Intrathecal nicardipine

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Data suggest that the intrathecal (IT) delivery of the calcium channel blocker (CCB) nicardipine may have a role in a reactive (rather than a preventative) approach to address cerebral vasospasm treatment and avoid delayed cerebral ischemia (DCI) [1]. This approach has the advantage of avoiding deleterious systemic effects, i.e., decreased blood pressure, that is common with oral and intravenous CCBs [2]. An intermittent and titratable IT nicardipine regimen was shown to be associated with proximal vessel vasodilation, reduced risk for DCI, and improved long-term functional outcomes [3] [4]. However, the macrovascular vasodilation itself, as quantified by a reduction in daily TCD blood flow velocity, was not associated with outcomes [5]

Sathialingam et al. employed a non-invasive optical modality called diffuse correlation spectroscopy (DCS) to quantify the acute microvascular cerebral blood flow (CBF) response to intrathecal nicardipine (up to 90 min) in 20 patients with medium-high grade non-traumatic SAH. On average, CBF increased significantly with time post-administration. However, the CBF response was heterogeneous across subjects. A latent class mixture model was able to classify 19 out of 20 patients into two distinct classes of CBF response: patients in Class 1 (n = 6) showed no significant change in CBF, while patients in Class 2 (n = 13) showed a pronounced increase in CBF in response to nicardipine. The incidence of DCI was 5 out of 6 in Class 1 and 1 out of 13 in Class 2 ($p < 0.001$). These results suggest that the acute (<90 min) DCS-measured CBF response to IT nicardipine is associated with intermediate-term (up to 3 weeks) development of DCI [6].

Case series

In this observational study, we prospectively employed a non-invasive optical modality called diffuse correlation spectroscopy (DCS) to quantify the acute microvascular cerebral blood flow (CBF) response to IT nicardipine (up to 90 min) in 20 patients with medium-high grade non-traumatic SAH. On average, CBF increased significantly with time post-administration. However, the CBF response was heterogeneous across subjects. A latent class mixture model was able to classify 19 out of 20 patients into two distinct classes of CBF response: patients in Class 1 (n = 6) showed no significant

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[1], [3], [5]
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[2]
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