

CASE REPORT

OLGU SUNUMU

**LEPTOMENINGEAL ENHANCEMENT AS A SOLE MAGNETIC RESONANCE IMAGING FINDING OF
SECONDARY CENTRAL NERVOUS SYSTEM VASCULITIS: A CASE REPORT**

Arsida BAJRAMI*, Filiz AZMAN*, Batuhan KARA, Hatem Hakan SELÇUK**,
Murat ÇABALAR*, Vildan Ayse YAYLA***

* Bakırköy Dr. Sadi Konuk Training and Research Hospital, Department of Neurology, İSTANBUL, TURKEY

** Bakırköy Dr. Sadi Konuk Training and Research Hospital, Department of Radiology, İSTANBUL, TURKEY

ABSTRACT

The main radiological findings of central nervous system (CNS) consist of multiple subcortical infarcts, parenchymal and leptomeningeal enhancement, petechial hemorrhages on MRI and multifocal caliber changes of the vessels on MRA and DSA. Solely or prominent leptomeningeal enhancement is rarely seen as an isolated manifestation of CNS. We report a case of intracerebral vasculitis secondary to inflammatory bowel disease (IBD) showing leptomeningeal enhancement as a unique finding in routine contrast-enhanced cranial MRI and aimed to emphasize the importance of these finding in diagnosing CNS.

Key Words: Central nervous system, leptomeningeal enhancement, inflammatory bowel disease.

**SEKONDER SANTRAL SİNİR SİSTEM VASKÜLİTİN İZOLE MAGNETİK REZONANS BULGUSU OLARAK
LEPTOMENİNGEAL TUTULUM: OLGU SUNUMU**

ÖZET

Merkezi sinir sistemi (MSS) vaskülitin ana radyolojik bulguları arasında MRG de görülen multipl subkortikal infarktlar, peteşiyal kanamalar, parankimal ve leptomeningeal kontrastlama ve MRA ve dijital subtraksiyon anjiyografisi (DSA) da saptanan multifokal damar kaliber değişiklikleri yer almaktadır. İzole veya belirgin leptomeningeal kontrastlama nadiren MSS vaskülitin tek radyolojik bulgusu görülmektedir. Burada, DSA ile inflamatuvar bağırsak hastalığına (IBD) sekonder gelişen intraserebral vaskülit tanısı konulan olgusu, rutin kontrastlı kranial MRG sinde izole leptomeningeal kontrastlamanın dışında başka radyolojik bulgu eşlik etmemesi nedeniyle sunuldu. Ayrıca nadiren görülen izole leptomeningeal kontrastlamanın, MSS vaskülit tanısında önemini vurgulamaya amaçlanmıştır.

Anahtar Sözcükler: Sinir sistemi vaskülit, leptomeningeal kontrastlama, enflamatuvar barsak hastalıkları.

INTRODUCTION

Central nervous system (CNS) vasculitis is defined as inflammation of parenchymal and/or leptomeningeal vessels of the brain. The range of diseases caused by immunological or inflammatory disturbances is enormous and categorized as 'primary' or idiopathic neuroimmune disorders if there is no systemic involvement and 'secondary', where usually CNS involvement coexists with other clearly apparent systemic manifestations [1, 2]. Clinically presents with manifestations such as headache, focal or generalized seizures, stroke-like

episodes, acute or subacute encephalopathies, progressive cognitive changes and cranial neuropathies [3, 4]. Contrast-enhanced magnetic resonance imaging (MRI), magnetic resonance angiography (MRA) and digital subtraction angiography (DSA) are the modality of choice used to detect and monitor cerebral involvement. The main findings consist of multiple subcortical infarcts, parenchymal and leptomeningeal enhancement, petechial hemorrhages on MRI and multifocal caliber changes of the vessels on MRA

Corresponding author: Arside Bajrami, MD, Bakırköy Dr. Sadi Konuk Training and Research Hospital, Department of Neurology, İstanbul, Turkey.

Phone: +90 212 414 71 33

E-mail: arsidebajrami@gmail.com

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and DSA [5, 6]. Leptomeningeal enhancement is a rare finding of cerebral vasculitis. We report a case of intracerebral vasculitis secondary to inflammatory bowel disease (IBD) showing leptomeningeal enhancement as a unique finding in routine contrast-enhanced cranial MRI.

