KOR J CEREBROVASCULAR DISEASE
September 2001 Vol 3, No 2, page 184-7

Takayasus Arteritis with Pregnancy Induced Eclampsia

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ABSTRACT

We experienced a case of Takayasus arteritis with eclampsia in a 43-year-old woman. The patient had angiographically definite Takayasus arteritis with the involvement of right common and internal carotid arteries. On MR images performed at clinical manifestations of eclampsia, unilateral involvement of T2 high signal intensities were demonstrated in right cerebral hemisphere. We report this case with a literature review. (**Kor J Cerebrovascular Disease 3:184-7, 2001**)

KEY WORDS : Takayasu's arteritis · Eclampsia · Magnetic resonance imaging.

Introduction

Takayasus arteritis is a primary, nonspecific, idiopathic arteritis, which often presents as aortic arch syndrome and is more prevalent in young Asian females with 15 to 45 years of age.[3)5)] Medium and large arteries including aortic arch, subclavian artery, and carotid artery are often affected.[3)9)] Partial or total occlusions of the large arteries to the brain are frequently noted in these patients.[5)] Eclampsia, a hypertensive disorder of pregnancy occuring after the 20th week of gestation, is characterized by hypertension, peripheral edema, proteinuria, and seizures. Brain MRI typically demonstrates bilateral hyperintense lesions on T2-weighted images involving the territory of posterior circulation.[4)6)] We report a patient with pre-existing Takayasus arteritis and pregnancy induced eclampsia. The patient showed high signal intensities on T2 weighted images and hypertensive hemorrhage in the right cerebral hemisphere without involvement of left cerebral hemisphere.

논문접수일 : 2001년 3월 9일
심사완료일 : 2001년 7월 11일
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Case Report

A 43-year-old woman with 29 weeks of gestation was transferred to our hospital for drowsy mentality. On admission, she presented left eyeball deviation and convulsive movements preceded by abdominal discomfort

Fig. 1. A CT scan at the level of basal ganglia on admission shows an oval high density at right basal ganglia with surrounding edema, indicating hemorrhage (arrow).

and nausea. On neurological examination, she had left hemiplegia with intact sensation. The blood pressure was elevated to 170/100. Laboratory findings demonstrated elevated transaminases (SGOT, 262 U/L ; SGPT, 178 U/L), slightly increased blood creatinine (1.62 mg/dl), and proteinuria (3.1 g/12 hours 2130 ml). CT scans performed on admission showed hemorrhagic high density at right basal ganglia (Fig. 1) and diffuse low density in the subcortical and deep white matter of right cerebral hemisphere without definite involvement of contralateral hemisphere. MR imagings of the brain obtained just after CT scanning demonstrated confluent high signal intensities in the cortex and subcortical white matter of the right posterior parietal lobe, occipital lobe, posterior tem-

