

# Symptomatic subclavian steal phenomenon due to retrograde blood flow in a 16-year-old boy

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## RECEIVED:

5-2-2008

## ACCEPTED:

5-1-2009

## CONFLICT OF INTEREST:

None

Subclavian steal phenomenon is a rare syndrome caused by retrograde flow in the vertebral artery leading to symptoms of vertebrobasilar insufficiency. It is important to distinguish subclavian steal phenomenon secondary to stenosis from cases in which the syndrome arises from hemodynamic disturbance. This condition is usually an ultrasonographic finding but it may cause symptoms. Patients with subclavian steal syndrome should be followed closely and surgical treatment considered. We report a case in a 16-year-old boy. [Emergencias 2010;22:47-48]

**Key words:** Subclavian steal syndrome Surgery.

## Introduction

Subclavian steal phenomenon or syndrome was first described in 1961 by Fisher<sup>1</sup> as secondary to proximal stenosis at the origin of the subclavian artery, with retrograde flow of the vertebral artery on the same side and symptoms of vascular insufficiency in the vertebrobasilar area. It is very rare and only affects 0.02% of patients. In the context of its rarity, the most common cause is atheromas, but it has also been observed in Takayasu disease<sup>2</sup>, or associated with alterations in embryological development of the aortic arch and supra-aortic trunks<sup>3</sup>. In these cases it usually presents unilaterally, but bilateral presentation has also been described<sup>4</sup>.

However, one must distinguish subclavian steal syndrome (SSS) secondary to stenosis from hemodynamic SSS. The latter is usually an ultrasound finding during vascular procedures. These patients rarely have symptoms, which basically only appear on performing exercise with the arm<sup>5</sup>.

The clinical manifestations are usually hemispheric, of carotid origin, due to hemodynamic failure, with poor blood supply of the vertebral artery. These clinical manifestations may be accentuated by peripheral vasodilation secondary to

physical activity of the upper limb, prior ischemic compression or arm straining movements.

We report the case of a 16-year old male patient with the phenomenon of subclavian steal accompanied by hemiparesis.

## Case report

A 16-year old boy with no medical history of interest, after various episodes of upper left chest pain and left arm parasthesia, consulted the emergency department (ED) for a sudden decrease of strength and sensitivity of the left arm and left leg, accompanied by headache and posterior neck pain.

On physical examination the patient had slight left hemiparesis, without neck rigidity or meningeal signs. Blood pressure of the left arm was slightly decreased. Brain CT scan, brain and neck magnetic resonance imaging, and lumbar puncture were normal. During admission the patient received Doppler ultrasonography of the supra-aortic trunks, which revealed alternating retrograde flow of the left vertebral artery. Suspecting SSS, angiography was performed to rule out arteriovenous malformation.

While under observation in the ED, the patient evolved favourably and the symptoms disappeared completely. No treatment was administered and the patient has remained without further episodes to date.

## Discussion

The clinical suspicion of SSS is based on an accurate history, as angina is related to upper limb activity, ipsilateral arm claudication, vertebrobasilar insufficiency symptoms and a physical examination where supraclavicular murmurs may be detected, asymmetry of humeral pulses and radial arterial pressure difference greater than 20 mm Hg of both arms.

Confirmation of the diagnosis is made by Doppler ultrasound, with current sensitivity and specificity close to 100%<sup>6</sup>. Angiography is necessary to rule out stenosing pathology<sup>7</sup>.

The treatment differs if there is an obstructive cause or, as in our case, a phenomenon of subclavian steal of hemodynamic cause.

In the latter case, evolutionary monitoring of the patient is required for decision-making on treatment, as the symptoms often disappear spontaneously with time.

Surgical intervention for recurrent cases and those with a cause of stenosis must be assessed individually, taking into account the following factors<sup>8</sup>: patient discomfort, the symptoms of the episode and their disabling condition, functional

and vital risk, patient employment status and surgical risk. Surgical treatment includes direct procedures such as transposition subclaviocarotid transposition and bypass<sup>9</sup>, and endovascular techniques such as percutaneous transluminal angioplasty or intraluminal stent placement<sup>10,11</sup>. Each patient must be assessed on an individual basis.

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## Fenómeno de robo de la subclavia sintomático de etiología hemodinámica en un joven varón de 16 años

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El síndrome de robo de la subclavia es una enfermedad debida a la inversión del flujo en la arteria vertebral con síntomas de insuficiencia arterial vertebro-basilar. Este síndrome es muy infrecuente. Es importante diferenciar entre el síndrome de robo de la subclavia secundario a una estenosis y el fenómeno de robo de la subclavia de causa hemodinámica. El fenómeno de robo de la subclavia es un hallazgo ecográfico habitual, pero sólo excepcionalmente es sintomático. En estos pacientes es muy importante un control evolutivo, para poder valorar el tratamiento quirúrgico. Presentamos el caso de un joven de 16 años con un fenómeno de robo de la subclavia sintomático. [Emergencias 2010;22:47-48]

**Palabras clave:** Síndrome de robo de la subclavia. Tratamiento quirúrgico.