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CASE REPORT **OLGU SUNUMU**

IDIOPATHIC HYPEREOSINOPHILIC SYNDROME PRESENTING WITH MULTIPLE EMBOLIC STROKE: CASE REPORT AND REVIEW OF THE LITERATURE

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ABSTRACT

A representative example of stroke syndrome due to idiopathic hypereosinophilic syndrome (IHES) is herein presented along with the other 21 cases published. A 27-year-old man presented with embolic encephalopathy. Cardiac MRI documented endomyocardial fibrosis complicated with biventricular thrombus. Although IHES gene positivity (FIP1L1 gene translocation) was not shown, bone marrow biopsy was typical for IHES. The disease was controlled well with steroid and hydroxyurea.
Key Words: Stroke, embolism, eosinophilia, cardiac MRI.

İDİOPATİK HİPEREOZİNOFİLİK SENDROM VE MULTİPLE EMBOLİK İNME: OLGU SUNUMU VE LİTERATÜR ANALİZİ

ÖZET

İdiopatik hipereozinofilik sendroma bağlı inmenin tipik bir örneği burada sunulmakta, ve literatürdeki diğer 21 vaka ile beraber değerlendirilerek, bu klinik tablo tanıtılmaktadır. Sunulan vaka 27 yaşında embolik ensefalopati kliniği ile başvurmuş, biventriküler thrombus ile komplike olmuş endomyokardial fibrosis MR ile dökümente edilmiş, gen pozitifliği (FIP1L1 translokasyonu) gösterilememekle birlikte tipik kemik iliği biyopsisi bulgularından sonra steroid ve hidroksiüre ile hastalık kontrol altına alınmıştır.
Anahtar Sözcükler: Strok, embolizm, eozinofili, kardiyak MR.

INTRODUCTION

Idiopathic hypereosinophilic syndrome (IHES) is a quite rare (1) but still important cause of stroke (2). Recognition the subject can prevent unduly diagnosis of central nervous system vasculitis or nonspecific (but active) cardioembolism. A typical example of IHES is herein presented to familiarize this entity in our stroke readership.

CASE REPORT

A-27-year-old man was hospitalized for acute onset dizziness and sleepiness. At admission, place- and time-disorientation, confusion and bilateral hyper-reflexia along with splinter hemorrhages and hepatomegaly were noted. Brain magnetic resonance (MR) imaging showed innumerable simultaneous small infarctions in all cortical and subcortical watershed regions of anterior and posterior cerebral circulations (Figure A-C). Brain MR angiography (Figure D) and carotid/vertebral artery ultrasound were normal.

A significant eosinophilia (7300/μL; 46%) grabbed our attention quickly after admission and consideration of (idiopathic) hypereosinophilic syndrome (IHES) streamlined the management. Endomyocardial fibrosis (EMF) with biventricular intracardiac thrombi was documented by cardiac MR imaging. (Figure E). Chronic interstitial disease was found in lung computed tomography (CT) (Figure F), and multiple splenic infarcts and

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hepatomegaly in abdominal CT. Extensive blood tests including search for parasitic infections was unrevealing. Eosinophilic hypercellularity in bone marrow aspiration and biopsy confirmed the diagnosis. Of note, the patient was negative for FIP1L1 gene translocation to platelet-derived growth factor receptor-α (PDGFRα) gene. Eosinophil counts dropped dramatically (to 100/µl in several days) in response to methylprednisolone and hydroxyurea. He was discharged uneventfully with warfarin in addition to these agents.

