

Development of collateral veins as a favorable prognostic factor for complete recovery in cerebral venous thrombosis due to *Tribulus terrestris*

Dear editor,

Cerebral venous thrombosis (CVT) is a relatively uncommon but serious neurologic disorder. It usually occurs in young people and is often associated with multiple prothrombotic risk factors.

We describe the case of a 37-year-old healthy man presented to our attention because of cephalgia, nausea, vomit, and a partial motor seizure followed by psychomotor agitation and coma. Urgent brain computed tomography revealed sigmoid sinus thrombosis extending to superior sagittal sinus and cortical veins. Then we

performed brain magnetic resonance imaging (MRI) with venography showing, on fluid attenuated inversion recovery (FLAIR) sequences, a hyperintense lesion in the right parietal cortex. MR angiography confirmed cerebral venous thrombosis (see Fig. 1). Complete screening for prothrombotic risk factors was normal. Anticoagulation and diuretic treatments were started and patient was sedated and intubated. Ten days after admission, the patient became progressively alert and intubation was withdrawn. The repeated brain MRI showed the disappearance of the cortical lesion previously evident in FLAIR scans and venography sequences marked the development of many collateral veins (see Fig. 1). At that time, the patient could refer about assumption of *Tribulus terrestris* (TT) 1000 mg a day started one-month before hospital admission.

We describe the case of a CVT occurring after intake of a TT supplement. TT is a complement of supplements available over the counter and widely used with several indications, such as physical activity (1). However, it is known to be a testosterone booster (1). In fact, TT is also used as a symptomatic treatment for erec-

tile dysfunction (1). For its characteristics, it is targeted at physically active men, including male athletes (1).

On this basis, taking into account that testosterone therapy has been strongly associated with thrombotic events (2), we postulated that TT supplements caused CVT in our patient, as no other prothrombotic risk factors were found.

Moreover, our patient showed, in concomitance with the improvement of the neurological status, the development of many collateral veins, which seems to support venous drain by passing the cerebral thrombosis, thus causing the restoration of the cerebral hemodynamic status facilitating the clinical recovery.

In conclusion, this report would suggest the possibility of serious thrombotic events associated with TT therapy. Moreover, we would one again underline that development of collateral veins could be a marker of favorable outcome in CVT patients.

Claudio Liguori^{1*}, Fabio Placidi¹,
Francesca Leonardi²,
Marina Diomedì^{3,4},

Correspondence: Claudio Liguori*,
Neurophysiopathology Unit, Department of
Systems Medicine, University of Rome "Tor
Vergata", Viale Oxford 81, Rome, 00133, Italy.
E-mail: dott.claudioliguori@yahoo.it

Conflict of interest: None declared.

DOI: 10.1111/jcs.12572

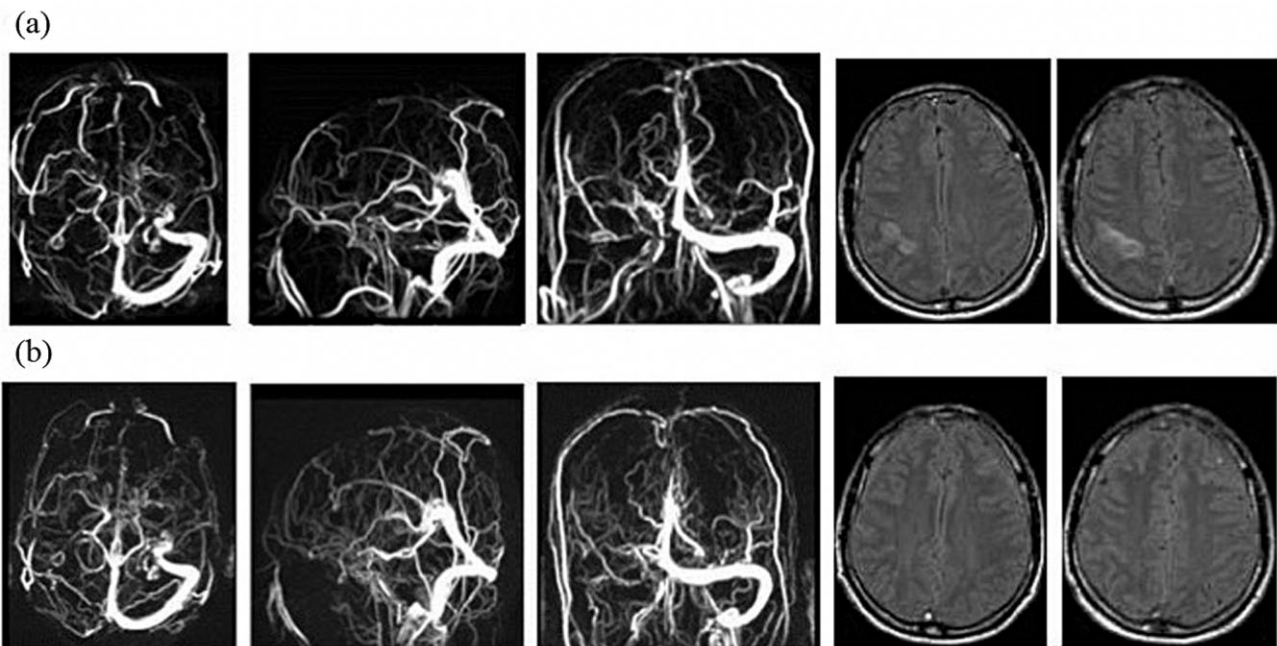


Fig. 1 Figure revealing sigmoid sinus thrombosis extending to superior sagittal sinus and cortical veins coupled with the hyperintense lesion in the right parietal cortex evident in FLAIR sequences (a) with the development of many collateral veins and the disappearance of the hyperintense lesion after 10 days (b).

Nicola Biagio Mercuri^{1,5},
Maria Grazia Marciani³,
Paolo Stanzione^{3,4}, and
Fabrizio Sallustio⁴

¹Neurophysiopathology Unit, Department of
Systems Medicine, University of Rome 'Tor
Vergata', Rome, Italy

²Department of Clinical Sciences and
Translational Medicine, Intensive Care Unit,
University of Rome 'Tor Vergata', Rome, Italy

³Neurology Unit, Department of Systems
Medicine, University of Rome 'Tor Vergata',
Rome, Italy

⁴Stroke Unit, Department of Systems Medicine,
University of Rome 'Tor Vergata', Rome, Italy

⁵Fondazione Santa Lucia, Rome, Italy

References

- 1 Pokrywka A, Obmiński Z, Malczewska-Lenczowska J *et al.* Insights into supplements with *Tribulus terrestris* used by athletes. *J Hum Kinet* 2014; **41**:99–105.
- 2 Glueck CJ, Wang P. Testosterone therapy, thrombosis, thrombophilia, cardiovascular events. *Metabolism* 2014; **63**:989–94.