensities were observed in our case. It is possible that abnormalities in various white matter pathways contribute to the etiology of OCD. The contribution of environmental and genetic factors can lead to white matter changes that are associated with the development of OCD symptoms.[12] In the history of our patient, the OCD began in the postpartum period increasing risk factors for psychiatric disorders[14] and psychosocial factors exaggerated her symptoms.

It has been argued that psychotropic medications can change white matter microstructure in patients with OCD.[15] Some studies have reported that drug-treated patients showed reduced white matter volume than drug naive patients and healthy controls.[15,16] In addition, there was no significant difference between these two latter groups.[15] These results suggest the effect of psychotropic drugs on white matter changes. On the contrary, other studies found abnormalities in the white matter in drug naive OCD patients compared to healthy control subjects and in pediatric OCD patients.[3,4] The authors reported that white matter alterations which may be partly reversible with pharmacotherapy are associated with the pathophysiology of OCD.[4]

Taken together, our case may represent an evidence of impaired connectivity due to white matter abnormalities in patients with treatment resistant OCD, and thus may serve to further our understanding of white matter deficits in OCD. It may be suggested that disruption in brain networks is associated with pathogenesis of the disorder.

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