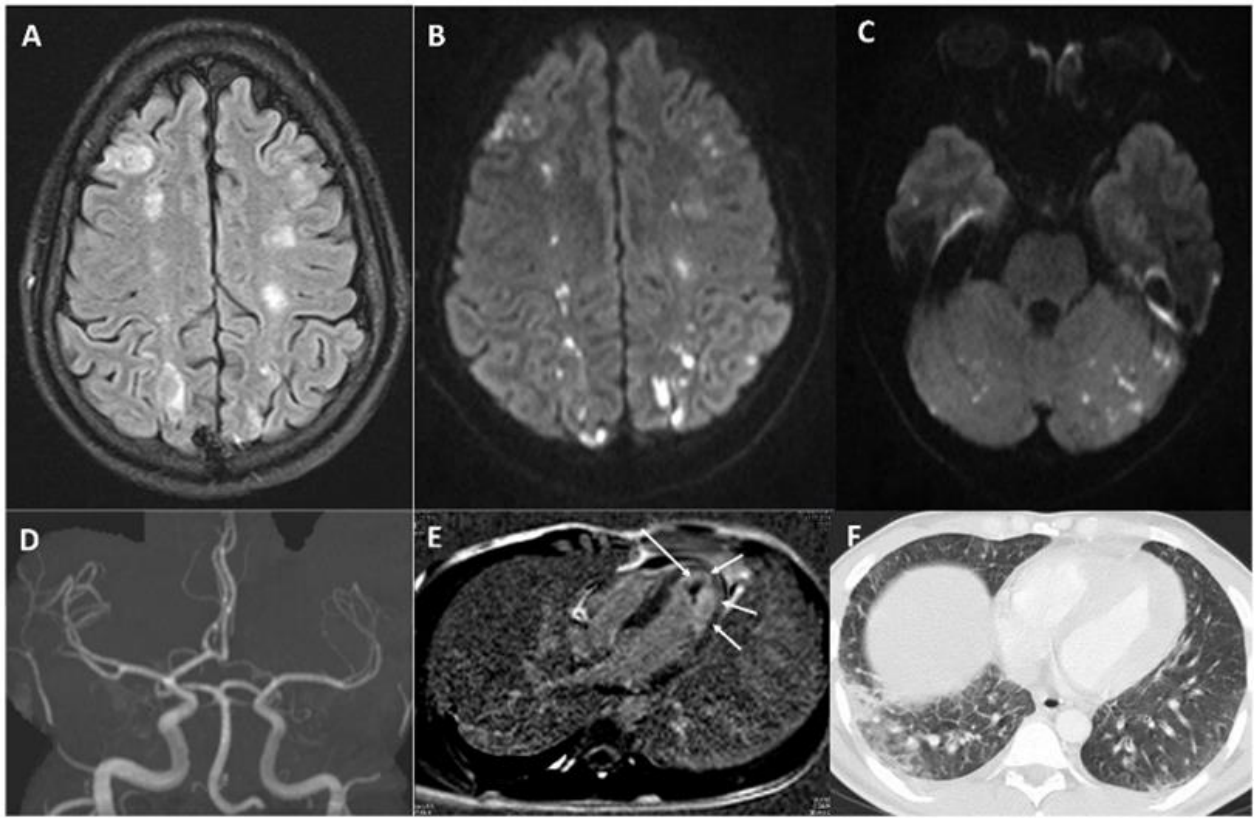

Figure. Axial FLAIR **(A)** and diffusion-weighted **(B,C)** images show multiple, small infarcts in all vascular border-zone territories. MR angiography **(D)** displays no abnormality. Cardiac MR imaging **(E)** shows single left ventricular apical thrombus (long arrow) and endomyocardial fibrosis (short arrows). Thoracic CT **(F)** shows changes compatible with interstitial lung disease.

DISCUSSION

IHES results in a rare but quite specific neurovascular syndrome (1). We found 21 adult IHES cases published in the last 10 years (Table).

Albeit focal neurological signs are not infrequent, clinical presentation is a typical example of "embolic encephalopathy", characterized with behavioral changes, confusion, ataxia, and memory loss. Upper motor neuron signs such as spasticity, hyper-reflexia, and Babinski's sign are usually found. Diffusion MR imaging shows characteristic "starry sky appearance" with multiple simultaneous small dot-like diffusion restrictions in anterior and posterior circulation watershed territories.