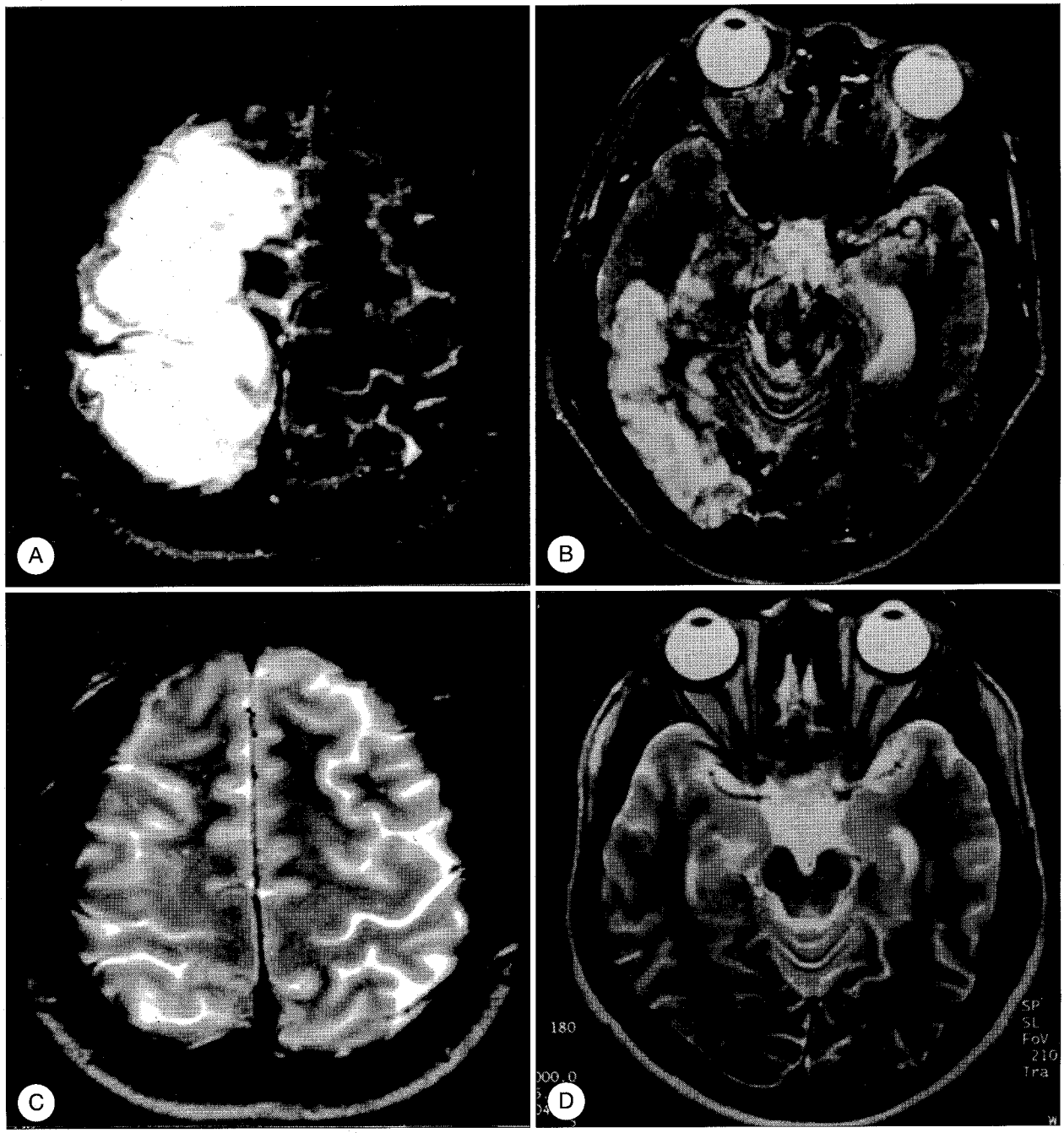

Fig. 2. Axial T2-weighted MRI scans at the level of frontal vertex and basal ganglia on admission. A : At the level of frontal vertex, confluent high signal intensities involving cortical and subcortical regions of right frontal and parietal lobes are noted, however, there is no detectable signal intensity in left frontoparietal lobe. B : Confluent, high signal intensities are also noted in right temporal lobe and occipital lobe. C, D : Follow-up images after 20 days show resolving cortical and subcortical high signal intensities.

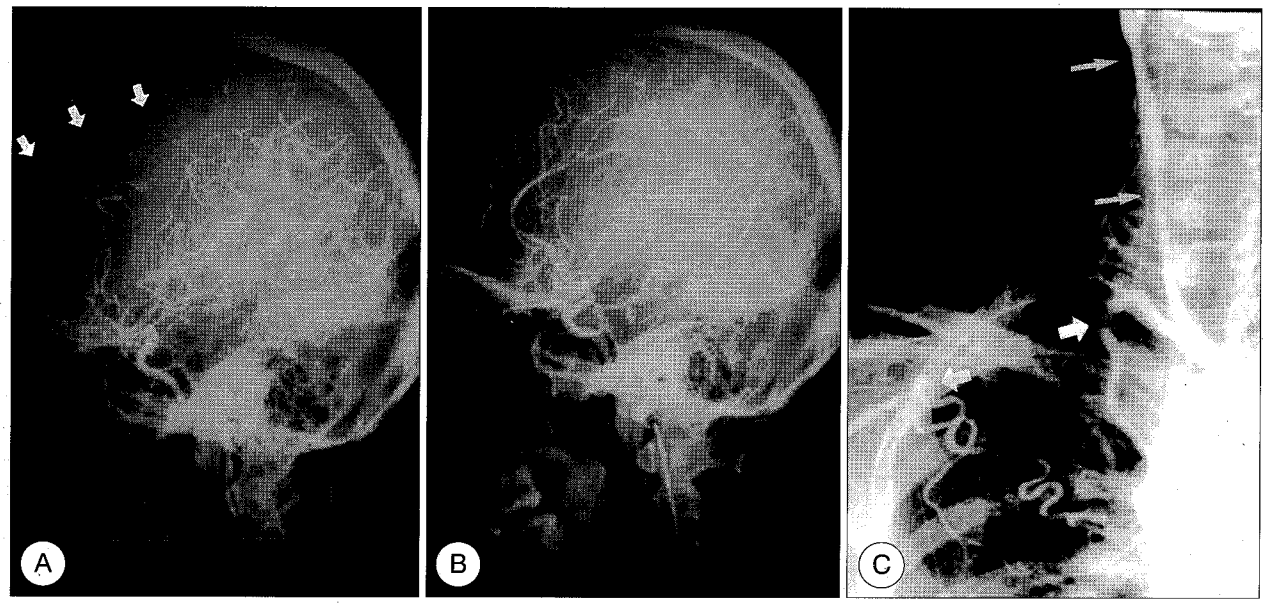

Fig. 3. Right brachiocephalic angiography and both internal carotid angiographies. A : On right internal carotid angiography, cortical arterial filling defects are demonstrated in frontoparietal lobes (arrows). B : However, on left internal carotid angiography there is no definite evidence of arterial filling defect in whole cerebral hemisphere. C : Right brachiocephalic angiography shows complete occlusion of the right subclavian artery with prominent right internal mammary artery, which serves as collateral vessels to the right axillary artery (short arrows). Segmental luminal narrowings along the right common carotid artery are noted, too (long arrows).

