displayed cautious gait, taking slow, short steps, with the feet barely lifting from the floor. Muscle strength, muscle tone, sensitivity, and deep tendon reflexes are normal. Abnormal gait was attributed to involvement of the frontal subcortical white matter. The mean Timed Up and Go test score was 11.5 ± 1.01 for the first 15 years of follow-up and 19.7 ± 1.12 for the last 10 years. Sphincter function has remained normal at all times throughout follow-up. Brain MR images revealed no changes from symptom onset to present (Fig. 1a and b). The case presented here demonstrates the variability of PACNS in terms of form of presentation, and the multiple differential diagnoses hindering aetiological diagnosis of the condition before brain biopsy can be performed. The most frequent symptoms include refractory headache, encephalopathy, and focal symptoms; spinal cord involvement is much less frequent.[6] CSF study results are abnormal in nearly 80% of patients,[7] with oligoclonal bands being observed in half of cases.[8] Inflammatory infiltrates may contain a combination of lymphocytes, histiocytes, and multinucleated giant cells; treatment is always based around long-term immunosuppression. PACNS is a rare disease, which means that few controlled studies of specific drugs have been conducted. One of the few published controlled studies on this topic included children with PACNS who were treated with methylprednisolone infusions, followed by maintenance therapy with cyclophosphamide plus either azathioprine or oral mycophenolate mofetil. Immunosuppresion in children may improve long-term outcomes; some of the patients included in the study were successfully managed for 7 years.[9] To our knowledge, ours is a unique case of long-term follow-up. Maintaining immunosuppression contributes to preserving functional independence for daily living activities. We should also highlight the abnormal persistence of leukoaraiosis on brain MR images over the course of 25 years. Although leukoaraiosis has a different pathogenic mechanism, once it appears, it persists or worsens over time.[10]

References

1. Cravioto H, Feigin I. Noninfectious granulomatous angiitis with predilection for the nervous system. Neurology. 1959;9:599—609.
2. Ferro JM. Vasculitis of the central nervous system. J Neurol. 1998;245:766—76.
3. Calabrese LH, Malek JA. Primary angiitis of the central nervous system. Report of eight new cases, review of the literature and proposal for diagnostic criteria. Medicine (Baltimore). 1994;67:20—40.
4. Amara AW, Bashir K, Palmer ChA, Walker HC. Challenges in diagnosis of isolated central nervous system vasculitis. Brain Behav. 2011;1:57—61.
5. Espinosa D, Domínguez RO, Famulari AL, Gallo A, D'Ábbraccio G, Vila JF, et al. Isolated CNS angiitis: eight years of benign course following corticosteroid treatment. J Neurol Sci. 1997;150 Suppl. S11.
6. Campi A, Benndorf G, Martinelli V, Terreni MR, Scotti G. Spinal cord involvement in primary angiitis of the central nervous system: a report of two cases. Am J Neuroradiol. 2001;22:577—82.
7. Salvarani C, Brown RD Jr, Calamia KT, Christianson TJ, Weigand SD, Miller DV, et al. Primary central nervous system vasculitis, analysis of 101 patients. Ann Neurol. 2007;62:442—51.
8. Scolding NJ. Central nervous system vasculitis. Semin Immunopathol. 2009;31:527—36.
9. Hutchinson C, Elbers J, Halliday W, Branson H, Laughlin S, Armstrong D, et al. Treatment of small vessel primary CNS vasculitis in children: an open-label cohort study. Lancet Neurol. 2010;9:1045—51.
10. Domínguez R, Famulari A, Vila J, Bartolomé E, Abiusi G, Rotta Escalante R, et al. Persistence of leukoaraiosis. Cerebrovasc Dis. 1996;6 Suppl. 2:72—3.

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Code stroke: can we improve response times?☆

Código ictus. ¿Podríamos mejorar los tiempos?

Dear Editor,

It was with great interest that we read the recently published article ''Code stroke in Asturias.''[1] We congratulate the authors and promoters of code stroke implementation in the region of Asturias on this excellent initiative. Stroke is associated with high morbidity and mortality, and prognosis is time-dependent; emergency services therefore play an essential role in early detection, transport, and access to neuroimaging studies.[2]

Several studies have highlighted the importance of good implementation of these processes in order to reduce morbidity and mortality in stroke patients.[3] The importance of this resides in reducing the time between symptom onset and definitive treatment, which has a definitive impact on prognosis: ''Time is brain.''[4,5]

Transport times frequently exceed 90 minutes due to the locations of the administrative areas assigned to the 2 reference centres providing reperfusion therapy (HUCA and Hospital de Cabueñes) and the time required for an ambu-