Mechanism of brain infarcts is cardioembolism and impaired washout of emboli due to microvascular dysfunction associated with endothelial toxicity and/or direct capillary blockade from high amount of eosinophils.

In IHES, eosinophilic myocarditis or Loffler's fibroblastic endocarditis eventually result in EMF and restrictive cardiomyopathy, which is the major cause of morbidity and mortality (2).

Albeit initial diagnostic clue is usually readily available from high eosinophil counts, effective treatment can still be delayed from unfamiliarity to the syndrome or non- focused investigation plan to

exclude secondary causes and different HES variants such as T-lymphocytic, myeloproliferative and vasculitic [Churg–Strauss-like] HES. It is important to note that although usually included in treatment regimen, stroke recurrence is not uncommon despite adequate anticoagulant and antiplatelet use. Specific treatment (imatinib in translocation-positive cases and steroid plus hydroxyurea or interferon-alpha in negative ones) is suggested to improve prognosis.

Table. FEATURES of STROKE in hypereosinophilia Syndrome [HES] (in ADULTs, in ENGLISH).

Year	Literature	Age, Sex	Clinical presentation	Typical shower pattern,[multiple small infarcts in all watershed territories]	Cardioembolism from IHES related heart disease [eosinophilic myocarditis, Loffler's endocarditis, Endomyocardial fibrosis]	Anticoagulant [AC], anti-platelet [AP] in addition to specific treatment
2004	Engelman et al (3)	40, M	Hemiparesis, dysarthria	Present	Yes	AC
2004	Sarazin et al (2)	51, M	Encephalopathy, hemiparesis	Present	Yes	Not-stated
2008	Chang et al (4)	43, M	Hemiparesis	Present	Not demonstrated [no MRI]	AC
2009	Lin et al (5)	67, F	Encephalopathy, hemiparesis	Present	Yes	AC
2009	Grigoryan et al (6)	48, M	Encephalopathy, quadriparesis	Present	Yes	Not stated
2009	Lee et al (7)	52, M	Encephalopathy, hemiplegia	Present	Yes	AP
2009	Takeuchi et al (8)	23, F	Hemiplegia, aphasia	Absent [Left insular infarct from M1 occlusion]	Not demonstrated [No TEE and MRI]	AC, AP, thrombectomy
2009	Perini et al (9)	63, F	Ataxia, neglect	Present	Not demonstrated [no MRI]	AC
2010	Sethi et al (10)	52, M	Dysarthria, hemiparesis	Present	Not demonstrated [No TTE;TEE and MRI]	AP
		47, M	Bilateral leg weakness	Present	Not demonstrated [No TEE and MRI]	AC
		46, F	Encephalopathy, tetraparesis	Present	Not demonstrated [No TEE and MRI]	Not stated
2010	Ahn et al (11)	56, M	Tetraparesis	Present	Not demonstrated [no MRI]	AP
2011	Van Gaalen et al(12)	18,F	Hemihypoesthesia, hearing loss	Absent [right dorsolateral pontine infarct]	Not present	AP
2013	Aida et al (13)	41, M	Dysarthria, hemiparesis	Present	Yes	AP
		65, M	Encephalopathy	Present	Yes	AC
		64, F	Encephalopathy, tetraparesis	Present	Yes	AC
2013	Wise et al (14)	66, M	Hemiparesis, cortical blindness	Present	Not demonstrated [no TEE and MRI]	AC
2013	Khwaja et al (15)	68, M	Bilateral leg paresis, speech difficulty	Present	Yes	AC
2014	Wu et al (16)	62, M	Hemiparesis	Present	Not demonstrated [no TEE and MRI]	AP
2014	Wang et al (17)	56, M	Hand numbness, headache	Present	Yes	AC
2015	Ishii et al (18)	82, F	Hemiparesis	Present	Yes	AC