poral lobe, and right basal ganglia on T2 weighted images (Fig. 2A and B). On pre-contrast enhanced T1 weighted images, a large, high signal intensity was noted in the right basal ganglia with a dark outer rim, which represented hemorrhage. A diagnosis of eclampsia was made and emergency cessarian section was performed.

On follow-up MRI of the brain imaged 20 days after the first MRI, the previously-noted, confluent high signal intensities on T2 weighted images were no longer demonstrated (Fig. 2C and D). Hemorrhagic high signal intensity in the right basal ganglia remained persistently on pre-contrast enhanced T1-weighted image. On cerebral angiography performed to evaluate vascular status, distal arterial filling defects were noted on the cortical arteries supplying the right frontoparietal lobes (Fig. 3A). However, left common carotid and internal carotid antrviograms showed no definite abnormality (Fig. 3B). On right brachiocephalic antrviograms, occlusion of right subclavian artery with collateral vessels and multiple segmental luminal narrowings along right common and internal carotid artery were demonstrated (Fig. 3C). We performed thoracic aortography to confirm the diagnosis of Takayasus arteritis. Finally, thoracic aortography revealed serrated luminal narrowings, which could confirm the diagnosis of Takayasus arteritis.

Discussion

In eclampsia, hyperintense signal intensities on T2-weighted images are seen in the posterior parietal and/or occipital lobes bilaterally and symmetrically.[4)6)7)] However, our patient who has definite clinical findings of eclampsia shows unilateral high signal intensities on T2-weighted images in right cerebral hemisphere without involvement of left cerebral hemisphere. According to the previously reported studies, unilateral involvement of cerebral hemisphere was unusual as a manifestation of eclampsia.

In Takayasus arteritis, cerebrovascular disease is not a frequent complication. Stroke occurs in up to 15% of patients from ischemia or hypertensive hemorrhage in Takayasus arteritis, despite multiple occlusions of major cervical arteries.[3)] Developed infarctions are heterogenous in distribution without concordance to the severity of the occluded vessels. Development of extracranial and intracranial collateral circulation and gradually progressing stenosis or occlusion can explain this discordance.[9)] In the study of Wong et al.,[11)] no major obstetric problem apart from hypertension was reported during the preg-

nancies of 13 pregnant women with Takayasus arteritis, and they concluded that Takayasus disease was compatible with good maternal and fetal outcome. And it is also difficult to regard the MRI findings of our patient as a sole manifestation of Takayasus arteritis from these studies.

Our patient has Takayasus arteritis and superimposing pregnancy induced eclampsia. When eclampsia is superimposed on the pregnant woman who has intracranial involvement of Takayasus arteritis, synergistic or additive effects may develop. While pathophysiology of eclampsia remains unclear, the clinical, pathological, and neuroimaging findings have led to two major hypotheses. One proposed mechanism is hypertension induced vasoconstriction, causing ischemia with the development of cytotoxic edema. However, against the vasospasm/ischemia hypothesis is the reversibility of the radiologic lesions with treatment like our case.[1)10)] An alternative view suggests that eclampsia is a form of hypertensive encephalopathy ; hypertension induces a loss of autoregulation, which leads to passive arteriolar dilatation, extravasation of macromolecules, and vasogenic edema.[2)8)]

Simce stenotic right common and internal carotid arteries may adversely influence the autoregulatory function of the right cerebral hemisphere and aggravate the ischemic state, it can lead to ischemic or hypertensive insult to right cerebral hemisphere. Consequently, confluent high signal intensities on T2 weighted images were developed in right occipitotemporal and parietal lobe without involvement of left hemisphere.

We report a unique case of Takayasus arteritis with eclampsia showing basal ganglia hemorrhage and diffuse signal intensity changes on T2 weighted images only in the right cerebral hemisphere.

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=국 문 초 록=

임신자간증을 동반한 Takayasus 동맥염

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저자들은 혈관 조영검사에서 우측 총경동맥과 내경동맥을 침범한 타카야수 동맥염이 확인되었고 자간증의 증세가 있을 때 시행한 자기공명영상에서는 우측 대뇌반구에 T2-강조영상에서 고신호강도의 소견이 있었던 43세 여자환자를 경험하였기에 문헌고찰과 함께 보고한다.

중심 단어 : Takayasu 동맥염 · 전자간증 · 자기공명영상.