Chronic Cerebral Ischemia Treatment

see also Acute Ischemic Stroke Treatment.

Carotid artery stenting

Revascularization for Chronic Cerebral Ischemia Treatment

Revascularization for Chronic Cerebral Ischemia Treatment.

Stem Cell Treatment for Ischemic Stroke Recovery

The role of cellular transplantation to promote functional recovery after stroke has been evaluated over the last two decades. Preclinical studies first established the potential for cultured neuronal cells derived from a teratocarcinoma cell line to be tested for safety and efficacy in the treatment of human stroke. In animal models of stroke that caused reproducible learning and motor deficits, injection of neuronal cells resulted in a return of learning behavior, retention time, and motor function. Clinical trials followed. Additional work with cells derived from a bone marrow neuroprogenitor line, fetal cortical stem cells, and other cell sources showed promise in preclinical studies and then these cells were tested in clinical studies [1].

Normobaric oxygen

A prospective randomized trial (NCT03745092) enrolled 50 cases of CCI patients, which were divided into NBO (8 L/min of oxygen supplement) group and control group (room air) randomly, and also enrolled 21 healthy volunteers. Two times of 30-min EEG recordings with the interval of 45min of NBO or room air were analyzed quantitatively.

The CCI-mediated EEG presented with two patterns of electrical activities: high-power oscillations (high-power EEG, n = 26) and paroxysmal slow activities under the normal-power background (normal-power EEG, n = 24). The fronto-central absolute power (AP) of the beta, alpha, theta, and delta in the high-power EEG was higher than that in healthy EEG ($p < 0.05$). The fronto-central theta/alpha, delta/alpha and (delta + theta)/(alpha + beta) ratios in the normal-power EEG were higher than those in healthy EEG ($p < 0.05$). The high-power EEG in NBO group had higher fronto-central AP reduction rates than those in control group ($p < 0.05$). NBO remarkably reduced the fronto-central theta/alpha, delta/alpha, and (delta + theta)/(alpha + beta) ratios in the normal-power EEG ($p < 0.05$).

NBO rapidly ameliorates CCI-mediated EEG anomalies, including attenuation of the abnormal high-power oscillations and the paroxysmal slow activities associated with CCI [2].

1)

Kondziolka D. Stem Cell Treatment for Ischemic Stroke Recovery. Semin Neurol. 2021 Jan 27. doi: 10.1055/s-0040-1722640. Epub ahead of print. PMID: 33506475.
2)

Ding JY, Liu Y, Rajah GB, Chen ZY, Zhang SY, Ding YC, Ji XM, Meng R. Normobaric oxygen may correct chronic cerebral ischemia-mediated EEG anomalies. CNS Neurosci Ther. 2021 Jul 9. doi: 10.1111/cns.13703. Epub ahead of print. PMID: 34242498.