REFERENCES

1. Weller PF, Bubley GJ. The idiopathic hypereosinophilic syndrome. Blood 1994; 83(10): 2759-2779.
2. Sarazin M, Caumes E, Cohen A, Amarenco P. Multiple microembolic borderzone brain infarctions and endomyocardial fibrosis in idiopathic hypereosinophilic syndrome and in Schistosoma mansoni infestation. J Neurol Neurosurg Psychiatry 2004; 75(2): 305-307.
3. Engelmann MG, Kolbe T, Faul C, Steinbeck G. Hypereosinophilic syndrome associated with heterozygous factor V gene mutation: an unusual combination resulting in an acute coronary syndrome and recurrent cerebral stroke-a case report. Angiology 2004; 55(2): 221-225.
4. Chang WL, Lin HJ, Cheng HH. Hypereosinophilic syndrome with recurrent strokes: a case report. Acta Neurol Taiwan 2008; 17(3): 184-188.
5. Lin CH, Chang WN, Chua S, et al. Idiopathic hypereosinophilia syndrome with loeffler endocarditis, embolic cerebral infarction, and left hydranencephaly: a case report. Acta Neurol Taiwan 2009; 18(3): 207-212.
6. Grigoryan M, Geisler SD, St Louis EK, Baumbach GL, Davis PH. Cerebral arteriolar thromboembolism in idiopathic hypereosinophilic syndrome. Arch Neurol 2009; 66(4): 528-531.
7. Lee EJ, Lee YJ, Lee SR, Park DW, Kim HY. Hypereosinophilia with multiple thromboembolic cerebral infarcts and focal intracerebral hemorrhage. Korean J Radiol 2009; 10(5): 511-514.
8. Takeuchi S, Takasato Y, Masaoka H, et al. Middle cerebral artery occlusion resulting from hypereosinophilic syndrome. J Clin Neurosci 2010; 17(3): 377-378.
9. Perini GF, Kassab C, Bley C, Monzillo PH, Thomaz RB, Hamerschlak N. Acute cerebral infarction in watershed distribution in a patient with hypereosinophilic syndrome. Arq Neuropsiquiatr 2009; 67(2B): 510-512.
10. Sethi HS, Schmidley JW. Cerebral infarcts in the setting of eosinophilia: three cases and a discussion. Arch Neurol 2010; 67(10): 1275-1277.
11. Ahn SW, Han MK. Multiple bilateral cerebral infarcts in a patient with idiopathic hypereosinophilic syndrome. Neurol India 2010; 58(5): 793-794.
12. van Gaalen J, van Dijk EJ, van Deuren M, de Leeuw FE. Dissection of the posterior inferior cerebellar artery in the hypereosinophilic syndrome. J Neurol 2011; 258(12): 2278-2280.
13. Aida L, Parkhutik V, Tembl JI, Martin N, Frasquet M, Bataller L. Embolism and impaired washout: a possible

explanation of border zone strokes in hypereosinophilic syndrome. J Neurol Sci 2013; 325(1-2): 162-164.
14. Wise FM, Olver JH. A 66-year-old man with multiple cerebral and cerebellar infarcts due to idiopathic hypereosinophilic syndrome. J Clin Neurosci 2013; 20(10): 1442-1443.
15. Khwaja GA, Duggal A, Kulkarni A, et al. Hypereosinophilia-an unusual cause of multiple embolic strokes and multi-organ dysfunction. J Clin Diagn Res 2013; 7(10): 2316-2318.
16. Wu X, Guo Y, Tan X. Acute cerebral infarction in watershed distribution in a patient with hypereosinophilic syndrome without cardiac lesion. Neurol Sci 2014; 35(10): 1607-1610.
17. Wang S, Wang A, Guo B, Zhu S, Chi Z, Zhao X. Loffler endocarditis with multiple cerebral embolism. J Stroke Cerebrovasc Dis 2014; 23(6): 1709-1712.
18. Ishii J, Yamamoto S, Yoshimura H, Todo K, Kawamoto M, Kohara N. Multiple cerebral infarctions in a patient with hypereosinophilic syndrome with Loffler endocarditis: a case report. Rinsho shinkeigaku = Clinical neurology 2015; 55(3): 165-170.