

# SEVERE STENOSIS OF THE INTERNAL CAROTID ARTERY PRESENTING AS LOSS OF CONSCIOUSNESS DUE TO THE PRESENCE OF A PRIMITIVE HYPOGLOSSAL ARTERY: A CASE REPORT

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Katoh M, Kamiyama H, Kobayashi N, Makino K, Takano K, Tokumitsu N, Takamura H. Severe stenosis of the internal carotid artery presenting as loss of consciousness due to the presence of a primitive hypoglossal artery: a case report. *Surg Neurol* 1999;51:310-2.

## BACKGROUND

Symptoms of ischemic attacks in the internal carotid system usually involve focal cerebral dysfunction, i.e., hemiparesis or aphasia. However, an ischemic attack in the vertebrobasilar artery system usually presents with combined symptoms. The variety of manifestations included in the vertebrobasilar profile makes the potential pattern of symptoms considerably more variable and complex than that in the carotid system. Manifestations can include syncope and also vertigo.

## METHOD AND RESULTS

A 42-year-old woman experienced frequent attacks of faintness with vertigo. Angiography demonstrated severe stenosis of the left internal carotid artery with a persistent primitive hypoglossal artery just distal to the stenosis. The right internal carotid artery was normal and cross circulation through the anterior communicating artery was not well developed. Both vertebral arteries were hypoplastic. The patient underwent carotid endarterectomy and, thereafter the episodes of syncope completely disappeared.

## CONCLUSION

It was supposed that global ischemia including the brain stem occurred because of stenosis of the left internal carotid artery attributable to the presence of a primitive hypoglossal artery. © 1999 by Elsevier Science Inc.

## KEY WORDS

*Primitive hypoglossal artery, TIA, loss of consciousness.*

Stenosis of the internal carotid artery (ICA) usually causes ischemia of the anterior circulation, presenting focal symptoms such as hemiparesis, aphasia, and ocular symptoms. It does not usually induce episodes of syncope. However, ischemia in the territory of the vertebrobasilar artery system can cause combined symptoms that include not only focal symptoms but also faintness. We report a patient with severe ICA stenosis presenting as frequent episodes of syncope with vertigo because of the presence of a primitive hypoglossal artery.

## CASE REPORT

A 42-year-old female noted frequent episodes of syncope associated with vertigo since September 1994. She was diagnosed with epilepsy, but the symptoms were refractory. In November, she was referred to our hospital for further investigation. The patient had a history of systemic lupus erythematosus (SLE), diagnosed at the age of 27 years, but the disease was no longer active.

The patient was neurologically normal. Magnetic resonance imaging did not show any abnormality. Cerebral angiography demonstrated severe stenosis of the left ICA at the cervical bifurcation and a persistent primitive hypoglossal artery just distal to the stenosis (Figure 1). Right carotid angiogram did not demonstrate any abnormal findings, but cross circulation through the anterior communicating artery was not well developed. The posterior communicating arteries were not shown and both vertebral arteries were hypoplastic. The patient underwent

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**1** (A) Cerebral angiography demonstrated severe stenosis of the left ICA at the cervical bifurcation and a persistent primitive hypoglossal artery just distal to the stenosis. (B) Anteroposterior view of left ICA. (C) Lateral view.

left carotid endarterectomy on December 6, 1994. There were no intraoperative or pathological findings to suggest vasculitis as a cause of carotid stenosis.

The postoperative course was uneventful (Figure 2) and the attacks of faintness disappeared completely.

## DISCUSSION

The primitive hypoglossal artery is an anomalous vessel that originates from the cervical portion of the ICA at the level of C1 to C3. This artery runs dorsally, lateral to the hypoglossal nerve, to enter the hypoglossal canal, and then joins the caudal basilar artery. The incidence of a persistent primitive hypoglossal artery found on arteriography has been estimated to be approximately 0.02–0.03% [3]. When this artery is persistent, the vertebral arteries are usually hypoplastic or aplastic bilaterally. The posterior communicating arteries are often absent bilaterally. There have been few reports in which a persistent hypoglossal artery was associated with other cerebrovascular disease. We found one case report describing an aneurysm of the anterior communicating artery in association with a persistent primitive hypoglossal artery [2].

Symptoms of ischemic attacks in the internal carotid system usually involve focal cerebral dysfunction, i.e., hemiparesis or aphasia. However, an ischemic attack in the vertebrobasilar artery system usually presents with combined symptoms. The variety of manifestations included in the vertebrobasilar profile makes the potential pattern of symptoms considerably more variable and complex than that in the carotid system [1]. Manifestations can include syncope and also vertigo. Interestingly, in the present case, an ischemic attack caused by severe stenosis of the left ICA manifested as syncope. In this case, a persistent primitive hypoglossal artery was present just distal to the ICA stenosis, whereas bilateral posterior communicating arteries and vertebral arteries were hypoplastic. Therefore, severe ICA stenosis could cause global ischemia of the brain stem.

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**2** Postoperative state of the  
left ICA.



**A**ccording to market fundamentalism, all social activities and human interactions should be looked at as transactional, contract-based relationships and valued in terms of a single common denominator, money. Activities should be regulated, as far as possible, by nothing more intrusive than the invisible hand of profit-maximizing competition. The incursions of market ideology into fields far outside business and economics are having destructive and demoralizing social effects. But market fundamentalism has become so powerful that any political forces that dare to resist it are branded as sentimental, illogical, and naïve.

—GEORGE SOROS  
“THE CRISIS OF GLOBAL CAPITALISM” (1998)