Code stroke. Can we improve stroke times? A reply☆

Código ictus. ¿Podríamos mejorar los tiempos? Réplica

Dear Editor:

We appreciate the interest in our article ''Code stroke in Asturias,''[1] as it presents us an opportunity to offer more detail on the code stroke strategy being implemented in our region, and to make improvements based on other authors' contributions.

We entirely concur with the authors of the letter that transport times from more remote areas constitute a challenge for the treatment of acute stroke in many patients who are more distant from the 2 reference hospitals. This can be observed in the small number of patients from the most remote areas among those who receive treatment, despite increases in code stroke activation and in the administration of reperfusion therapy since the latest update to our region's code stroke policy.[2]

We plan to apply research and communications technologies to address the obstacles of time and our region's topography. Telemedicine has long been used in the treatment of acute stroke; fibrinolysis administered at remote centres by a specialist at the reference hospital has been shown to be safe and effective, and is associated with good long-term progression.[3–5] The technique is less well-established in some other areas of Spain, but has achieved similar results.[6,7] Various clinical practice guidelines attest to the effectiveness of telemedicine, recommending its use for stroke treatment.[8,9] Telestroke has also been associated with improvements in rural settings[10]; NIHSS scores established in examinations performed over videoconference have been shown to be valid and reliable.[11] Other studies have demonstrated good results for the identification of candidates by teleradiology, with specialists viewing scans remotely.[12] In our region, this function is provided via an internet connection between public hospitals, allowing radiological imagery to be sent and viewed.

The Public Health System of Asturias is currently working to implement a specific telemedicine system for the treatment of acute stroke. We hope that once the system is live, acute-phase stroke treatment will become available to patients who are currently outside the treatment window for fibrinolysis, or who are excluded from the code stroke system itself due to long transport times.

The telestroke system is intended to enable neurologists at reference centres to collaborate with local on-call physicians to simultaneously examine patients from more remote areas without on-call neurology services or stroke units, and to assess neuroimaging findings and share clinical history data in real time, jointly deciding whether to administer fibrinolysis. The only aspect on which we disagree with the authors of the letter is whether patients should be transported to reference hospitals once perfusion is underway. Some studies have demonstrated the safety and effectiveness of transporting patients during administration of fibrinolysis.[13,14] This approach offers the benefits of admission to a stroke unit (which is not possible in remote hospitals) and the associated protocols, care, management of complications, and diagnostic and therapeutic procedures. It also minimises treatment delays for patients requiring endovascular treatment: invaluable time is wasted if we wait for fibrinolysis to be completed at the local hospital.

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Intracranial hypertension syndrome in a patient with psoriasis receiving ustekinumab☆

Síndrome de hipertensión intracraneal en una paciente con psoriasis tratada con ustekinumab

Dear Editor,

Ustekinumab is a human IgG1k monoclonal antibody that binds to the p40 subunit of interleukins IL-12 and IL-23; these cytokines are involved in the pathogenesis of psoriasis. The efficacy and safety of the drug for treating moderate to severe psoriasis were evaluated in the PHOENIX 1 and 2 studies (the latter had a follow-up period of up to 5 years). Adverse drug reactions included infections and tumours.[1] We describe the case of a patient with psoriasis and receiving ustekinumab who developed intracranial hypertension syndrome but showed no abnormalities in aetiological studies.

The patient was a 27-year-old woman with a 13-year history of plaque psoriasis; she had previously been treated with methotrexate and cyclosporine, with no response. She had a non-hormonal intrauterine device and was not obese. In April 2016, the patient received a 45-mg injection of ustekinumab; she received another injection on week 4, and subsequently every 12 weeks. Six months after treatment onset (after the fourth dose), the patient began to experience blurred vision in the right eye and recurrent episodes of complete vision loss (black-outs) lasting several seconds, also in the right eye. She also developed oppressive right-sided hemicrania continua of mild to moderate intensity. The patient was evaluated at our hospital's neurology department in December 2016. The neurological examination detected bilateral papilloedema predominantly affecting the right eye, and normal visual acuity and visual field. All analyses yielded normal results (complete blood count, haemostasis tests, biochemical study, liver profile, hormone analysis, autoimmunity study, infectious serology study). Brain MRI, MRI angiography of the venous sinuses, and visual evoked potentials revealed no alterations. Ocular ultrasound revealed bilateral optic nerve sheath thickening (up to 6.1 mm) and optic disc swelling (up to 1 mm), particularly in the right eye. These findings indicate intracranial hypertension. A lumbar puncture revealed a CSF opening pressure of 30 cm H_2O; a CSF analysis revealed no alterations (infectious serology study, oligoclonal bands, molecular biology analysis). Treatment with ustekinumab was discontinued in December 2016. In January 2017, the patient was started on acetazolamide, which improved the headache and reduced the frequency of the episodes of vision loss. An ocular ultrasound performed in February 2017 also showed slight improvements, with an optic nerve sheath thickness of 5.7 mm in the right eye and 5.6 mm in the left. Papilloedema persisted. The ocular ultrasound revealed no thickening of the optic nerve. Two months later, the patient was fully asymptomatic; acetazolamide was progressively withdrawn. In the absence of any other findings that may explain the symptoms, the patient was diagnosed with intracranial hypertension syndrome probably secondary to treatment with ustekinumab.

Intracranial hypertension syndrome is characterised by elevated CSF pressure, frequently above 25 cm H_2O. The condition has been found to be associated with a number of drugs, including amiodarone, cytarabine, corticosteroids, ciclosporin, LH-RH analogues, levothyroxine, lithium, rofecoxib, levonorgestrel, growth hormone, tetracycline, retinoids, and even some medicinal herbs used in southern India.[2,3] In patients with psoriasis, intracranial hypertension has also been associated with methotrexate[4] and acitretin.[5] A complete aetiological study should be conducted to rule out such other causes as cerebral venous sinus thrombosis or CNS infection.[2] Clinical trials of ustekinumab report no adverse reactions involving the CNS, although some authors have described various neurological adverse effects: Gratton et al.,[6] for example, report a case of reversible posterior leukoencephalopathy, whereas Stöllberger and Finsterer[7] report a case of varicella zoster virus meningitis. Interestingly, Abdelnabi et al.[8] report a case similar to our own, a young woman developing intracranial hypertension secondary to treatment with ustekinumab, although in their case the patient presented memory alter-

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