CASE

A 31-year-old female with known history of IBD had been suffering from headache for one week, before she was referred to our institution. Her neurological examination was unremarkable and routine laboratory tests together with cerebrospinal fluid (CSF) examination were normal. The contrast-enhanced cranial MRI and MR-venography showed that the dural sinuses were patent and there were no pathological changes in signal intensity of brain parenchyma. However, leptomeningeal enhancement was seen along the inferior aspects of both cerebellar hemispheres. Additionally, cranial MR-angiography was performed to rule-out an arterial pathology such as intracranial saccular aneurysm or a vascular malformation. Time-of-flight (TOF) angiography showed narrowing of basilar trunk. Digital subtraction angiography (DSA) demonstrated additional changes in caliber and counter irregularities affecting distal cortical arteries (Figure I, II and III).

DISCUSSION

Leptomeningeal enhancement is a rare manifestation of intracranial vasculitis. It can be seen in primary, as well as in secondary central nervous system vasculitis and often represents transmural vascular inflammation affecting small and medium-sized leptomeningeal arterial vessels. Among diseases that manifest as leptomeningeal involvement meningeal carcinomatosis, primary tumors, infectious and inflammatory diseases are the most commonly seen. When the leptomeninges are involved as a result of a systemic inflammatory process, as seen in secondary CNS vasculitis, contrast enhancement on MR images usually follows the contour of the brain, extending into the sulci. In cerebral vasculitis, leptomeningeal enhancement can be detected together with other findings such as multiple infarcts of different ages in various vascular territories, parenchymal lesions, and petechial hemorrhages, nonspecific areas of increased signal intensity on FLAIR or T2-



Figure I. Time-of-flight (TOF) angiography showing narrowing of basilar trunk.



Figure II. MRI Angiography showing narrowing of basilar trunk and vertebral artery.

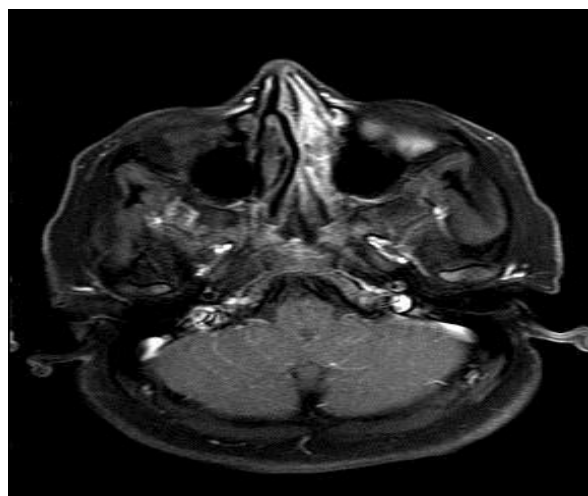


Figure III. T1- weighted contrast-enhanced images showing leptomeningeal enhancement of the inferior aspects of both cerebellar hemispheres.

weighted image. Direct signs of vessel wall changes like thickened wall, intramural contrast may also be detected by DSA, MRA and MRI [5, 6]. Occasionally, enhancement may be marked and extend into the adjacent leptomeningeal tissue referred as perivascular enhancement. However, leptomeningeal enhancement it is infrequent as an isolated finding [5]. Among systemic vasculitis involving the CNS, association of IBD with neurologic and neuromuscular involvement is rare and often controversial [7]. In a study made by Dolapcioglu et al including radiological findings in patients previously diagnosed with IBD and normal neurological examination showed mostly white matter lesions on cranial MRI. According to the same study the incidence of white matter lesions seemed to be similar in IBD patients and normal healthy individuals, and the lesions detected did not pose any clinical significance [8]. Our case previously diagnosed with IBD differs from other secondary CNS vasculitis, as the CNS involvement was showed by solely leptomeningeal enhancement. Negishi et al reported a case of biopsy-proved granulomatous angiitis that showed prominent leptomeningeal enhancement with comparatively little parenchymal involvement in MRI [9]. Further on Salvarani et al in his study pointed out the benign course of the disease in patients who presented with prominent leptomeningeal enhancement and no associated parenchymal abnormalities [10].

In conclusion, the presented case showed that leptomeningeal enhancement can be the sole MRI finding in cerebral vasculitis. It should be kept in mind that with proper history and clinical findings, cerebral vasculitis might take place in differential diagnosis of leptomeningeal enhancement.

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