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lance to transport a patient from a given healthcare centre to the reference hospital. To transport time we should add the typical delays in seeking medical care, the time required for code stroke activation, the time necessary for the emergency services to reach the patient, and the time required for activating the in-hospital code stroke protocol (CT scan). Cumulative delay poses a threat for treatment within the therapeutic window (4 h 30 min). This is especially problematic given that delays in administering fibrinolysis reduce the effectiveness of the treatment.[6]

We decided to explore the possibility of using new technologies to treat stroke patients at the closest regional hospital equipped with a CT scanner. Treatment would be administered by specialised stroke teams and monitored by a specialist neurologist[7] from the reference centre. Telemedicine for stroke treatment is currently in use in several areas of Spain, obtaining similar results to those reported in the literature and those observed for treatment administered in stroke units.[8,9] Current telemedicine systems not only enable video conferences and joint examinations by clinicians at both centres, but also real-time sharing of the patient's relevant medical history and CT images.[10] Our experience with this system over the past 7 years has been very positive, with patients treated in a regional hospital using telemedicine systems and patients treated at the reference hospital's stroke unit displaying similar modified Rankin Scale scores at 3 months. In fact, symptom onset—CT scan times, symptom onset—treatment times, and door-to-needle times were shorter in local hospitals with telemedicine systems than in the reference hospital.[11]

Telemedicine may help to significantly reduce time to reperfusion therapy. Once IV fibrinolysis is administered at the regional hospital, patients may be transferred to the reference hospital's stroke unit for re-evaluation and, where necessary, endovascular treatment with techniques only available at reference hospitals (intra-arterial thrombolysis, thrombectomy, or other techniques). In our health district,[12] regional hospitals with telemedicine systems transfer patients to the reference hospital's stroke unit after completing IV fibrinolysis (1 hour) locally; when symptoms do not improve or large vessel occlusion is suspected, the patient is transferred to the reference centre while receiving IV fibrinolytics, as agreed by the neurologists at the regional and reference centres (telestroke).

References

1. Benavente L, Villanueva MJ, Vega P, Casado I, Vidal JA, Castaño B, et al. El código ictus de Asturias. Neurologia. 2016;31:143—8.
2. Vázquez Lima MJ, Blanco González M. Algunas consideraciones sobre el infarto cerebral desde otra óptica. Neurologia. 2014, http://dx.doi.org/10.1016/j.nrl.2014.04.003.
3. Ruiz-Ramos M, García-León FJ, López-Campos JL. Características demográficas de la mortalidad en los servicios de urgencias hospitalarios de Andalucía. Emergencias. 2014;26:109—13.
4. Alonso de Leciñana M, Egido JA, Casado I, Ribó M, Dávalos A, Masjuan J, et al. Guía para el tratamiento del infarto cerebral agudo. Neurologia. 2014;29:102—22.
5. Gallardo Tur A, García Casares N, de la Cruz Cosme C, Jiménez Parras M, Temboury Ruiz F, Rosell Vergara E, et al. Análisis de factores asociados al pronóstico a largo plazo en el ictus isquémico fibrinolisado. Emergencias. 2015;27:34—8.
6. Lees KR, Bluhmki E, von Kummer R, Brott TG, Toni D, Grotta JC, et al. Time to treatment with intravenous alteplase and outcome in stroke: an updated pooled analysis of ECASS, ATLANTIS, NINDS, and EPITHET trials. Lancet. 2010;375:1695—703.
7. Geffner Sclarsky D, Simón Gonzálbo A, Soriano Soriano C, Vilar Fabra C, Claramonte Clausell B, Belenguer Benavides A. Pseudoictus en el código ictus. Frecuencia, diagnóstico, tratamiento y destino. Emergencias. 2014;26:437—42.
8. Jiménez M, Tur S, Legarda I, Gorospe A, Torres M, Merino P, et al. Telemedicina aplicada al ictus en las Islas Baleares: el proyecto Teleictus balear. Rev Neurol. 2012;54:31—40.
9. Pedragosa A, Álvarez-Sabín J, Molina C, Brugués J, Ribó M. Trombólisis endovenosa en un hospital comarcal mediante el sistema teleictus. Rev Neurol. 2011;53:139—44.
10. Masjuan J, Álvarez-Sabín J, Arenillas J, Calleja S, Castillo J, Dávalos A, et al. Stroke health care plan (ICTUS II. 2010). Neurologia. 2011;26:383—96.
11. Rodríguez Bouzada N, Blanco González M, Vázquez Lima MJ. Resultados preliminares teleictus Galicia. Vigo: Ponencia Jornadas Urgencias Neurológicas; 2014.
12. Rivas SA, González MB, Sánchez JAC, Ferro JF, Rodríguez-Yáñez M, Fariña MRR, et al. Protocolos de actuación en el Área Neurovascular. Xerencia de Xestión Integrada de Santiago de Compostela. Santiago: Consellería de Sanidade; 2012.

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